



Innovative Contractor Engagement

Project report on the implementation of Innovative Contractor Engagement for the appointment of a Design and Build Contractor for the Bank Station capacity upgrade scheme

September 2014

MAYOR OF LONDON



**London
Underground**



London Underground's Stations and Crossrail Directorate have pioneered the development of a procurement process known as **Innovative Contractor Engagement (ICE)**. The Bank Station Capacity Upgrade Project Team have led the development of ICE and used it to procure the Design and Build Contractor for the project.

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Forward

The increasing recognition and focus on infrastructure investment as a driver for UK economic growth means that it is now more important than ever for the industry to demonstrate it can deliver value enhancing infrastructure. Particularly as numerous studies have identified that client and supply chain issues remain significant contributors to higher costs, poor performance and underperforming benefit realisation.

Infrastructure UK is a unit within the UK Treasury that works on long term infrastructure priorities. Its 2011 Implementation Plan identified components of work including changing the behaviours of industry and clients, using smarter procurement and improving infrastructure data as part of a drive towards an industry which is better placed to invest in developing solutions, skill and capability that can deliver better value.

London Underground (LU) is a major owner and operator of public infrastructure and is fully committed to the objectives championed by Infrastructure UK. LU's Tube network is the world's oldest metro, and carries more than one billion passengers a year, on 11 lines serving 270 stations. Passenger demand for the use of its infrastructure has never been higher, and the population of London continues to grow apace. LU has embarked on a major programme to deliver the extra capacity needed to keep pace with rising demand, a £1.3bn a year investment programme which will deliver a 30% upgrade in Tube capacity. It is an ambitious plan to update, upgrade

and expand the Tube while maintaining the vital flow of close to four million customers through the network every day.

This report presents an approach that LU is taking to address both client and industry behaviours in order to improve efficiency. With the objective of procuring better value whilst delivering projects, Innovative Contractor Engagement (ICE) has been conceived to ensure that the good ideas the market has in response to project requirements can be bought forward and developed with the client as soon as possible for maximum benefit.

ICE has been pioneered on a major upgrade project at Bank Station and the results demonstrate the spectacular increase in value that the industry can achieve when we – client, designer, Tier 1 contractors and their supply chain – get it right. The winning bid is a clear demonstration that good ideas from the market will deliver better value and win bids.

The successful execution of ICE on Bank has provided LU with a platform for future development which addresses our historic challenge of how to control costs, speed up the works and reduce the impact on the travelling public. It also reinforces our aspirations to be an intelligent, innovative and efficient client that can build strong relationships with the supply chain whilst delivering value to the public purse, for the travelling public, and for London. A sure and significant step to a better future.

BANK STATION

↓ Central line

↓ District and Circle lines

↓ Northern line

↓ Waterloo & City line

↓ Docklands Light Rail 

↓ Public subway and toilets

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Executive Summary

London Underground's Stations and Crossrail Directorate recognise that supply chain innovation has to occur early on in the procurement process in order to derive maximum benefits from such innovation. This principle has led to a new procurement process known as Innovative Contractor Engagement (ICE). The Bank Station Capacity Upgrade Project Team have led the development of ICE and pioneered its use to procure the design and build Contractor for the project.

Four pre-qualified bidders were selected for the ICE and they provided four different schemes with significantly different approaches. Two bidders in particular demonstrated unique and innovative thinking – they were ranked 1st and 2nd in the tender evaluation.

The tender winning bid by Dragados SA provides a more “Effective Product”, increasing the benefits within the business case, and provides a more “Efficient Method”, delivering it faster and cheaper compared to the original LU Base Case. This value is made up from:

- An increase of 1.1:1 (45.1%) in the B:CR from 2.4:1 to 3.5:1;
- A £148,625,000 (19.2%) increase in Journey Time Social Benefit over the 60 year project life;

- A £61,155,000 (9.8%) reduction in the Estimated Final Cost to £563,812,000;
- A 5 week (22.7%) reduction in closure duration of the Northern line, to 17 weeks. This equates to a £35,884,000 (52.9%) saving in social dis-benefit ;
- A £30,850,000 (15.6%) increase in induced Revenue throughout the life of the project to £228,909,000;
- A more effective Step-Free Access solution direct from street to platform on both the Northern & DLR lines; and
- A more efficient fire and evacuation strategy throughout the whole station.

The codification of ICE has led to the development of new project management processes for managing the development of supplier innovation, intellectual property and the promotion of a more collaborative, open and transparent relationship with the market. All Project documentation that defined LU's approved Base Case, such as the scheme design details, the LU Business Case, Cost Plan and Risk Register was shared with bidders as part of the tender process.



The winning bid by Dragados SA provides a more “Effective Product”, **increasing the benefits within the business case**, and provides a more “Efficient Method”, delivering it **faster and cheaper** compared to the original LU Base Case.



Tier 1 Contractors have sought to deliver value by **engaging early** with and **locking in the innovations** from their lower tier supply chain.

LU has also demonstrated to the market that it is able to maintain confidentiality of bidder's ideas during a negotiated dialogue tender process, and behave equitably and fairly, reinforcing the principle that the bidders are entitled to make a reasonable profit. All parties respected and maintained confidentiality throughout the whole process.

Engaging bidders in ICE has led to innovation in project management in order to better describe what the client wants to buy (see section 8.1).

The Employer Requirements were in all principal areas unchanged between the Dialogue and Tender stages, demonstrating strong client knowledge of the business need. A key principle of ICE. The ITT documentation was de-constrained as much as possible, to allow bidders maximum flexibility in developing their schemes to meet Employer Requirements.

The tender scoring targeted a more "Effective Product" (70%), the long term viability of the investment, and (30%) on an "Efficient Method", the short term service provision. This was achieved by aligning evaluation criteria with the key objectives and purpose of the scheme.



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Introduction

London Underground Stations and Crossrail Directorate have pioneered a procurement approach known as Innovative Contractor Engagement (ICE). ICE has been developed to enhance the value that LU will obtain from the marketplace in procuring a Design and Build (D&B) contract for the development of Bank Station Capacity Upgrade (BSCU) Project.

ICE is an “Infrastructure UK” model approach that seeks to maximise market value through innovation in the supply chain.

This project report is a summary of the work and engagement of the BSCU project team with the market and its primary stakeholders, as it set about developing, implementing and securing the benefits of ICE for the project.

2.1 Report Aims

This report is produced as a reference document, setting out how the Bank Project team have pioneered the ICE procurement approach. It is directed at project practitioners across all built environment disciplines that are faced with the constant challenge of delivering increased value within a project context on behalf of their clients as they commission capital investment projects.

The key aims of the report are:

- To set out the context within which ICE was implemented on BSCU project;
- To present the key issues and processes that shaped the implementation of ICE on the project, and have contributed to the delivery of a successful outcome for the procurement model;

- To highlight the key observations and lessons learnt; and
- To contribute to the development of the future implementation of ICE on other projects.

2.2 Report Scope and Limits

The scope of this report is by necessity, limited to the implementation of ICE on the BSCU project and the associated development work carried out by the project delivery team.

The report is set out in four parts.

- Part 1 discusses the background and principles of ICE and sets this in the BSCU Project context;
- Part 2 discusses the management of the implementation of ICE;
- Part 3 discusses the benefits that have been delivered by the process; and
- Part 4 (Appendix A) describes the development of the BSCU Base Case.

In addition to EU procurement law (Utilities Regulations), the BSCU project context is extensively influenced by the investment governance requirements of Transport for London and the resultant project management framework (PMF) processes in operation at London Underground. These are described to the minimum extent necessary in order to establish their influence. The report does not attempt to otherwise explain the investment management framework.

Part I

The ICE Concept

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Innovative Contractor Engagement

3.1

Current Procurement Practice

The current approach of clients and the resulting supplier behaviours has developed out of a cold commercial reality (predominantly lowest cost). This is particularly observed on large capital investment projects where both parties have to deal with the inherent risk of reconciling the expected volume of change of any immature scheme against the hard edge of an early commercial agreement.

Current practice results in a combination of:

- Client “Market Testing” – and then seeking the lowest market bid for any innovation brought forward. This does not incentivise suppliers to offer innovations at an early stage. Bidders are reluctant to bring forward innovation where it can't win bids, and will hold it back until the return of tenders, or more often, post-contract value engineering;
- Client “Late Contractor Engagement” which significantly diminishes the projects ability and thus the value in adopting supplier innovation, particularly once a client outline design is fixed; and
- Design based bids alternatives – which are expensive to produce as this usually has to be prepared alongside a ‘compliant bid’. They are not usually encouraged by client procurement departments due to the additional cost and complexity associated with the evaluation of the alternatives as well as the compliant bid. Bid evaluation of alternatives is rarely ever allowed for in the procurement timetable.

Client’s current procurement practice tends to shift emphasis to lowest cost and makes ideas more valuable to the contractor, post return of tenders.

There is broad agreement across the industry that early supplier engagement is advantageous, and that innovation starts with the supply chain. Client behaviour at the procurement stage needs to encourage and when necessary reward the early formulation of ideas which are capable of winning bids. But clients appear less enthusiastic when it comes to single large projects particularly since commercial risk is a key consideration and perversely, the procurement processes and behaviours adopted tend on balance to dis-incentivise innovation and focus on lowest cost.

Successful supplier innovation means that you don’t get bid winning ideas, until you have ideas that are capable of winning bids.



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3.2 The ICE Concept

There is a widely held acceptance that the UK Construction industry needs to innovate and integrate in order to deliver significant value improvements, and while the industry is making some progress in this direction, there have been far fewer successes to date with single large capital investment projects. Clients, particularly in the public sector, also need to make a meaningful contribution to the change.

In the case of London Underground, a key lesson learnt from the award of design and build contracts for Bond Street (2010) and Victoria (2010) was that supply chain innovation had to be identified early on in the procurement process in order to maximise the benefits that the innovation could bring to the project. This was particularly relevant where Transport and Works Act Orders or planning consents were required. This key lesson was one of the factors contributing to the key principles for Innovative Contractor Engagement, a new procurement approach that LU would take.

The key principles of ICE were first formally set out in November 2011 in a paper to Infrastructure UK by the LU Programme Director of Crossrail and Stations. The paper was a response to the on-going concern that the cost of delivering infrastructure in the UK remains unsustainably high when compared to Continental Europe. It outlined the new approach LU proposed to take.

ICE is designed to incentivise early innovation from the supply chain. It consists of two strands; first, commercial protection of competitive advantage from bidder's innovation; and second, competing performance delivery against outputs (not pricing of a common outline design).

The original core principles of ICE are as follows:

- Pre-qualification based on contractors' ability to deliver and specifically their ability to innovate;
- A post qualification period of "Ideas Development" against a Requirements Schedule;
- The protection of contractors' intellectual capital for innovation;
- Establishment of a non-disclosure agreement between the parties;
- Establishment of fees to be paid to the contractor for this development;
- Redrafting of the Requirements Statement to allow for constraint removal where conflicts are established;
- Issue of the ITT against this modified Requirements Statement;
- Commercial evaluation against Requirements Statement; and
- Contract against Requirements Statement NEC Option C (essentially therefore culminating in an orthodox contractual arrangement).

3.3 ICE and Bank Station Capacity Upgrade Project

The BCSU project provided an opportunity to codify and implement ICE on a large, complex capital investment project. By Nov 2011, BCSU was already underway with the client led RIBA D design stage. However a change in the passenger modelling parameters on which the engineering development was based resulted in a need for the interchange capacity greater than that achieved under the RIBA C/C+ design stage. The resulting concept design (known as the Base Case) met the additional demand requirements but was less than optimal in the following areas:

1. It pushed the completion date beyond the required Dec 2021 and exceeded the established budget in excess of £150m;
2. The operational proposal was sub-optimal as it contained passenger hotspots throughout the life of the business case;
3. The design was based on the construction from a constrained 10 King William Street worksite. Construction from a larger worksite was likely to result in delivery benefits; and
4. Development of the project would require an order from the Secretary of State for Transport under the Transport and Works Act (TWA). The project was no longer confident that the Base Case could be promoted through the TWA Order process as the optimum scheme for development.

A review of the project towards the end of the RIBA D Stage concluded that further client led design development was not the most efficient way to address these short comings. Instead, it suggested that involving the market was more likely to result in a solution that delivered the strategic objectives at a price closest to the project budget. At the projects disposal were two key mitigations, which if correctly utilised would help deliver a successful outcome:

1. Increase the extent of land purchase – an opportunity to increase landtake had been identified following the increase in passenger demand. A bigger worksite would allow the contractor increased access for the construction of the works, contributing to a reduced construction duration and reduced risk. It would also provide additional environmental benefits; and
2. Undertake ICE procurement prior to submission of a TWAO - lessons learnt from other large station capacity upgrades showed that obtaining powers (Crossrail Act in the case of Bond Street and TWAO in the case of Victoria) on an Employer design and then procuring a D&B contract, precluded the significant value that contractor innovation could bring through the D&B competition where that innovation would need to extend those powers. This approach (obtaining powers and then procuring a D&B contractor) places a constraint on contractor innovation.

ICE would effectively reverse the sequence by procuring a D&B contractor first and then seeking the TWAO on the D&B contractor design (which would already include the contractor innovation). While this had the impact of deferring the original TWA submission date by up to two years, it was recognised that early market involvement could produce time and cost savings and encourage innovative thinking including early contractor definition of the project to help design, plan and deliver the works.

The potential benefits of adopting ICE for the project were noted as:

1. Early dialogue/engagement with contractors, with supply market innovation being brought forward before the TWAO application is made. Contractors would, from a commercial perspective inform:
 - i. the optimum operational configuration of the project in terms of passenger access, egress and interchange;
 - ii. The means of vertical transportation, particularly to surface; the optimum configuration between high speed lifts and escalators remain unresolved even after recognition of the opportunity to increase land take; and
 - iii. Optimisation of the Northern Line blockade duration required for any track related works
2. A further discussion of the context and impact of these issues is provided in Appendix A which presents the development history of the project.

3. Enhanced potential for increased benefits and/or reduced cost, schedule efficiencies including risk mitigation and safety improvements;
4. TWAO application based on a market tested most economically advantageous tender scheme;
5. Greater certainty of criteria in the full Invitation to Tender for the main D&B contract; and
6. Active contractor involvement with recent market experience of bidding on similar tunnelling projects e.g. Crossrail and Station Capacity Projects.

The team also recognised that developing an untried procurement approach would require the development of new management processes and procedures not in the corporate management system. Doing this on a major project such as Bank presented a significant delivery risk to the project and brought considerable reputational risk to LU. Thus it would have to develop specific processes and procedures for managing these risks.

The management of reputational risk can have a significant influence on the pioneering of an innovative approach which by its very nature has no precedence

Following successful compliance with governance requirements, the project received investment approval from TfL Board in March 2012, thus providing funding for the development of ICE.

Part 2

**ICE Project
Management**

4

Codifying and delivering ICE

4.1

Codifying the ICE concept

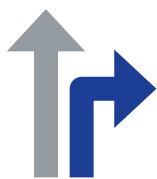
Codifying and implementing ICE began in detail after TfL Board approval. Delivery had to align with LU project management and investment governance requirements as well as sound project management principles of organisation, effective stakeholder management, schedule control and risk management. The project team readily identified that it had to structure its delivery in the following logical steps in order to attain its objectives:

- Create a set of internal governance documents and obtain senior stakeholder sign off approving its delivery approach – essentially a set of management processes and plans to secure the approval of the ICE delivery strategy;
- Create a set of documents with which it would convey intent, and manage the engagement with the market place – essentially the Tender / Bidder documents, that would culminate in the Invitation to Tender; and

- Manage the process through a series of internal Stage Gate reviews and Boards to demonstrate that it was in control and on track to satisfy corporate investment governance requirements obtaining the necessary stage approvals all the way through to Contract Award.

The activities associated with these logical steps are discussed in the remaining sections of Part 2.

It should be recognised that the project team were faced with the delivery of a new process and while the desired outcome was known, the team was embarking on a delivery route which was not only new to it, but had never been tried before by the organisation. Naturally therefore, the Projects approach to delivery was significantly influenced by the need to mitigate risk, maintain the confidence of key stakeholders, and protect project and corporate reputation.



The project team were faced with the delivery of a **new process** and while the desired outcome was known, the team was embarking on a delivery route which had **never been tried before** by the entire organisation.

5

Management documents

The early outputs created by the project team consisted of the suite of management plans and governance documents that would set out the process being designed, and communicate these to both internal and external stakeholders.

1. Internal stakeholders would be concerned with understanding and approving the procedures' that would deliver ICE. They included senior managers throughout the organisation and the external review teams that would be required to assess the project in accordance with investment governance requirements. Their principal area of concern would be to ensure that the project understood and had process in place to manage the legal and commercial issues, and associated technical and reputational risks;
2. External stakeholders - 4 pre-qualified bidders who would participate in the process. The project would have to clearly define and communicate the rules of engagement so that the bidders could understand the level of exposure and commitment required. Importantly, the bid teams themselves would have to seek the support of their respective Boards, it was therefore essential that the engagement was capable of being understood, seen to be transparent, and deemed capable of delivering a successful outcome, commensurate with the level of resource required to support it; and

3. External stakeholders including the Corporation of London (CoL) and the Church of England (CoE), who were already involved in extensive consultation on the development of the project to date and who would want to be assured by and involved in the development of new ideas resulting from the ICE process.

Key documents are described below.

5.1

Invitation to Participate (ITP)

LU is subject to EU procurement legislation (UK Utilities Contracts Regulations 2006) and therefore followed the negotiated procedure. In order to ensure compliance with the legislation it was necessary to set out the ICE requirements and governance to the Bidders prior to engagement.

External counsel was sought on the proposed ICE approach and clear guidance was provided to the project team on the necessary processes to demonstrate compliance.

The Invitation to Participate (ITP) was developed as the principal document through which the project would communicate its intents and requirements. It was issued to the bidders in advance so that they had an opportunity to consider the detail of the LU proposal and accept the terms under which ICE would proceed.

The ITP set out the ICE process, including:

1. Intent of the ICE – including LU’s objectives from the engagement. This was a development of the core principles of ICE described in section 3.2 above;
2. A description of the process that the parties would be engaged in, including the dialogue, the ITT and preferred bidder integration;
3. Instructions and information to bidders – including protocol for engagement with bidders, key dates, LU’s contribution to bid costs, communications protocol, and other standard procurement issues;
4. Illustrative contract terms – based on NEC ECC Option C (amended with TfL Z clauses);
5. A copy of the project requirements statement; and
6. The Information Agreement (IA) template

5.2 Information Agreement (IA)

A critical component of the ICE is the need for bidders to divulge, and the BSCU Project team to protect bidders’ intellectual property. This is information that is commercially sensitive; and would not normally be divulged early on in the procurement process (pre ITT).

The Information Agreement created a legally binding agreement between LU and each of the bidders, and set out the obligations of either party in respect of confidentiality, intellectual property and other commercially sensitive information.

Both Bidders and LU were required to sign the IA as a condition precedent to proceeding with the ICE process.

The IA established the mechanisms around how bidder’s intellectual property would be valued against the project business and traded between the parties. See section 7.1.1

Under the terms of the IA, bidders’ innovations, termed Unique ITP Outputs, would be declared by the bidders in the Request to Proceed (RTP) statements submitted on conclusion of the dialogue stage (see 5.3).

Subject to LU’s agreement with the RTP declaration, the confidentiality of Unique ITP Outputs remains protected, unless purchased as set out in the IA.

5.3

Request to Proceed (RTP) Statement

The project team decided during the early codifying of ICE that the bidders' outputs from the dialogue phase would not form a part of the formal tender evaluation. The project however needed to capture the outputs so that there was an agreement of the bidders' innovations resulting from the process. These innovations, termed Unique ITP Outputs, are protected by the confidentiality terms of the IA. They could be commercially traded between LU and losing bidders at the end of the formal tender evaluation. See section 5.2 above. Any innovation that was not declared at the end of the dialogue was not protected by IA confidentiality terms.

In addition, a key principle of the ICE was that LU would ensure that the ITT would not unknowingly constrain the bidders' innovations so long as they met the project requirements. A statement from the bidders would ensure that LU was able to check the terms of the ITT before issue. It would also allow LU to signpost to the bidders, any areas of their bid that would merit further development prior to submission with the tender. Refer to section 7.2.4.

Consequently, bidders would be required to submit a Request to Proceed (RTP) statement at the end of the dialogue stage. The format and content of the RTP was essentially at the bidders' discretion. It was however expected that the submission would fulfil the requirements of the IA.

5.4

ICE Procurement Execution Plan

In November 2011, project management of capital investment projects in LU was under the provisions of the LU Project Management Framework (PMF). PMF describes a series of products (management and technical plans) to be produced at various stages of the project lifecycle in order to provide evidence that the project is being appropriately and consistently managed. The schedule of mandatory and optional products is recorded in the Gate Management Plan produced following a project characterisation exercise.

PMF products would also provide part of the evidence that the project would submit during investment governance reviews (see section 6.2 below).

For the RIBA D stage, the project had developed a PMF compliant project execution plan (PEP) that covered general day to day delivery. The emergence of the novel ICE approach and the particular requirements of the ITP and IA necessitated development of specific and detailed management arrangements. These would describe the exact process by which the project team and project stakeholders would manage ICE and had no precedent within the PMF Framework.

The detailed arrangements were set out in the Procurement Execution Plan. It described how the project would manage and maintain confidentiality of bidder's information, a critical consideration since a key risk to the delivery of ICE was that LU participants and their stakeholders and suppliers,

Figure 1. The management of bidders data and correspondence



failed to treat bidders information in accordance with the requirements of the Information Agreement. Any such failure would expose LU to both commercial and reputational risk.

Two concepts were introduced as a result of the confidentiality arrangements.

The first was the creation of a Core Team consisting of:

- The Project Manager – accountable for leading the ICE process and leading all meetings with bidders unless delegated to a member of the Core team;
- The Senior Sponsor – accountable for leading the overall assessment of innovative ideas relating to the business case;
- The TWA and property Works Package Manager – accountable for leading on all property and TWA related activities;
- The Programme Engineering Manager – accountable for all engineering department activities;
- The LU Professional Head of Tunnelling – accountable for communicating LU’s approach to the design and construction of its tunnel assets;
- The Senior Commercial Manager – accountable for leading all commercial department activities; and
- The Commercial Manager – accountable for day to day administration of the procurement process.

They were essentially the only members of the project in direct contact with and privy to bidder’s information during the dialogue phase.

The second was that engagement with the bidders, bidders’ data and all other material pertaining to the dialogue could only exist within Secure Areas. These were isolated meeting rooms and restricted data storage areas for hard and soft data. Bidder’s data could not exist in any form outside the Secure Area unless it was under the direct control of a member of the Core Team and had the permission of the Project Manager.

The management arrangements derived for managing ICE were by nature restrictive when compared with normal project management arrangements. However in the absence of precedent, the key concern was that ICE would fail if Bidders were not assured that the Project team was able to maintain confidentiality of their commercially sensitive innovations through the tender process. The confidence of the bidders in the management regime created by the project was a key success factor in the execution of ICE.

In order to ensure effective participation in a confidential dialogue where ideas can flow freely, participants must have confidence in the suitability of the management arrangements designed to protect confidentiality of their intellectual property.

The process diagram for the management of bidder’s correspondence which is taken from the Procurement Execution Plan is presented in Fig 1.

5.5

Instructions to Tenders [ITT]

The final document considered as a constituent part of the ICE process is the Instructions to Tenderers. The ITT is a component part of the business as usual conventional procurement but its significance to the successful delivery of ICE was recognised very early in the process. The wording of the ITT, particularly in relation to the requirements, and the method in which the tender would be scored and evaluated

had to be consistent with the dialogue stage. A successful outcome of the process could only result if the bidders were not only able to create innovation, but also able to provide a structured response that could be evaluated.

The procurement process must communicate a consistent message to the market about what the buyer wants to buy and how the markets offer will be valued.



6

Investment governance gates and approvals

As described previously, TfL and LU governance and project management requirements dominate the project context. Investment governance is based on TfL Standing Orders, which requires a project to progressively provide evidence of both project assurance and business assurance at predefined stages of the project lifecycle in order to receive Authority to continue with project development.

In practical terms it meant that in the run up to the appointment of a D&B contractor, the project would be required to:

1. Navigate its way through a series of Project Reviews, Stage Gates and Corporate Boards;
2. Successfully engage its primary stakeholders which include TfL and its subsidiary companies, internal functional interfaces, external stakeholders such as the Corporation of London, and with the pre-qualified bidders; and
3. Seek approvals from TfL Board at 3 stages during the development journey. These stages were effectively the approval of the ICE Strategy, approval to issue the ITT, and contract award. Fig 2 in section 7 relates these approvals to the project delivery timeline.

The route to each individual TfL Board, the approval authority for a project the size of Bank, necessitated approvals and endorsements through seven stages of progressively increasing seniority, these being:

- LU Project Stage Gate;
- TfL Corporate Stage Gate;
- LU Stations Programme Board;

- Rail & Underground Board;
- Project Planning Panel;
- Finance & Policy Committee; and
- TfL Board

These approvals steps are discussed below.

6.1 LU Project Stage Gates – PMF (and Pathway)

LU PMF manages the project lifecycle through stages and each project is required to pass through Project Gates at the end of each stage. The next Gate applicable to BSCU at the end of the RIBA D study is Gate 3. Success at the Gate signifies the end of concept design and that the project is ready to proceed with procurement of a contractor (based on a single design option).

At the Gate, the project provides evidence that it has the management and technical plans, processes and assurance approvals in place which enable it to manage the next stage of the project lifecycle. The evidence presented is normally in the form of a signed off Gate Management Plan. The Gatekeepers in attendance are the principal internal stakeholders to the project; i.e the Project Manager, the Sponsor and the User Representative.

In April 2013 PMF was replaced with Pathway, TfL's new integrated methodology for project and programme delivery. Pathway is predominantly based on PMF and therefore the change had no material effect on the management of the project.

During the later part of the RIBA D design stage, the proposed PMF outputs were modified in recognition that the project would proceed with ICE. Therefore the Conceptual Design Statements (CDS) for the Base Case design, which would have been produced as part of the design stage, would not necessarily represent the final scheme that would be built. The Directors Review and Assurance Team (DRAACT) accepted that the Core Design Team (CDT) process used for the design stage provided outputs that met the Technical Assurance requirements and it was not necessary to produce the CDSs. This approach which was made possible by the rigorous discipline of the CDT process released significant costs from the RIBA D Stage budget and prevented a potentially abortive spend. The CDT process is discussed in Appendix A.

In addition to the CDS, the development of other certain PMF products were also subject to the D&B Contractors proposals and the project stakeholders concurred that it was sufficient for the Gate Management Plan to identify those documents which would be more appropriately produced by the winning D&B Contractor based on the specifics of his scheme.

With these assurance principles agreed, the Project undertook and passed Stage Gate 3 review in March 2012. During the later stages of ICE procurement, the project team decided that it would be prudent to revisit Stage Gate 3 after the appointment of the D&B Contractor. The project has since upgraded to Pathway and passed Stage Gate 3.1 in October 2013. This will be revisited again on completion of the full Concept Design Statement.

The development of the project Base Case design and the associated Project Governance should be tailored to suit the specific context of the project development route.

6.2 TfL Corporate Stage Gates – Investment Governance Reviews

TfL's Investment Governance Framework comprises assurance activities and investment approval processes in order to ensure that investment decisions align with corporate strategies and TfL's standing orders. All projects are required to comply with the rules defined in the Standing Orders.

The TfL Corporate Gateway Approvals Process (CGAP) requires that all budgeted Projects with a value greater than £5m require authorisation at a TfL corporate level and are subjected to a series of staged approval, CGAP gates, during the project lifecycle.

Typically, Projects are required to seek CGAP approval at:

- Project commencement (CGAP Gate A);
- Single option selection (CGAP Gate B);
- Pre-tender (CGAP Gate C);
- Contract award (CGAP Gate D);
- Project close (CGAP Gate E); and
- Programme gate (CGAP Gate F)

Each Gate applies “challenges” to the project to assess whether it is in a suitable state to move through the gate.



TfL's **Investment Governance Framework** comprises assurance activities and investment approval processes in order to ensure that investment decisions align with **corporate strategies**.

The Gate review carried out on behalf of the Programme Management Office (PMO) by the External Expert (EE) provides assurance that a project or programme is deliverable, affordable and provides value for money. The CGAP process does not prescribe specific processes or documents for the gate review. Rather, it validates the efficiency, effectiveness and economy of how projects are being delivered.

The CGAP review is also supplemented by a review from the Independent Investment Programme Advisory Group (IIPAG). IIPAG provides independent assurance and expert advice to the Mayor of London concerning Transport for London's Investment Programme; including all maintenance, renewal, upgrades and major projects, but not operational issues or the activities of Crossrail Limited. IIPAG will consider issues of economy, efficiency and value for money in preparing its advice. Details of the IIPAG terms of reference can be found on the TfL website.

BSCU was audited by the EE and IIPAG in the lead up to the three Board approvals. A modified CGAP Gate B+ was carried out in January 2012 in the lead up to approval of the ICE Strategy at the TfL Board in March 2012. A further Gate B+2 was carried out in July and August 2012, in order to facilitate the issue of the ITT. The standard TfL progression of gates was not followed because the essential selection of a single option would not happen until after the project had issued the ITT. A final Gate D review to appoint a D&B Contractor was carried out in July 2013.

The sequencing and the timing of these reviews imposed significant constraints on the project schedule and project resources required to support them. Senior project personnel had to be in attendance for the reviews, which due to the complexity of the issues surrounding BSCU and the novelty of the ICE process were detailed and wide ranging, and went on for a considerable duration. But the reviews also took place at critical stages of the delivery process, meaning that senior project staff were stretched between project delivery and supporting the review.

Successful compliance with corporate governance requires a strategic long term resource plan. Experience indicates that governance audits occur at schedule critical periods, diverting the attention of senior project members from the business as usual activities at a time when it is most required.

Records of the independent reviews carried out on the projects implementation of ICE indicate detailed challenges and robust debate between the project team, the EE and IIPAG. As would be expected for a project of this size and complexity, these reviews were both challenging and supportive, and a benefit to the project was that it became even more assured in its ability to articulate its approach, and communicate the benefits to primary stakeholders.

The project successfully passed the corporate reviews applied at each stage and secured the endorsement of the reviewers in order to progress through the corporate gate and seek the related investment approvals.

The TfL CGAP has now been superseded by Pathway, which builds on much of the content of CGAP and has adopted the same lines of enquiry.

6.3 LU and TfL Corporate Board Approvals

As discussed in section 6.2 Corporate governance stated that the project was required to seek approval from TfL Board at mandatory stages in order to proceed with the next stage of development. Following the endorsement at LU and TfL Corporate gates as described in the preceding sections, the project team, including the project sponsor prepared and presented the necessary investment papers which were routed through the following Boards pursuant to achieve TfL Board approval.

- LU Stations Board;
- Rail & Underground Board;
- Project Planning Panel;
- Finance & Policy Committee; and
- TfL Board

The endorsement of the External Expert and IIPAG was a significant factor contributing to the successful passage through the Boards. However the project also embarked upon and maintained a comprehensive programme of stakeholder engagement to make sure that the principal internal stakeholders who sat on these Boards were routinely briefed and kept abreast of emerging developments on the project. It was therefore possible to address any concerns arising in sufficient time, and ensure a smooth passage through the Board.

The importance of a successful first time approval at each investment Board cannot be understated. A failure at any of these Boards would have been a significant setback, detrimental to the project delivery programme, the reputation of the project and the organisation as a whole. The loss of momentum and confidence with senior stakeholders would have been difficult to overcome. To put this achievement into context, it must be noted that the delivery of ICE was taking place against the very public failure of the West Coast Main Line franchise procurement. This had led to a loss of confidence in public sector procurement competence. It was also happening at a time when London was preparing for and hosting the 2012 Olympic Games; therefore the project had to manage with a significant degree of disruption to team resources and senior management availability.

7

The 5 stages of ICE delivery

In order to provide clarity of process management and execution, ICE delivery was broken down into a series of distinct but overlapping phases, managed through the project schedule. The phases and the project timeline are illustrated in Fig 2 below, which also shows the interrelationship with the 3 stage approvals for TfL Board.

The evolution of the phasing is intrinsic to the project context. It provided a logical approach which was aligned with corporate governance (as described in section 6) and meant that the project could proceed through the critical approvals confident that all primary stakeholders had bought into the achievements to date and the objectives of the next phase. The principal objectives, issues and events associated with each of the stages are discussed below.

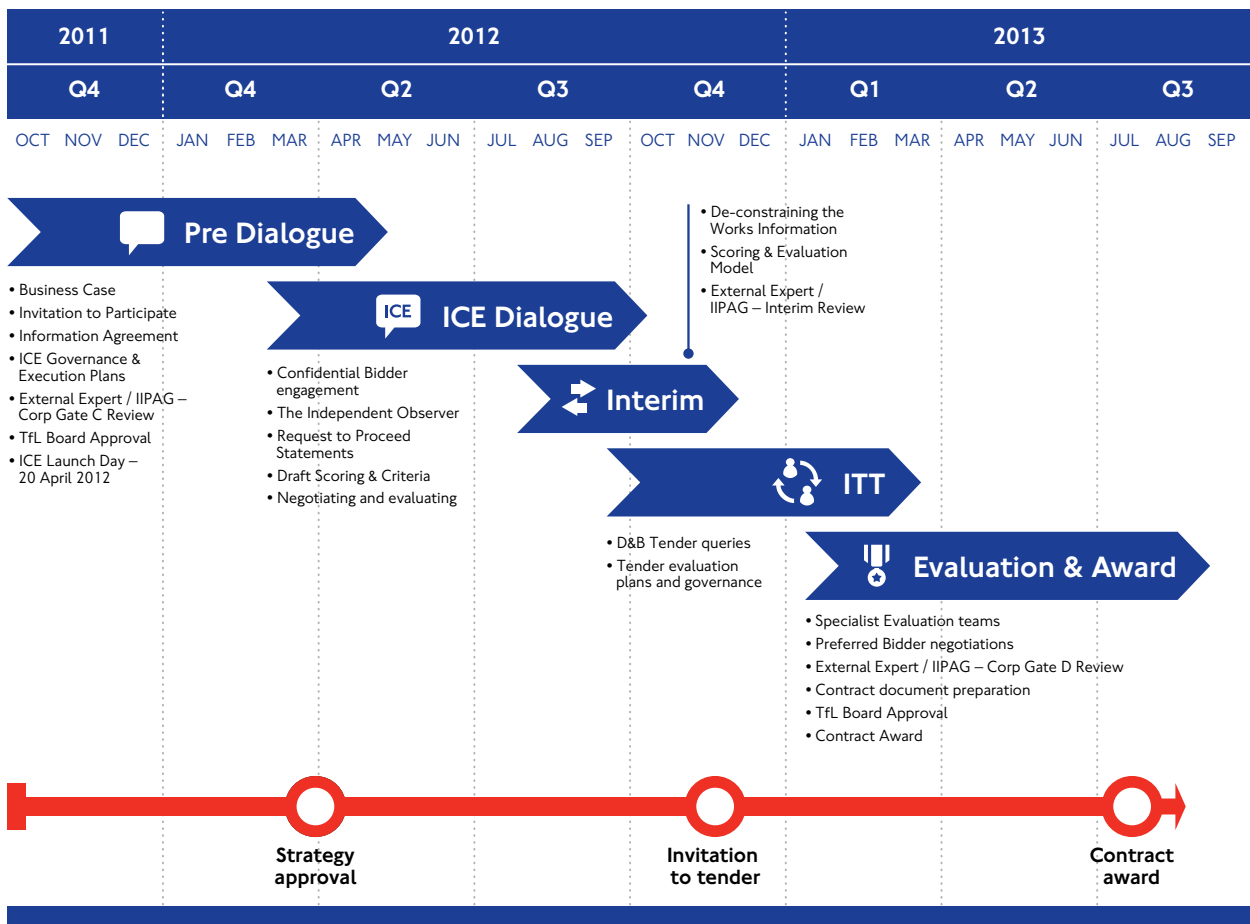


Figure 2. ICE Implementation phases



The emerging management plans and governance set out the **processes** and **controls** to be deployed and to secure the **investment approvals** required to proceed with the novel procurement.

7.1 Pre – dialogue Stage

The objective of the pre dialogue phase was to get the project through corporate governance, and ready to commence dialogue with the shortlisted bidders. The key challenges lay in the iterative development of the project structure and the development of the governance for the new procurement process. Refer to section 5.

ICE was a new direction for an established project team part way through a RIBA D design study. It was necessary to align the composition and focus of team members to the new challenges ahead whilst maintaining the delivery of RIBA D. The project evolved into a new series of work streams complemented by a team structure that had right balance of leaders and doers committed to the projects new objectives and working as a team to deliver success.

The emerging management plans and governance set out the processes and controls to be deployed in order to secure the investment approvals required to proceed with the novel procurement. The documents and approvals are described in sections 5 and 6. Some of the key issues resolved during this stage are discussed below.

7.1.1 Confirmation of the Business Case

The Business Case forms the baseline against which innovation, and thus value delivered by ICE is objectively measured. See section 5.2. It is essential that there is a clear understanding of the business case and the components which make up the calculation of the business case. An understanding of the business case is also a fundamental requirement for effective proposal by the bidders. Otherwise they are unable to appreciate what LU values – which should be a major factor as they assess the cost to benefit ratios of their emerging innovations.

The updated Business Case narrative for the project was completed in January 2012. The cost to benefit ratio for the RIBA D Base Case was 2.4:1. This ratio was conservative as a result of the necessary approximations when modelling major congestion relief projects and does not take into account the expected pricing opportunities from competitive market delivery. A further discussion of the Base Case can be found in Appendix A.

7.1.2 Key Documents

The key documents produced during the stage are

- Invitation to participate;
- Information Agreement; and
- ICE Procurement Execution Plan

The purpose and intent of these documents was discussed in section 5 above. The completed drafts were reviewed with key internal stakeholders and adjusted to take account of legal and commercial opinion. The final draft of the Information Agreement was shared with the bidders in advance of the dialogue stage in order to understand any significant concerns; there were no significant issues raised. The bidders were required to sign the Information Agreement as a condition precedent to proceeding with the Dialogue stage.

7.1.3 Gateway Approvals

The strategic outcome of the Pre-dialogue stage was to secure the necessary approval from TfL Board to proceed with the implementation of ICE. The component parts to this was ensuring that the governance was in place, that stakeholders had bought into the codified concept and delivery mechanism and that the external reviewers had successfully tested the project and were able to give an endorsement that the project remained on track to deliver the business objectives.

BSCU entered into the Corp Gate B+ / C Review in Dec 2011 / Jan 2012. The review was initiated prior to the completion of the RIBA D design stage due to the requirement to assess the project in advance of the imminent funding submission rather than at a natural completion of work stage (the resulting distraction of key project resources at a critical time is discussed in 8.2). The review was so termed because the impact

of the revised demand matrices discussed earlier was to amend the context of the single option selected for development at the previous Gate B.

The PMO concluded that there was not a single preferred option (as expected under the terms of the Gate inquiry), but several options that may be progressed, dependent on approval of land take and procurement strategy. Thus the project had not yet passed the fundamental element of the Corp Gate Review – single option selection. However the work ethic and choices (including procurement) made by the project team and evidenced during the enquiry will ‘generate a deliverable project that is fit for purpose’. Subject to certain recommendations, the PMO supported granting of the funding authority requested by the Project.

IIPAG’s report endorsed the projects application for funding in order to progress to the next stage, subject to conditions, and was supportive of the procurement choice

One of the recommendations from the review was that IIPAG wished to keep a watching brief on the projects progress during the next few critical months, particularly during the dialogue and ITT development so that ‘IIPAG can be assured that the innovative principles agreed were being developed into a rigorous contracting methodology and project definition’.

7.1.4 TfL Board Approval

Commencing with routing via the Rail and Underground Board in January 2012,

the Project successfully presented a series of investment papers and progressively gained approvals culminating in TfL Board approval (as set out in section 6.3) in March 2012.

The project sought approval of additional project authority of £8.9m, increasing current Authority from £13.6m to £22.5m in order to continue with the next phase which included the following scope activities:

- Commence procurement of the next stage of design involving competition to secure early dialogue with the bidders in ongoing design development
- Commence negotiations for property acquisition based on updated and extended worksite requirements
- Concept design works on critical enabling elements such as listed building protection and utilities
- Continue with programme activities associated with progressing towards a TWAO submission in early 2014, and
- Implement further design development on Docklands Light Railway (DLR) head shunt proposals, with a view to including within the scope of the project.

The DLR head shunt, together with the budgeted and unbudgeted aspirations of other TfL business areas contributed to the project context.

7.1.5 **ICE Launch Day – 20 April 2012**

On 20 April 2012, the bidders were formally introduced to the Project and to ICE at a launch day event held at the Institution of

Civil Engineers. Even though ICE is principally a confidential dialogue between individual bidders and LU, a deliberate decision was taken to hold the launch event as an open forum. This was done in order to promote transparency, ensuring that all four bidders heard the same message, and were afforded equal access to senior LU project team members.

Proceedings were structured to provide bidders with a project background, to reinforce the aims, objectives and governance of ICE and to set the scene for the journey ahead. The opportunity for the bidders to engage and ask questions during the many unplanned and informal breakout sessions turned out to be one of the contributing factors a successful launch day.

The agenda for a novel procurement launch day requires flexibility. Attendees need time and space to engage with the client team and explore any uncertainties. Allow plenty of breakout time between presentations.

At the conclusion of the launch day, bidders were issued with their individual copies of some 175 documents that formed the background to the project so that they could commence review prior to the first of the confidential dialogue days with the LU Project Team. Of these, the bidders were advised to focus on 6 key documents which described the scheme.

Key lessons:

- Preparing the project for ICE requires significant resources and when combined with governance requirements, puts a significant demand on senior project members. A early strategic resource plan needs to address the quantum and deployment of project resources.
- The schedule should allow multiple iterations for production of governance especially where novel processes are concerned and identify key points for briefing stakeholders.
- Develop a data management strategy for all stages of the procurement process as soon as possible. In particular, consider how data will be exchanged with external parties.
- Allow sufficient time within the project schedule. Managing the complex interaction between project requirements, governance and stakeholders, particularly where a novel process is concerned will take up more time than business as usual activities.

7.2 ICE Dialogue Stage

The key objective of the dialogue stage was to help the bidders understand the base scheme and LU's requirements so that they could effectively derive their innovations and be ready to respond with those innovations in the ITT phase. During the dialogue, bidders would be engaged with the Core Team (see section 5.4), who would respond to their enquiries as necessary in order to further their understanding of the project.

The bidder's teams were given unprecedented access to all LU client information including design and business case material. The project released around 200 priority documents as part of a total upload of some 2000 documents to the bidders shared and private areas (see section 5.4) in order to ensure that all bidders had equal 'knowledge' of the project background and its development to date. The creation of a 'level' playing field was thought to be important because the LU designer that had

developed the Base Case had since joined with one of the bidders - refer to section 8.2 for further discussion of project resources.

The key challenges that the project had to overcome during this phase were:

1. Ensuring that confidentiality was maintained by all LU participants. Confidentiality was central to the effective and productive engagement with the bidders during the dialogue; it had by now become a matter of reputation and the cornerstone on which the relationship between the bidders and the core team was built.
2. Overcoming the legacy brought about by the failure of the West Coast Mainline franchise tender, a very visible failure of public sector procurement management. While it had no connection with the project, it left a legacy that the project would have to overcome in getting the endorsement of senior corporate stakeholders.



Around **150 meetings** and **350 Requests for Information (RFI's)** were handled during the dialogue.

7.2.1 Confidential Bidder Engagement

The first round of confidential dialogue with the bidders commenced during 15 – 18th May 2012. The ICE Core team, Independent Observers (see section 7.2.3) and the individual bid teams met in the secure area to begin a process of exploration which was scheduled to continue for the next four months, with the objective of defining a more effective scheme that could be delivered by more efficient methods.

During the dialogue, bidders could request meetings via technical queries on specific topics. Core Team representatives covering six key areas of the project – Commercial; TWAO and Property; Sponsor, Modelling and Business Case Assistant, Engineering, Project Management and Tunnelling would be available to discuss specific issues raised by the bidders.

The Core Teams approach to the dialogue was influenced by the external advice the project had previously sought in order to better understand bidder behaviour. This advice proved invaluable during the dialogue.

Each of the first engagement meetings was led by the Bank Project Manager. The meeting commenced with an explanation of how the ICE would proceed, and the conduct expected of both parties and was carried out using a pre-prepared script in order to ensure that each bid team received an identical message.

During the course of the dialogue, the number of meeting requests varied between bid teams and it became apparent that they had different expectations around the degree

of engagement with the Core Team. Some teams were able to fully embrace the open and transparent process that the Core Team and the IA promoted while other teams appeared unable to make the full transition from the closely guarded approach typical of conventional bid engagement.

Around 150 meetings and 350 Requests for Information (RFI's) were handled during the dialogue.

Bid Teams exhibit different behaviours. A consistent approach may not always produce similar reactions. Consider if different approaches to different teams is warranted (and permissible within 'the rules').

RFI's from the bidders about the base scheme continued right up to the end of the dialogue when a cut off was applied to bring the stage to an end. This was contrary to the initial expectation that the bidders would have made a transition from learning about the Base Scheme to developing their innovations much sooner in the process. On evaluation, it would appear that the significant quantity of documents provided was detrimental to the bidders' progress. The documents had been released to ensure that all bid teams had access to all legacy information. And despite the best efforts of the Core Team to signal otherwise, some of the bidders spent a significant amount of time attempting to understand which information was essential, possibly to the detriment of developing innovation within the prescribed timescales.

Carefully consider the quality and quantum of base scheme information issued to the bidders. A project work stream might be required in advance to 'clean up' the information to be issued.

The conduct of the parties during dialogue was important. Not only had confidentiality of dialogue to be maintained, the Core Team were required to act fairly and impartially and avoid unduly influencing any bidder in any particular direction, responding directly to the questions posed by the bidders without offering opinion or suggestion about where possible solutions might lie. In the absence of precedence, the core team were greatly concerned with compliance with the Information Agreement, and erred on the side of caution.

The on-going challenge for an effective ICE dialogue phase on subsequent projects is to improve the degree of client direction available to the bidders without materially directing the individual bids.

7.2.2 Bidder Requests for Information (RFI)

The RFI was the formal mechanism employed during the dialogue phase through which bidders requested formal responses to any matters arising during the development of

their innovations. Bidders upload RFIs to their secure data area and the Core Team correspondingly uploaded the project responses.

The analysis of bidder RFI's and meetings following the conclusion of the dialogue phase indicates a difference in approach between the individual bidders and also highlights the trends in LU's management of the engagement process.

Notable points include:

1. The RFI / dialogue process is an opportunity for the Client to collaborate with bidders in developing their innovations, and is key to a successful outcome. Significant client side resources are required to execute to schedule – refer to 8.2 for a discussion about the support provided by Multi-disciplinary Consultants (MDC).
2. Clients responding promptly to RFI's allows the bidders to make effective use of the dialogue process.
3. Maintaining confidentiality is fundamental to building trusting relationships with bidders and requires good governance. The project achieved a 100% success rate maintaining confidentiality, successfully managing a key project risk.
4. Consideration should be given for an interim RTP submission with RAG response in order to better guide and direct bidders' efforts – see 7.2.4 below for RAG reports.

7.2.3

The Independent Observer

The Independent Observer (IO) was appointed to attend the dialogue and confirm that it had been conducted in accordance with the intents of Invitation to Participate, the Information Agreement and the Procurement Execution Plan.

Where reasonably practicable, the IO was required to:

- Witness the meetings between the Core Team and the Bidders in order to attest that the conduct between the parties was equitable, non-discriminatory and transparent
- Exercise judgement and intervene to moderate the conduct of the parties where it is considered that a particular dialogue or line of enquiry is likely to result in a breach of the Information Agreement or is not in keeping with the ethos of ICE. The IO was on occasions required to make this judgement call during the conduct of the dialogue.

The Independent Observer provided written statements during and after the completion of the dialogue confirming the neutrality and objectivity of the engagement.

Bidders conversed independently with the IOs and confirmed their satisfaction to the IOs at the end of the dialogue.

The appointment of the Independent Observers was found to be critical to maintaining the integrity of the ICE dialogue process.

7.2.4

Request to Proceed (RTP) Statements

The end of the dialogue phase concluded with the bidders preparing and submitting their RTP statements (the intent of the statements is discussed in section 5.3).

LU did not formally specify a format or content for the RTP Statements and noted a wide variation in the quality of bidder's submissions. There was also a wide variation in the maturity of the scheme proposals.

The Project team reviewed each of the Bidders RTP submissions, and provided a response that was set out in two parts.

1. Review of the status of the RTP submission, including where and to what extent they required further validation and evidence to achieve a standard that would be acceptable as part of a response to the ITT.

Each major element of the bidders' submission was reviewed and summarised against the Red, Amber, Green (RAG) categories described below

Red

There are serious issues about the viability of the solution. Extensive validation will be required to demonstrate that it achieves the required quality threshold

Amber

The proposal has some issues and requires some modification and/or further validation to achieve the required quality threshold

Green

No objection / Comment.

2. Review of the Unique ITP Outputs in the RTP Submission.

The LU review was limited to the technical elements of bidders submissions and did not include any review of commercial, cost or Business Case material that the bidder may have included (but was not requested). The review also recognised that the RTP submission is not intended to be scored. It represents an interim stage in the development of bidders' proposals in accordance with the IA (as set out in section 5.3) potentially leading to a formal response to an issued ITT.

The Dialogue Stage should aim to achieve a high level of maturity of the ideas / innovations to be included in the RTP.

7.2.5 Draft Scoring & Evaluation Criteria

Approval of the ICE Strategy at the TfL Board in March 2012 set the project a target of 15% additional value to be achieved through a combination of cost savings, improved benefits and reduction of dis-benefits (blockade). A scoring and evaluation model was required that would reflect the purchasers core requirements and priorities in all circumstances. As far as reasonably practicable, the model also had to discourage any opportunity for the bidders to 'strategically bid' the project.

The challenge of accurately codifying the scenario faced by the project while considering the fundamental question of 'What do you want to buy?', led to a key element of project management innovation, necessitated by the absence of suitable project management literature. The project created a new model, establishing an interdependent relationship between the projects requirements, benefits and risk and opportunities profile. This model is discussed in section 8.1 which deals with Innovations in Project Management.



The development of the **scoring** and **evaluation** criteria presented some of the greatest collective challenges to the project team.

Core principles established proposed to evaluate:

- Quality using the business case benefits;
- The Price based on the business case whole life costs as the basis for the recommendation to award contract to the Most Economically Advantageous Tender (MEAT) and;
- The best value for money scheme as determined by the Quality:Price ratio; subject to complying with the bid to cost (£625m) and bid to time (before December 2021) constraints.

In defining the Quality scoring the project was careful in calibrating the scoring scale, for example, capping congestion relief benefits at £28.5m/pa (£32.174m in the final ITT) Fruin Level of service C at 2026 + 31% demand

The development of the scoring and evaluation criteria presented some of the greatest collective challenges to the project team, including IIPAG and the External Experts. Particularly since the project was now developing its approach against the background of the failure of the West Coast Main Line franchise.

Counter arguments developed during the development of the scoring included that:

1. The strategic benefits of journey time and capacity have been well communicated to the bidders and it would therefore be more appropriate if compliance with these fixed criteria are scored on a pass / fail basis;
2. Step free access and station evacuation may be considered as compliant or non-

compliant even though the preference of configuration alternatives is subjective;

3. Scoring dis-benefits to TfL is difficult. Particularly in the areas of interruption to the train service, and the failure or extended consideration of the TWAO. In the case of interruption to the train service, a model based on the actual cost associated with the information and passenger management for a well informed and carefully managed blockade may be more appropriate when assessing the inconvenience of a temporary blockade considered against the 60 year benefit of capacity and shorter journey time. (This issue relates to the business case methodology employed by TfL corporately rather than specifically with reference to the Bank business case). A numerical model based on the number of working sites may give rise to a more transparent assessment of the TWAO risk;
4. There was concern that the calculation of value may be too complex. Utilising the value calculation introduces the bidder's prices into the evaluation with the result that tactical pricing cannot be fully eliminated; and
5. The counter proposal was a much greater weighting towards product performance and to reduce influence that method related issues (blockade duration, construction methodology and risk) has on the scoring criteria. The value of long term business plan savings (particularly customer time savings) are of a lower order and carry less weight than savings in capital cost of the project and carry a large risk of inaccuracy.

In any event, to ensure trust between Contractor and LU and compliance with EU procurement regulations, it is vital that the methodology for award is not open to opinion.

However the over-riding consideration is that the Business Case is the methodology used by TfL to assess relative scheme performance, and therefore scheme bids should be evaluated accordingly. There is then consistency between what the market has been asked to bid, TfL’s project appraisal methodology, and the evidence needs of the TWA Order to make the transport scheme business case. And this approach had been communicated to the bidders all along.

The final tender evaluation model was in 3 parts:

1. Mandatory Questions (financial, organisational, HSQE, Value for Money (VFM)),
2. Core Requirements as below:
 - CR1 – Capacity Enhancement;
 - CR2 – Reduction in Journey Times;
 - CR3 – Disruption during construction;
 - CR4 – Step Free Access;
 - CR5 – Fire and Evacuation Plan;
 - CR6 – Time; and
 - CR7 – Value for Money.
3. Management of Risks and Opportunities:
 - RO1 – Risk Management and Employer’s Risks;
 - RO2 – Transport and Works Act Order;
 - RO3 – Design and Construction; and
 - RO4 – Opportunities.

The relative importance placed on how the project was delivered (method/journey) versus what the project delivered (product/destination) was eventually set so that the final scoring targeted a more “Effective Product” (70%), representing the long term viability of the investment, and (30%) on an “Efficient Method”, representing the short term service provision.

Product	
Capacity Enhancement	17.0%
Reduction of Journey Times	17.0%
Design & Construction Layout & Approach	15.0%
Step Free Access	10.0%
Fire and Evacuation Plan	10.0%
Subtotal Product	69.0%
Method	
LU Project Business Case risk reduction	2.5%
Transport and Works Act Order	5.0%
Disruption during construction	12.5%
Time DfT Milestone	2.5%
Design to Cost	2.5%
Opportunities	6.0%
Subtotal Method	31.0%
Total	100%

Table 1
Tender Evaluation ‘Product’ and ‘Method’ Weightings

The Value of each bid is then the product of 100% benefit weightings score (Q) divided by the whole life cost (P) as set out in the Business Case. Price as an element is not scored separately.

The whole life cost of the project as defined within the business case is inclusive of the Contract Sum, LU historic and future management costs, LU and contractor risk, asset renewal costs, maintenance costs, operational costs, Land Purchase costs and net resale value and inflation.

The bids were then ranked against each other to provide VFM %. In the event that other bids are considered to be within evaluation tolerance of the most economically advantageous tender, LU could choose to run a Best and Final Offer competition stage to finalise the evaluation.

The Project scored the Base Case as a reference for the evaluation of bidder responses at 5 out of 10 for each of the eleven criteria. However there was no requirement for bidders to price the Base Case design.

7.3 Interim Stage

The key objective of the Interim stage was to bring the innovative engagement to a conclusion and enter into a conventional ITT process. The project team would demonstrate that it had achieved the first part of the wider procurement objective and seek approval from the TfL Board to proceed with ITT.

The key challenges associated with the stage lay in concluding the description and weightings of the 'value' items in order to complete the tender evaluation model, and managing internal stakeholders.

7.3.1 De-constraining the Works Information

Preparation of the Works Information and other parts of the NEC contract had commenced in July 2012 whilst the ICE dialogue was underway. The submission of

Key lessons:

- Ensure that the core team has the right people representing the right business functions.
- The schedule should allow for multiple iterations for production of governance especially where novel processes are concerned, and identify key points for briefing stakeholders.
- Develop a data management strategy for all stages of the procurement process as soon as possible.
- Allow sufficient time on the project schedule, consider the complexity of project requirements, constraints and stakeholder; they will take up more time than business as usual activities.

the RTP statements at the end of the dialogue meant that a final check of the draft contract documents could now be carried out and any necessary adjustments made to ensure that the ITT did not preclude any element of bidder innovation which met the Project Requirements.

7.3.2 Scoring & Evaluation Model

Following the initial development (discussed in 7.2.5), the project team sought to bring together all the elements that comprised the evaluation protocol and validated that it operated as intended. The component parts gave a coherent model which ensured that LU was able to objectively procure best value. Further discussion of the commercial strategy model for the scheme is included in section 8.5 and 8.6.

As set out in the OJEU notice, the evaluation objective was to select the bidder with the MEAT. Bidders were required to submit qualitative and quantitative responses in separate envelopes. The qualitative criteria would be evaluated against the scoring and evaluation model. The price had to be submitted in multiple formats; in the tender evaluation model, Business Case Assistant (BCA) and notional price calculator (see below) which had been structured to directly supplement the BSCU project business case.

The outputs for the evaluation of the two envelopes are then combined in the evaluation model to deliver a MEAT result.

The integrity of the scoring and evaluation model was dependent on the following:

- BCA – Model validated by TfL PMO. Used on TfL Capital Project appraisals; Consistent with DfT/TfL guidance; LU Costs are a fixed input (unless and to the extent they are changed because of the bidder's proposed scheme);
- OSD Residual Value – can be bid back in the BCA but only m2 office/retail; Value is automatically calculated using the same calculation as LU, and evidenced by the bidder's OSD proposals;
- LU Risk Register – LU risk profile based on bidder's proposal can be bid back and entered into the BCA at a fixed date. Any risk mitigation or proposal elements that amends the design would form part of the contractors Works Information;
- Legion Passenger Model – Standard industry model upon which was built the business case. Validated by LU Modelling team;
- Quantified Activity Breakdown QAB – Further detailing (aligned to Base Case) of LU PMO standard cost feedback structure; and
- Notional Price Calculator – Cost model to compare all bids on a common base – (predicated on the Crossrail model).

7.3.3 External Expert / IIPAG review

PMO commissioned the latest round of project reviews by the External Expert and IIPAG and these commenced in July 2012, and concluded in October 2012.

In order to minimise duplicated effort, the reviewers sat through all the Bidder's bid presentations but did not assess the Bidders Request to Proceed. Their reviews were limited to the overall status of the project, the preparation for tender issue, and assessment of the evaluation process. IIPAG held several meetings with the Project Manager and Sponsor and was able to assess the Bidders RTP proposals.

Following this review, a report from PMO was submitted to the Rail and Underground Board of 16 October with recommendations but endorsing that the project should pass through the corporate gate and proceed to issue the tender.

During this time, IIPAG had maintained its watching brief and attended several meetings / interviews with the Project Manager and the Sponsor. IIPAG also published its advice following its review. The advice came at the height of the discussions and challenges surrounding the scoring and the evaluation approach, and is reflective of the depth of debate and the variety of views amongst project stakeholders surrounding this critical subject area.

The endorsements from the corporate gate review supported the project's investment papers at the end of the stage. The papers appraised the various Boards of the progress to date with the ICE journey, the completion of the tender documents and the completion of the scoring and evaluation models. For the second time since embarking on the development of ICE the project successfully secured the approval of the TfL Board and was able to proceed to the ITT Stage.

Senior members of the project require sufficient time in the schedule for managing business stakeholders, particularly where new or novel processes are proposed. Without stakeholder understanding and support, the outcome is likely to be a reversion to business as usual.

7.4 ITT stage

The objective of the ITT Stage was to manage the ITT process, and prepare the project for the evaluation and award stage to follow. The key challenge faced by the project lay in maintaining project momentum and team focus.

7.4.1 D&B Tender queries

The ITT was issued to the Bidders on 14 November 2012 with the exception of the award criteria which was confirmed to bidders on 5 December 2012. The bidders were required to submit electronic tender queries to a secure data area. The first TQ was submitted on 21 November 2012 and the TQ area closed on 01 February 2013, with the return of tenders expected on 25 February 2013.

During the TQ period, 226 TQ's were submitted by the 4 bidders.

7.4.2

Tender evaluation plans and governance

The Tender Evaluation Plan set out the evaluation procedures to be followed by the Evaluation Team. The ITT responses were due back from bidders before noon on 25 February 2013.

Key elements of the process included

- Each bidder was assigned a code name – George, John, Paul, or Ringo – and all evaluation documents up to and including the TfL Board refer only to bidder's code names. The identity of bidders could only be known outside the Evaluation Team following TfL Board decision to award a contract;
- Specified individuals (referred to as Evaluators in the Evaluation Team) carried out the evaluation, supported by technical, commercial, legal, and other specialists; and
- Section 2 – Award Criteria, set out how the ITT would be evaluated. The work of the team would comply with TfL corporate governance requirements and the evaluation plan.

Tender evaluation was expected to happen in two phases:

Phase 1 – Activity up to and including submission of the draft Rail and Underground Board (RUB) Paper (expected to be 16 April 2013). This would consist of:

1. Compliance – check on completeness of ITT response document submitted and consistency of certain values;

2. Evaluation – analysis of the ITT response in accordance with the ITT Award Criteria (Section 2) including any Best and Final Offer (BAFO) phase required (no BAFO was actually undertaken);
3. Due Diligence – validation of commercial elements of the ITT response as necessary; and
4. Identification of any Unique ITP Outputs and valuations from bidders.

Phase 2 – On-going activity that continues after submission of the draft RUB Paper. Activities could continue up to award of contract including:

1. Further due diligence required;
2. Negotiation of Unique ITP Outputs, if any, that LU wishes to purchase;
3. Possible development of the Alliance Protocol arrangements including any behavioural workshops;
4. Development of any discretionary Key Performance Indicators (KPIs);
5. Update of the RUB Paper as it progresses to the TfL Board on 03 July 2013;
6. Concluding draft contracts with all qualifications conformed with two (or more) bidders to maintain anonymity and competition up to the mandatory standstill period; and
7. A recommendation to award any contract awarded to the MEAT.

The Tender Evaluation Plan also:

- Set out the evaluation organisation which consisted of Evaluators, Moderators, the Bank Evaluation Steering Group and Advisors, including the terms of reference of the groups as necessary;

- Provided guidance on the conduct of engagement with the Bidders after the ITT responses, including request for clarification and due diligence, and the conduct of tender meetings;
- Provided specific instruction on management of tender compliance;
- Set out the process for Quality evaluation, including scoring by evaluators, moderation meetings and planning meetings;
- Set out the due diligence process, including due diligence of the QAB, Activity Schedule and the cost loaded schedule linkage; and
- The protocol to be employed through to contract award.

7.5 Evaluation and Award Stage

The objective of the Evaluation and Award Stage was to complete the assessment of bidders ITT returns and make a recommendation to TfL Board for the Award of a D&B Contract to the Preferred Bidder (PB). In addition, the project would also prepare for enjoining with the PB for the next phase of the project lifecycle. The key challenge faced by the project was in managing multiple internal stakeholders and maintaining objectivity.

The 4 bidders returned Tenders on 23 February 2013. Evaluation was undertaken by the specialist teams in line with the Tender Evaluation plan discussed in 7.4.2 above.

7.5.1 Preferred Bidder Negotiations

The two top ranking bidders were taken forward in separate technical and commercial due diligence streams. Over a 6 week duration, the project team and the bidders engaged to negotiate a final position on all issues and amend contract terms as necessary. Most of the dialogue was centred on clarification of key risk items, since the ICE approach had meant that the bidders had a significant period of time to understand the project and LU's requirements and were therefore able to bid accordingly.

The bidders proposal including the associated Legion model and business case were conformed into the Contract.

The benefits associated with the winning bid are discussed in Part 3.

7.5.2 Negotiating and Evaluating Unique ITP outputs

The project had considered the bidders' proposed Unique ITP outputs during the evaluation of the RTP statements and the assessment of these proposals communicated to the bidders as part of the response to the RTP. The project either agreed or disagreed with the bidder's position that a particular innovation was unique. Bidders could respond to the projects assessments; the project required matters concluded by 12 October 2012, prior to the issue of the ITT's.

At ITT bidders were asked to reconfirm which elements of their ITT response they considered to be innovations and to provide an estimated value in accordance with the IA. In total, the process achieved a total of 24 registered innovations. 14 innovations from losing bidders and 10 innovations from the Preferred Bidder

Following tender evaluation, the project concluded that none of the losing bidders' innovations could be independently integrated with the preferred bidder's scheme. However the Employer TWAO risks could be mitigated by reference to and description of losing bidders' schemes. Quantified Risk Analysis (QRA) indicated that £1,880k risk mitigation was provided by the three losing bidders' schemes. 50% of this risk reduction then formed the total of the available 'pot' for purchasing innovations as set out in the IA.

Losing bidders were given an allocation of the pot based on the proportion of their innovations relative to the total number of losing innovations. For example, a bidder with four unique outputs out of a total of 14 outputs from all losing bidders was awarded four fourteenths of the total pot.

This approach meant that the bidders could be 'rewarded' for their innovations as established within the terms of the IA, without having to enter into an improbable exercise of valuing each innovation against a varying baseline. LU had the benefit of purchasing all the losing innovations which would be used as evidence in the forthcoming TWA Order application. The losing bidders were in part rewarded for their early efforts even though the winning scheme offered LU the best value on its own merit.

7.5.3 External Expert / IIPAG – Corp Gate D review

As discussed in 4.3.2 the Project was subject to a Corp Gate D review prior to seeking authorisation from the TfL Board for the award of contract following the selection of the Preferred Bidder. The critical test applied is to confirm that the Project had a final option, and that internal stakeholders had bought into 'what it was buying'.

An initial review on the project carried out by the EE in March to April 2013 could not achieve the full scope of the Gate D Lines of enquiry as the project had not yet completed assessment of the tenders. A supplementary review was carried out in late April 2013 which focused on the PB and the process that was being followed to achieve subsequent contract award.

A final review was carried out to complete the Gate D at the end of the tender evaluation.

The EE set out their review conclusions in the final report, and includes the following:

- The PB was a very well assembled and detailed tender which demonstrates a high level of effort in delivering the bid;
- The PB demonstrated that the bidder has efficiently used ICE to understand the objectives of the scheme and work with the Project to identify alternative approaches;
- The ICE process has potentially delivered real benefits by providing a new methodology for achieving the project solutions; and

- The EE was however concerned that the PB solution contained significant changes to the original scheme that were yet to be fully endorsed by key internal and external stakeholders, but recognised that the project team were taking steps to address this.

The report was a clear endorsement of the Project achievements to date and supported the recommendation to award contract to the PB.

7.5.4 Contract Document preparation

The preparation of the final contract documentation followed conventional procurement processes. Due diligence clarified the key risk items. Conforming of the contract ensured that the tender addendums issued by the project had been correctly incorporated into the WI.

One of the issues that had not been fully considered in the pre ITT stage was how the bidders' proposal, including the contractors Works Information, would be bound into the contract documents. With hindsight, it would have been preferable to constrain the format of the bidders' response within the ITT, and receive a uniformly structured return that could be readily bound into the contract documents.

7.5.5 TfL Board Approval

Following consideration and approval by Projects and Planning Panel on 08 May 2013 and Finance and Policy Committee on 23 May 2013, an investment paper was submitted to the 03 July 2013 TfL Board. The paper requested that the Board grants:

1. Additional project and procurement authority. This is to enable the project:
 - to progress to the next phase of design;
 - to prepare documentation ahead of a Transport and Work Act Order (TWAo) submission, including the preparation of over station development (OSD) proposals and secure associated planning consent;
 - to continue to schedule critical enabling works to support both scheme development and the TWAo process; and
 - to continue property purchases, including compensation payment.
2. Procurement authority for the design and build contract for the project. The Board was asked to note that although the contract would be let as a whole, it comprised two stages where Stage 1 was the work required up until the granting of the TWAo and Stage 2 was all subsequent work. Under the contract TfL will have the right not to proceed to Stage 2 and approval would be sought from the Board if it is proposed that the work proceeds beyond Stage 1.

The TfL Board approved the funding to award a contract to Dragados SA, thus bringing the ICE process to a successful conclusion, within the scheduled timescale. Thereafter followed the mandatory standstill period and the signing and sealing of the contract occurred on 30 July 2013. Start date for the delivery phase of the project was 01 August 2013.

8

Project management themes

8.1

Project Management Innovation

The ICE process engaged the market with core project requirements, not a specified scheme. It rewarded the supply chain's innovation for maximising TfL business case benefits, whilst capping the estimated final cost (EFC).

The requirements (or 'what the client wants to buy') must be well defined; however, the solution (or 'how requirements are met') is the subject of the confidential dialogue and the design and build competition. The risks/opportunities and benefits of the solutions developed by the bidders to meet the project requirements can vary; the emphasis is on selection of the most effective product. This contrasts with the classic cost-quality-time balance model used in project delivery, where the project requirements and design solution are fixed (for example, where a client completes his client design) and the emphasis is largely on procuring the most efficient delivery method.

The project team were challenged with determining exactly what it was LU wanted to buy to achieve the 15% additional value that the business sought. The view was that the conventional project management triangle of time, cost and quality did not provide an adequate model for determining this value and there appeared to be a gap in current Project Management literature. As the whole of the ICE process was predicated on the business need, it was always back to this business case and its content that the project team turned.

Putting these elements together, the team developed a new 'front end' PM triangle with Requirements, Benefits/dis-benefits and Risk/opportunities at each point of the triangle. Tender evaluation criteria, contract strategy and works information was the central trade off within the triangle. This is illustrated in Figure 3 (page 46).

This new concept for a 'front end' PM triangle set the team the framework through which it was able to determine and trade off the value criteria within the business case against procuring the most "Effective Product" and "Efficient Method".

It could create a direct monetary relationship between costs and benefits in the Business Case and points awarded in the evaluation.

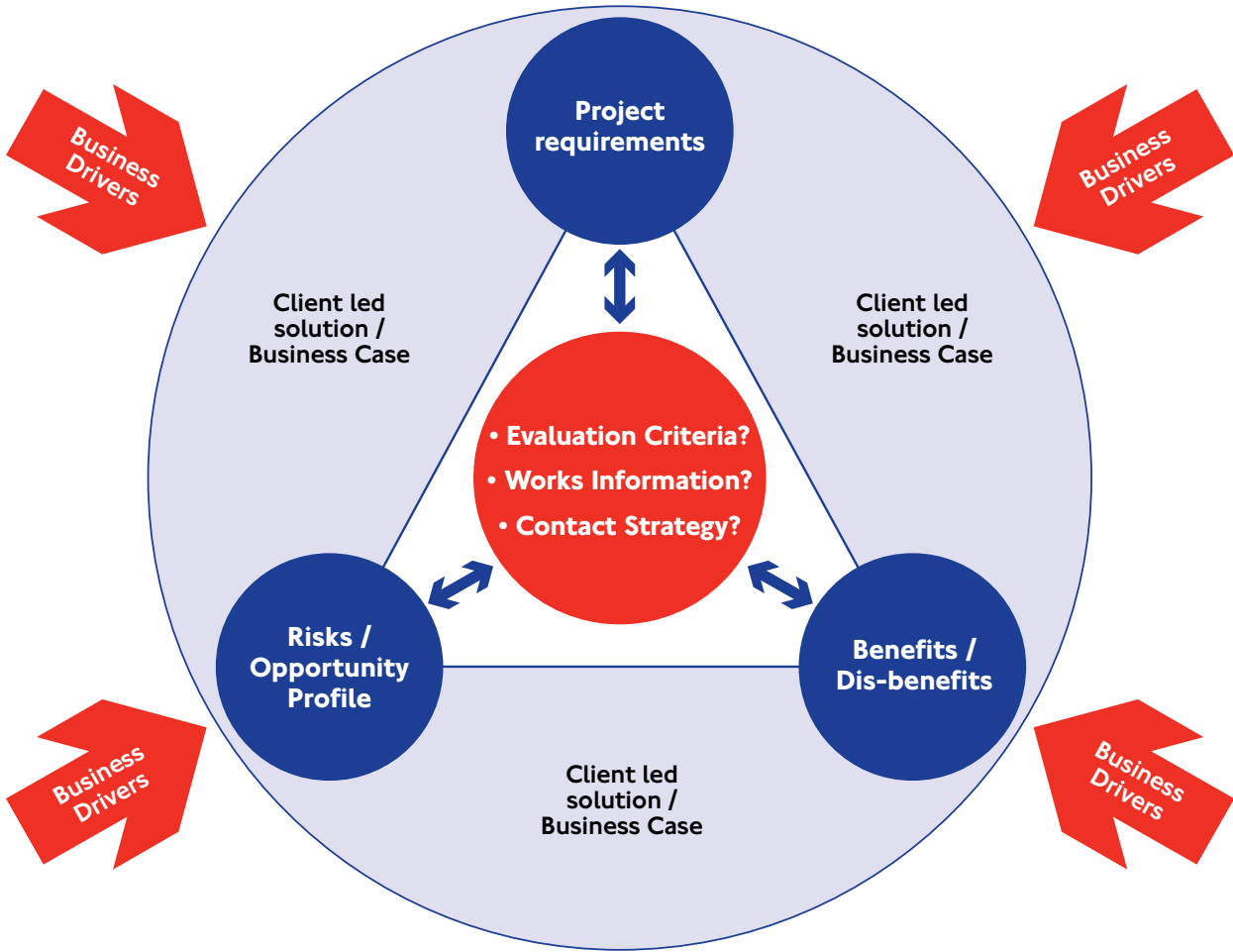
The resulting tender evaluation model (see Figure 4 below for an example) , provided the bidders with a clear direction through which they had the opportunity to win the bid while maximising the business case. A win-win situation for both client and contractor.

8.2

Resource Management

During the early stages of planning ICE, the availability of project resources had been identified as a potential risk. The project took steps to appoint multi-disciplinary consultants (MDC) in a supporting capacity to ensure that it would be able to draw on a resource pool at short notice in order to support it through the ICE process. Project delivery effort was affected by two resource led issues:

Figure 3. A new 'front-end project management triangle



1. LU's engineering consultants for the RIBA C and D Study phases took a strategic decision to join with Contractors and form a bid team. The project had initially ring-fenced a core design-delivery team from the existing Consultant to complete the RIBA D study and other ongoing investigations into third party issues. As the codification of ICE evolved, it became apparent that a cut-off date was required after which this design-delivery team would have no further involvement. This was in order to ensure that the market's perception of confidentiality and of a level playing field was not prejudiced. The team had developed a successful and productive working relationship with their LU counterparts and the loss of the legacy knowledge placed significant strain on the remaining LU Project Engineering team as the MDC engineers were still developing an understanding of the base scheme while the project was gearing up to accommodate and educate 4 new bidders' teams.
2. The ICE process required a core team that necessarily consisted of project functional leads. Confidentiality requirements were paramount and strictly enforced. When coupled with the extensive engagement with four bid teams during the dialogue phase, it meant that key project members were effectively absent from the project for a significant period of time. They were focused on the dialogue phase and struggled to maintain their wider management role on the project and carry out other business as usual activities.

Non-core team project members felt a sense of frustration, aware that they were being asked to carry out works relating to some of the options without knowing the full context. It is also likely that the project's preparation for the interim stage suffered as a consequence since it did not have the capacity to apply the same rigour to planning for this stage as it had to the pre-dialogue stage.

8.3 Risk Management

Effective Risk Management was a key part of the evaluation of the bid. The risks were structured in the project risk register under 3 headings, RO1 – Strategic Risks, RO2- TWAO, RO3 – Delivery risks. Bidders were instructed that their submission should seek to both maximise the business case benefits and minimise the risk exposure (both client and contractor). Yet given the opportunity to trade off one against the other.

The bidders were issued with a fully costed risk register which gave them visibility of LU's perception of delivery risk. Sharing this level of information with bidders is novel. Whilst risk registers might be issued out as part of the ITT documentation it is rare to see them fully costed as it was in the Bank ICE process. Feedback from some of the bidders reported that the bidders found this a key part of the puzzle in understanding the concerns that LUL had for the scheme and what they, as a bidder, were able to bring to the project to address these concerns.

The bidders were asked to submit, as part of their tender return, their version of the risk register, indicating where they considered their bid had changed / eliminated / added to these risks with the justification for these amendments. Bidders were asked to actively look at reducing both client and contractor risks, again a departure from the standard approach to risk in bid submission where bidders traditionally are only asked to identify how they will minimise their own risk.

The risk registers submitted with the tender were reviewed by the LUL project team to validate their assessment of the potential scheme risk. In all cases this led to a change to both cost and time risk allowance as bid and fed into the business case assessment.

The approach was, however, not without issue. There were varying degrees to which the bidders complied with the instructions for amending the risk register, which made analysis challenging.

Feedback from the bidders highlighted a desire to have a greater understanding of how the risks were initially quantified and how they would be normalised under the tender evaluation. This should be addressed in future tender evaluations

8.4 Project Governance

The internal governance process in effect within LU at the commencement of the ICE Implementation was the Project Management Framework (PMF) Gates process. The process was designed to guide the delivery of project through the LU's investment process. Projects would demonstrate they had a minimum level of governance and risk management maturity as they evolved through the project lifecycle, and were subjected to a series of Gates.

PMF operated alongside and was aligned with the CGAP Process described in 6.2 above. It was also aligned with the development of the engineering design and the delivery of assurance. When applied correctly on a large project such as Bank, PMF provided a robust and scalable management framework.

However PMF was not ideally aligned with ICE. Principally because of the comparatively mature stage at which Bank chose to implement ICE (although some lack of fit would nonetheless have occurred even if the project had adopted ICE earlier in the project lifecycle). The authorisation to proceed with ICE was given after the project had completed the RIBA D Design Stage and passed Stage Gate 3. The Gate signifies the Projects readiness to proceed to tender, and for a conventionally procured scheme, this would have meant that there was a single client design, signed off by all the principal stakeholders.

		BASE	1	2	3	4
Product		£625,000	£625,000	£625,000	£625,000	£625,000
CR1: Capacity Enhancement	17.0%	8.50	10.00	8.50	12.00	10.00
CR2: Reduction in Journey Times	17.0%	8.50	8.50	8.50	12.00	8.50
RO3: Design & Construction	15.0%	7.50	8.50	7.50	7.50	7.50
CR4: Step Free Access	10.0%	5.00	5.00	10.00	5.00	7.00
CR5: Fire and Evacuation Plan	10.0%	5.00	5.00	5.00	5.00	5.00
Subtotal Product	69.0%	34.50	37.00	39.50	41.50	38.00
Method						
RO1: LUL Project Business Case	2.5%	1.25	1.25	1.25	1.25	1.25
RO2: Transport and Works Act Order	5.0%	2.50	2.50	2.50	2.50	2.50
CR3: Disruption during construction	12.5%	6.25	6.25	6.25	8.00	6.25
CR6: Time	2.5%	1.25	1.25	1.25	1.25	1.25
CR7: Design to Cost	2.5%	1.25	1.25	1.25	1.25	1.25
RO5: Opportunities	6.0%	3.00	3.00	3.00	3.00	3.00
Subtotal Method	31.0%	15.50	15.50	15.50	17.25	15.50
Total	100%	50.00	52.50	55.00	58.75	53.50
Total Rank		5	4	2	1	3
Value Rating – £100m = 8.00 Quality pts if P = £625m		8.00	8.40	8.80	9.40	8.56
VR Rank		5	4	2	1	3
VFM		85.11%	89.36%	93.62%	100.00%	91.06%
P equiv		£531,915	£558,511	£585,106	£625,000	£569,149
Lost Value		£93,085	£66,489	£39,894	£0	£55,851
Value of a quality point (rank 1 .v. rank 4) £k		£10,638				

Figure 4. BSCU Tender Evaluation Model (example only, not actual bid figures)

ICE instead presented a set of project requirements to the bidders against which they could bid an alternative to the client design. In fact the innovation that LU desired suggested that the bidders were unlikely to adopt the clients design.

In practical terms, the Bidders submitted designs containing their innovations that were at best at a RIBA B/C level of engineering development. In relation to LU's assurance standards, it was some way off the concept design that the Base Case represented, and therefore presented a much greater level of uncertainty. Further, it was not likely to attain a similar level of technical assurance until further design development had taken place after award of the design and build contract to the winning bidder.

The Project, working in close collaboration with the PMO, IIPAG and the EE was able to manage the misalignment inherent in the new ICE process, and demonstrate that it had a robust management approach and processes in place to manage the uncertainty.

The adoption of a procurement process such as ICE requires a degree of flexibility in the application of LU and TfL investment processes and project management standards. Further work is required to better understand and to adjust the application of governance to suit.

8.5 Contract Strategy

There are a number of issues for TfL/LU and bidders, including those emerging from the ICE procurement approach, that bear on to the selection of the proposed contract and delivery strategy. These are:

Client

- Letter of commencement required prior to main construction;
- Ability to respond quickly to changes in the TWAO process; and
- Incentivisation to work collaboratively to deliver on time and at cost.

Contractor

- Price for main construction capable of being confirmed at the end of the TWAO period;
- Incentive to enhance returns through efficient design development and construction, and preference to be incentivised through delivery rather than solely a pain/gain share; and
- Additional incentivisation to work collaboratively to deliver on time and at cost through risk management.

The default LU position is the ECC Option C (with TfL Z clauses) for major projects. The new TfL contract was circulated with the ITP (the first time it had been shared with the market) and was characterised by a significant thinning of Z clauses.

Additional requirements for Bank were

1. a break clause – that led to the Stage 1 and Stage 2 arrangements; Stage 2 (main works) cannot commence until a Stage 2 Works Commencement Notice is issued;

2. Requirement to recognise uncertainties such as the maturity of the design, utilities definition, and the change emerging from the TWA Order process in pricing, therefore inclusion of certain cost element on a net cost reimbursable basis (effectively option E);
3. Aspiration to incentivise delivery of the design and TWA Order preparation work (Stage 1 works) resulting in the fixed fee amount arrangements; and
4. Parent company guarantee from the ultimate holding company(ies)

The final strategy settled a single NEC3 ECC Option C Contract supported by a non-contractual Alliance Protocol. The contract structure includes:

- Single NEC3 ECC Option C Contract with two Stages;
- TfL/LU letter of commencement required before Stage 2 commences;
- LU take TWAO risk once submitted – changes are Compensation Events;
- Contractor takes full responsibility for completing the design of their own proposal. TfL/LU design information prepared to date is provided as non-contractual supporting information;
- X21 single point design responsibility still required for residual matters, but no client design for contractor to adopt or novate or for LU to warrant;
- TfL/LU at its discretion will not issue the letter of commencement, and will exit the contract with a fully assured Compliance design and a TWAO (provided it is granted) to openly and competitively rebid as a ‘build only’ contract should the performance of the contract not be satisfactory;
- Change in cost of works done by utilities (but not Contractor supervision) is a Compensation Event (i.e. it will be paid as cost reimbursable);
- The fee in Stage 1 is fixed and paid on achievement of key deliverables;
- In Stage 2, Contractor has a fixed fee against the activity schedule;
- A 2.5% buffer range either side of the Target Cost is applicable to the client only. A 50/50 pain/gain share is applied outside the buffer;
- Bidders bid percentage fee to be applied to all CEs for scope change and prolongation. This avoids disputes on staff thickening;
- At the start of the contract, the bidder forecasts a periodic spend. This forecast is paid as “actual-to-forecast” and then reconciled to “actual” at the end of each quarter (contractually specified as P3, P6, P9, P11, to line up with TfL quarterly forecasts);
- Alliance Protocol (non-contractual) to include incentivisation and key performance indicators (KPIs) for the Alliance collectively, and for TfL/LU and the Contractor for reduction of costs or risks;
- Limited damages clauses based on LU costs – retain for failure to meet Completion date and Schedule 9 (LCHs);
- Inflation risk protection for Contractor through X1 (Price Adjustment For Inflation) linked to BCIS indices; and
- An opportunity to fix the price by negotiation at the end of Stage 1.

8.6 Commercial Bid Evaluation

Bidders were requested to bid their proposal in two parts:

- Envelope 1 – Mandatory. Non-Price, including all information to be evaluated (engineering, HSQE, Alliance Protocol, confirmation that ITT budget is not exceeded, benefit:cost ratio); and
- Envelope 2. Mandatory. Option C with certain Stage 1 activities cost reimbursable).

The Technical Proposal could not include any Price references or information except for that specified - confirmation that the Price meets the Cost requirement not to exceed budget and the benefit:cost ratio. All Pricing elements of the ITT response including Form of Tender, and Contract Data (Parts 1 & 2) would be included in Envelope 2.

The following method was employed for the evaluation of bids (see also section 7.2.5):

1. Envelope 1 for each bid was opened by the Technical Evaluation Team and evaluated against the criteria set out in the ITT with a possible maximum of 100 points – 70% being allocated to the product and 30% to the method;
2. The bidders were ranked one to four in descending order of total points scored out of a possible maximum of 100 points (Q);
3. Envelope 2 was opened and evaluated by the Commercial Evaluation Team;
4. When the ITT responses were received, two independent cost estimates of the proposed scheme and risk provision were made for each bid. These were 'blind' estimates, made without knowing the as bid cost for that proposal. The two comparator cost estimates were used to validate as bid costs, in particular where there is an abnormally low bid that cannot be substantiated by the bidder;
5. Bidders prices in Envelope 2 will be evaluated by the Commercial Evaluation Team and the Notional Price calculated for each (P);
6. The Value Rating (VR) for each bid was then calculated where $VR = (Q/P)*100$ expressed to 2 decimal points;
7. The bidders were then ranked one to four in descending order of Value Rating; and
8. The relative Value For Money (VFM) for each bid was then calculated with $VFM = (VR (bid)/VR(highest)*100\%)$ expressed to 2 decimal points.

Part 3

ICE Benefits and Outcomes

9

Business Case and Supply Chain Benefits

9.1

The Business Case

The ICE challenge to the Project team and to the bidders, was to deliver a scheme that represented an increase in value of 15 per cent, made up of reduction in the EFC, improvements in the benefits, reduction in dis-benefits and an improved schedule.

Unquestionably, the ICE has been successful with three out of four of the bidding consortia exceeding the 15% target. The leading bid by Dragados SA is illustrated in fig 5 below. It represents both the lowest price bid and offers the highest increase in benefits, and provides:

- An increase of 1.1:1 (45.1%) in the B:CR from 2.4:1 to 3.5:1;
- A £148,625,000 (19.2%) increase in Journey Time Social Benefit over the 60 year life of the project (fig 5 note 1);
- A £61,155,000 (9.8%) reduction in the Estimated Final Cost to £563,812,000;
- A 5 week (22.7%) reduction in closure duration of the Northern Line, to 17 weeks (see fig 5 note 2). This equates to a £35,884,000 (52.9%) saving in social dis-benefit ;
- A £30,850,000 (15.6%) increase in induced Revenue throughout the life of the project to £228,909,000;
- A more effective Step-Free Access solution direct from street to platform on both the Northern & DLR lines (see fig 5 note 3); and
- A more efficient fire and evacuation strategy throughout the whole station.

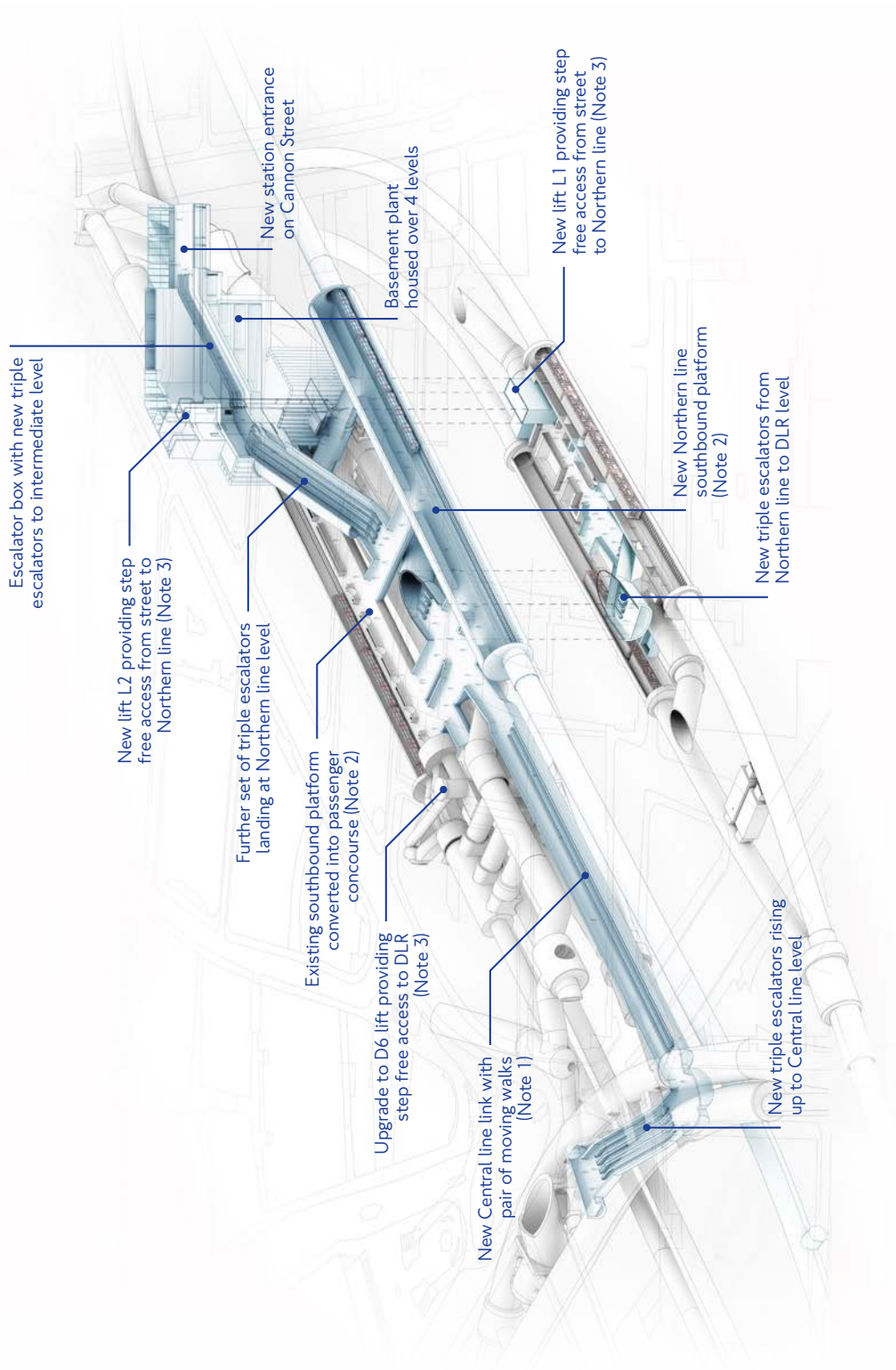
9.2

Supply Chain Benefits

There have also been other benefits associated with the early engagement of the supply chain, principally that:

- Confidentiality in RTP phase requires exclusive Tier 2 (and beyond) supply chain engagement locking in intellectual property and significant additional value as scheme develops. This in turn recognises the value of the lower Tier supply chain in the design development process, both during the tender stage and during future delivery;
- Early engagement encourages team collaboration development during the dialogue. It brings about an early relationship development between the client and the contractor teams and allows this relationship to develop before a commercial contract is in place; and
- Potential Unique ITP Output gains for losing bidders allowing for a greater level of commitment from the supply chain with the prospect of recovering costs of developing innovation should the bidder ultimately be unsuccessful.

Figure 5. BSCU Scope of Works



10

ICE Lessons Learnt

Three lessons learnt workshops were conducted at separate stages, to capture important observations, good, as well as bad from the projects implementation of ICE.

10.1

15th November 2012 workshop

The first workshop was held on the 15th November 2012 with the BSCU Project team. The workshop focused on project delivery up to the issue of the ITT, and specifically on key lessons learnt for the ICE process.

Overall the team considered the ICE dialogue process to date had been a success with lessons learnt both from aspects that went well and those that could be improved in future. The project encountered a number of key challenges, which are summarised below:

- First time use of the procurement process ICE with tight deadlines;
- A change to the Multidisciplinary Consultancy support in March 2012, immediately after completion of the Concept (referred to as RIBA D Lite) design and prior to the dialogue;
- Changes in key personnel;
- The Olympics period and the subsequent diversion of resources; and
- Increased scrutiny following the InterCity West Coast franchise challenge to the tender process.

36 key lessons learnt were captured from this session.

Further details are available in the Lessons learnt report.

10.2

9th August 2013 workshop

The second workshop was held on 9th August 2013 with the bidders following the mobilisation of the winning D&B Contractor. The second workshop was designed to capture the Bidders' experience of the ICE process, identify key lessons and improvements, and act as a close out of the ICE process for them. Prior to the workshop a survey of the bidders had been carried out to record their assessment of how well they considered that the intent of ICE (as stated in the requirements statement had been achieved). The results were grouped under three themes:

- ICE Process;
- Risk and Innovation; and
- LU Engagement

The results of the survey were presented anonymously and used to elicit further discussions with the bidders during the workshop.

Other than project team members required to facilitate, the workshop was restricted to the bidders' teams only. Meta planning techniques were used to draw out issues from the attendees who were arranged into four groups comprising members from different bid teams so as to encourage cross bid team discussions. The issues identified by the groups were then presented and arranged into common themes.



The **open discussion** that followed allowed teams to query decisions that had been made in the scheme designs to **understand the thinking processes**.

The workshop concluded with the four bid teams sharing the details of their schemes with the rest of the workshop group. This impromptu and unplanned addition to the workshop agenda gave all the teams a unique insight as to how different bidders had approached the ICE process and how teams had sought to deliver the project requirements and manage the key risks. The open discussion that followed allowed teams to query decisions that had been made in the scheme designs to understand the thinking processes and how those decisions had informed the scheme design. Up until this stage the workshop had been mainly focused around getting the bidders' feedback but this session allowed the LU team to try to respond to the bidder comments and explain the reasons behind how they had managed the process.

Key recommendations arising from the workshop include:

- Consider shortening the overall process;
- Revisit bid costs vs duration / tender requirements to provide greater reimbursements for unsuccessful bidders;
- Consider engaging bidders at earlier stage in the design process e.g. RIBA B/C;
- All parties to remain open to innovation throughout the process; client to be willing to accept alternatives to client scheme and bidders to continue to innovate to meet project requirements;

- Enhance way finding for project information;
- Client and bidders to have a shared understanding of what constitutes innovation;
- Client to provide early training on Business Case Assistant use, the Risk Register and the QAB;
- LU to consider additional structured feedback to the bidders at agreed stages on their proposals in the form of RAG assessments;
- Bidder to agree a schedule of meetings early on with client;
- LU to ensure core team in LU dialogue phase have appropriate level of technical experience to respond to queries; and
- Build feedback sessions into the ICE process to allow teams to understand how others have sought to meet the project requirements.

Further details, including the native results of the bidders' survey are available in the Bidder Lessons Learnt report.

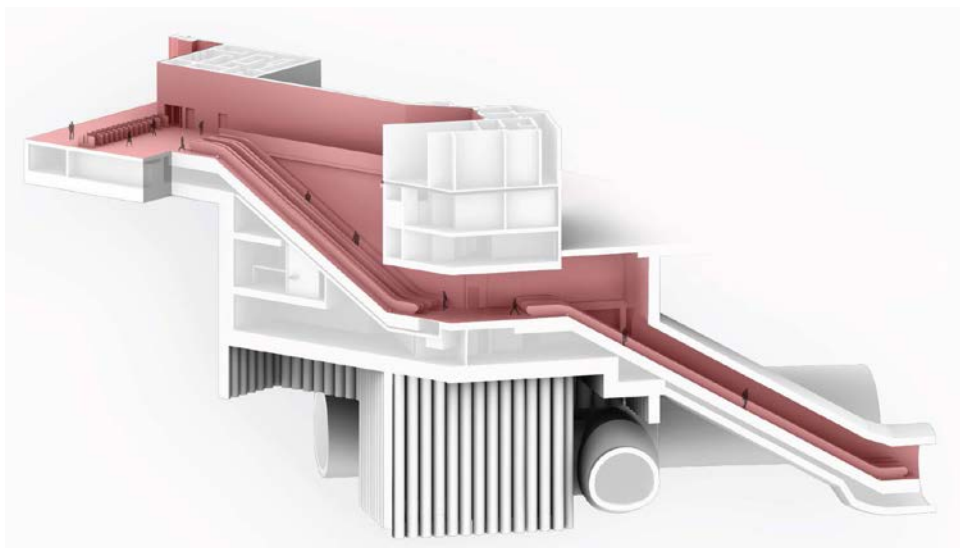
10.3 15th August 2013 workshop

A final workshop was held on 15th August 2013. This workshop included all members of the LU Project team. It complemented the first internal lessons learnt workshop and covered the project for the Interim stage to pre-award of contract.

The key recommendations noted at the workshop include:

- Set out resource requirements and agree plan to manage / support key staff;
- As part of a final review of the tender questions, cross – check tender questions against scoring system and pair down any non-essential questions;
- Evaluators to be part of the question setting;
- Consider electronic submission or more than 3 hard copies of the bids to better support the Tender evaluation process;
- Design and plan a communications plan to manage the message;
- Involve legal team early; and
- Seek to close out key concerns pre contract award e.g. programme.

Further details, are available in the Bidder Lessons Learnt report.



Appendix A – Base Case – BSCU

Development of Client Base
Case for Bank Station capacity
upgrade project

A 1.0

Project Vision, Mission and Behaviours

Bank SCU Vision:

To create a world class, operationally efficient underground rail interchange through best in class project delivery.

Bank SCU Mission:

- Create a clear set of client requirements;
- Develop an approach which is driven by adding value; and
- Collaborate through an integrated team

The Values and behaviours of all individuals within the Project will be driven by the doing what is “Best for Bank”

A 2.0

Project background and scope

A 2.1

Project background

Bank station is located in the heart of the City of London's financial district. As the main gateway to the City for employees and visitors, the station is of strategic importance to the UK's economy. Bank station is also a strategic network interchange served by six underground lines; the Northern, Central, Waterloo & City, and the District and Circle at Monument, (which is part of the same station complex), and the Docklands Light Railway (DLR), for which Bank is the major central London terminus.

The station has been developed in a piecemeal manner from 1884 onwards as additional lines have been built, reaching its present form in 1991 when the DLR extension opened. The platform tunnels lie predominantly under the roadways of King William Street, Queen Victoria Street and Eastcheap. Most of the platforms are at deep level (i.e. 30m to 40m depth), and are therefore dependent upon escalators or lifts for passenger access and egress.

Today's station complex has three ticket halls, being Monument for District and Circle, the Northern line ticket hall on King William Street, and the Central line ticket hall between the Bank of England and Mansion House. The DLR and Waterloo and City services do not have dedicated ticket halls. In total, the station has three ticket halls, ten platforms, 15 escalators, six lifts and two 300ft long moving walkways.

Bank station was designed and built in expectation of passenger levels far less

than those currently using the station. It is now the fourth busiest interchange station on the LU network with 96,000 passengers boarding, alighting and interchanging during the AM peak period (07:00-10:00). Demand has increased significantly since 2003 (when this project commenced) with the station experiencing a 25 per cent increase in entry, 29 per cent in exit and 41 per cent growth in interchange demand. This trend is expected to continue.

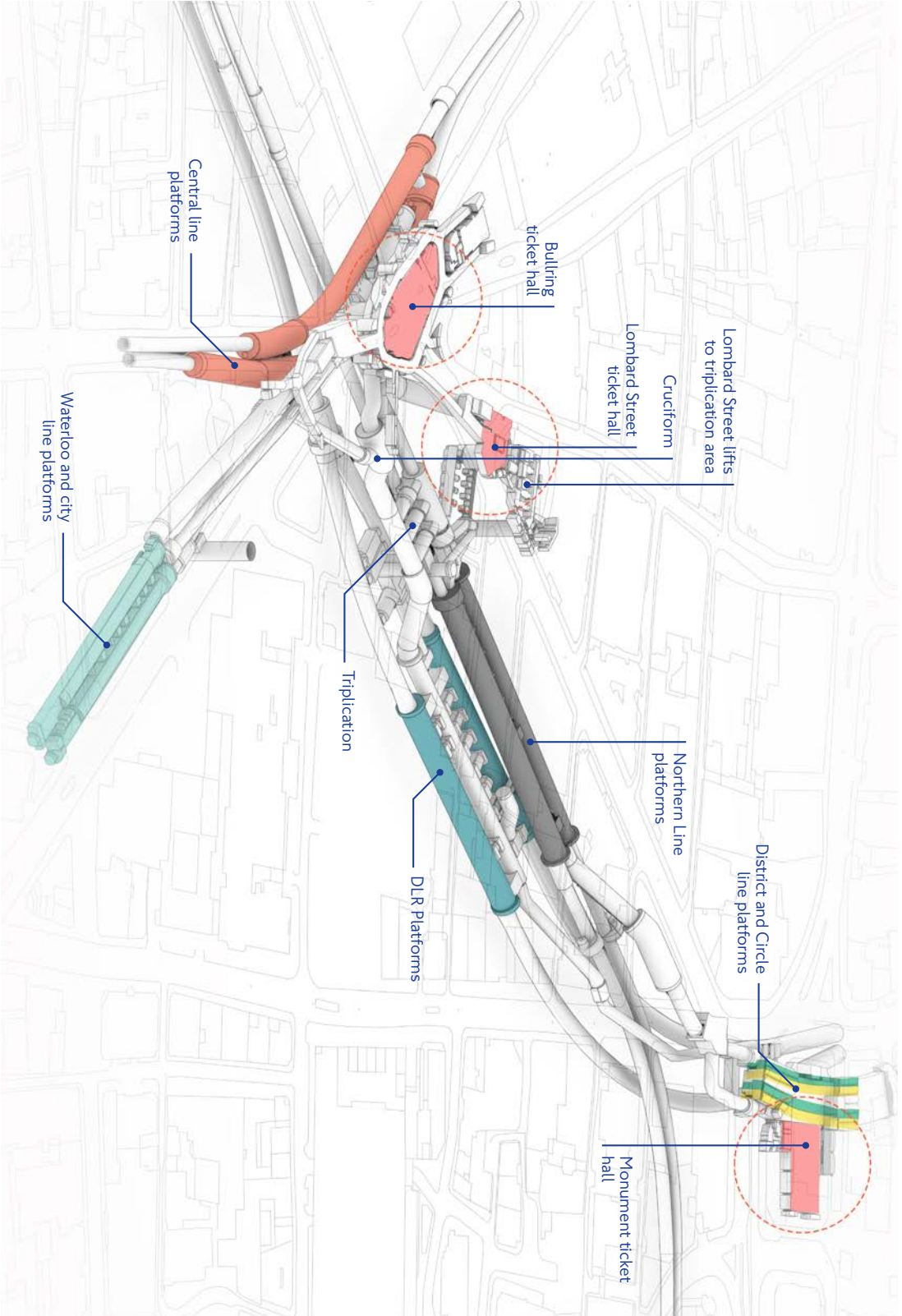
Areas of the station are close to 'saturation' point, where day to day demand overwhelms capacity, even during 'normal' operations. Operational controls are commonly implemented due to passenger congestion. These controls range from:

- imposing lengthy one way systems including on-street interchange between lines;
- non-stopping the Central and Northern lines;
- suspension of the DLR service; or
- resorting to a full controlled station evacuation.

There is an upward trend in operational interventions, with 108 instances in 2011 as a direct cause of overcrowding.

By 2016, the AM peak three hour passenger demand is expected to exceed 100,000 through the effect of significant new employment generated by major commercial development in the City and the increased train service capacity from LU and DLR line upgrades. With this level of demand, further operational controls will be required on an ongoing and increasingly disruptive basis to manage congestion at safe operating levels.

Figure A1. Existing LU Infrastructure



A 2.2

LU Network Impacts

Bank station is served by lines that have either been upgraded [DLR three car] or will be upgraded. The congestion at the station will impact on the ability of these upgrades to realise their full benefits. In particular, the planned Northern Line Upgrade (NLU) would be unable to realise the targeted train frequency; the planned upgrade would first increase the number of trains per hour (tph) from 20 tph to 24tph in 2014 (NLU1) and then again to 28/32 tph in 2018.(NLU2) [and further following line segregation at Camden Town to run separate Edgware-Battersea and High Barnet/Mill Hill East-Morden services]

Without implementing BSCU project, the first pinch point for Northern line customers are the stairs at the Bank end of the Northern line platforms. Increasing the frequency of the trains should mean fewer passengers per train, and therefore fewer passengers on the platform. However, due to the location of the pinch point, it is unlikely that passengers will be able to get off the platform before the next train arrives which will additionally increase the journey time that passengers face when moving through the station.[dwell times to cope with boarding and alighting demand would not allow the higher frequencies to be operated resiliently]

The implications of not upgrading Bank are principally:

- increasing levels of delay for customers as operational control extends journey times;
- London Bridge, Moorgate and Liverpool Street stations, as alternatives to Bank, have little spare capacity and become vulnerable to closure themselves as is currently experienced when Bank is closed;
- the benefits of line upgrades, particularly the Northern line, may be compromised if future train services at Bank station are regularly disrupted due to congestion; and
- the DLR could be regularly and seriously disrupted by restricted or suspended access into Bank during periods of station control. The terminus at Tower Gateway, where the station and train service capacity is restricted, would not be a viable diversionary route. Under these circumstances, the Jubilee line is a natural alternative to the DLR exacerbating an already congested Jubilee line and the respective stations that serve it.

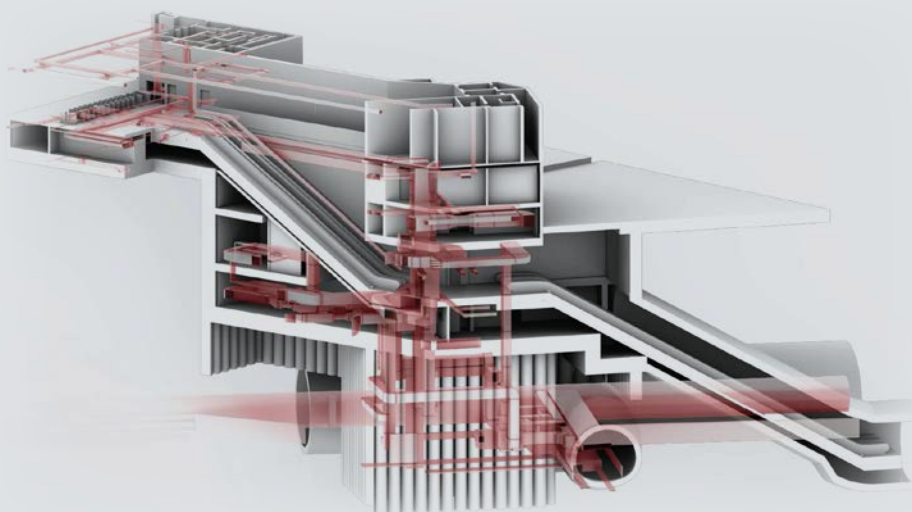
A 2.3 Project Objectives

Following the Comprehensive Spending Review (2010), the BSCU Project was required to relieve congestion on the Northern Line by 2021. The strategic objectives are:

To increase capacity at Bank station - principally to the Northern line and DLR areas, and the interchange routes - with the aim of reducing journey times and congestion, ensuring that passenger density throughout the Bank/Monument Station complex for all NL and DLR customers during peak times is such that the need for regular station control is avoided (indicative average Fruin level of service C);

To provide a step-free route(s) to the Northern line platforms from street and DLR levels, and an accepted means of escape for Persons with Reduced Mobility (PRM) and the ability to provide assistance to PRMs; and

Compliant emergency fire and evacuation protection measures will be provided for NL/ DLR passengers, ensuring a place of safety within the limits prescribed in the appropriate standards.



A 3.0

Project Development

A 3.1

Overview

LU has investigated solutions to address the congestion at Bank since 2003. The station currently suffers from significant levels of congestion particularly at:

- The Northern line (NL) platform, which are narrow and back-to-back with no 'reservoir' of passenger circulating space between them. The narrow staircases at the north end of the platforms become particularly congested, with passengers having to be held at the top at peak times to prevent excessive overcrowding on the platforms below;
- The exits from the DLR platforms, where there is insufficient vertical capacity to the upper levels of the station, leading to extensive queues; and
- Interchange routes to and from the NL and DLR platforms, including to and from the Central line (CL) platforms.

Following Engineering review, RIBA B completed in March 2009 and recommended "Option 7" which consists of the provision of a new southbound running tunnel and platform, the conversion of the existing southbound tunnel into a concourse, and new connections to the existing infrastructure. Option 7 was further refined in RIBA C+ into two variants that differed in their method of providing congestion relief between the Northern line and DLR levels, and between the Northern line level and the Triplification.

The Legion modelling at the end of RIBA C+ showed that the proposed station design operated at the design year but failed at the

sensitivity test of 20% (roughly 32 years after year of opening). The modelling indicated that there was insufficient vertical capacity between the DLR and Northern line and also additional links between the Triplification and the Central line due to congestion in the Cruciform area.

Design development in Concept addressed these issues from RIBA C+. Value engineering in RIBA C+ identified that the redundant southbound Northern line running tunnel could provide an additional link between the Triplification and Central line. However, this was an incomplete solution as it was not compliant to be used as a two way route and had a non-compliant vertical rise to the Central line.

A 3.2

Passenger modelling

Since 2007, BSCU project has used a demand matrix that was derived for RIBA Stage B which was based on Railplan, LU Rolling Origin-Destination Survey (RODS) data available at the time, and standard LU station demand forecasting methodology as applied. The demand was adjusted to incorporate the results of the 2006 Metronet survey for interchange passengers. Due to the escalator refurbishment programme it has not been possible to do a large scale passenger survey at the station since then.

During RIBA D, LU Modelling recommended that the demand matrix was updated using Railplan 6.2.2 which is more robust than previous versions. It has AM and PM peak models (previously the PM was a 'transposed'

version of the AM peak) and includes planned developments from the London Plan as well as committed future Tube upgrades, Crossrail, Thameslink and other public transport improvements. For the Northern line, Railplan 6.2.2 includes Northern line upgrade II with 28/32 trains per hour and partial line separation.

The changes to key interchange movements brought about by Railplan 6.2.2 led to design developments in RIBA D that included two links between the TriPLICATION and Central line and the provision of two additional escalators and a staircase between the DLR and Northern line.

A 3.3 Business Case

The primary benefits of the Base Case proposal in meeting requirements for the scheme are:

1. Capacity enhancement and journey time benefits of £24.8m/pa;
2. step-free access benefits of £846k pa (based on Bank station contribution to a network business case);
3. secondary (induced) revenue benefits of £163k pa;
4. ambience benefits of £130k/pa;
5. removal of speed restriction on Northern line benefits of £395k/pa; and
6. avoidance of station closures benefits of £3.4m/pa.

The cost ratio for the Base Case scheme is 2.4:1. This ratio is based on a conservative methodology as a result of difficulties in

comprehensively modelling major congestion relief projects. The ratio does not include a number of non-quantifiable benefits, which include but is not limited to the following:

- **Journey time benefits** - full reduction in congestion is not included as it is difficult to model;
- **No 'do-nothing'** – full social cost for the 'do-nothing' case was not used as a comparator, instead a 'do-minimum' scenario was created to assess the scheme and reflect the most likely operational measures that would be adopted to avoid a 'gridlock' station;
- **Do Minimum** - a conservative assessment of the social costs to the passengers inconvenienced by station control has been used. This itself was capped to reduce the wider social disbenefit impact of congestion
- **London Bridge, Moorgate, Liverpool Street station closures and overcrowding avoidance** - conditions at Bank station cause nearby stations (including London Bridge, Moorgate and Liverpool Street stations) to become vulnerable to closure due to overcrowding;
- **Northern line train upgrade realised** - congestion would mean that the planned Northern line upgrade would be unable to realise the targeted train frequency or realise its full passenger benefits;
- **Reliability benefits** - congestion at Bank station has an impact on the reliability of the operations at the station and the dwell times of the trains. This delay leads to an irregular service;

- **DLR service disruption avoidance** - DLR is subject to station control measures due to congestion. The future scheme provides additional vertical capacity from DLR and will reduce the effect of station congestion on the DLR service pattern;
- **Safety Benefits** - present there are no fire protected zones on the station and a complete controlled station evacuation takes between 15 and 30 minutes. The scheme greatly enhances fire and evacuation protection measures. Evacuation lifts, smoke extraction and fire-doors which provide a place of safety for Northern line/ DLR within 6 minutes;
- **Security Benefits** - new comprehensive colour digital CCTV integrated with the station system and interfaced at the CERs at platform and basement levels will improve the security at Bank station;
- **Station Reputation** - a recent poll by the Londonist website, Bank station was rated the worst station on the network. It received more than twice as many votes as any other station and overcrowding was quoted for the “top nuisance”; and
- **Long Term Economic Impact** - to maintain employment growth projections, the City and inner East London are dependent on Bank Station continuing to be an efficient interchange station and an attractive entry/exit point to the City. The station control measures considered in the ‘do minimum’ are not sustainable in the long term and delays experienced could inhibit investment and employment.

Furthermore, the business case is based on the assumption that severe station control measures can be implemented to keep the station operational. However, expected overcrowding in the long term indicates that maintaining viable operations at this station would be at risk.

A 3.4 Core Scope

1. Creation of a new ticket hall at surface level;
2. Diversion of the southbound Northern line (NL) and the formation of a new southbound platform;
3. Transforming the existing southbound platform and some of the running tunnel area into a new concourse and passage area;
4. New large cross passages linking the newly formed concourse to the new southbound platform;
5. New stairways and escalators to link the new NL cross passages to the DLR beneath;
6. New links from NL level to the concourse and to the Central line (CL);
7. New link to the CL platforms via passageway and escalators;
8. New lift shaft with four high capacity lifts providing Step Free Access from NL platforms along with separate SFA lift to DLR level; and
9. Improved secondary escape through provision of escape stairways.

Figure A2. BSCU – Project RIBA D Option 7/B2

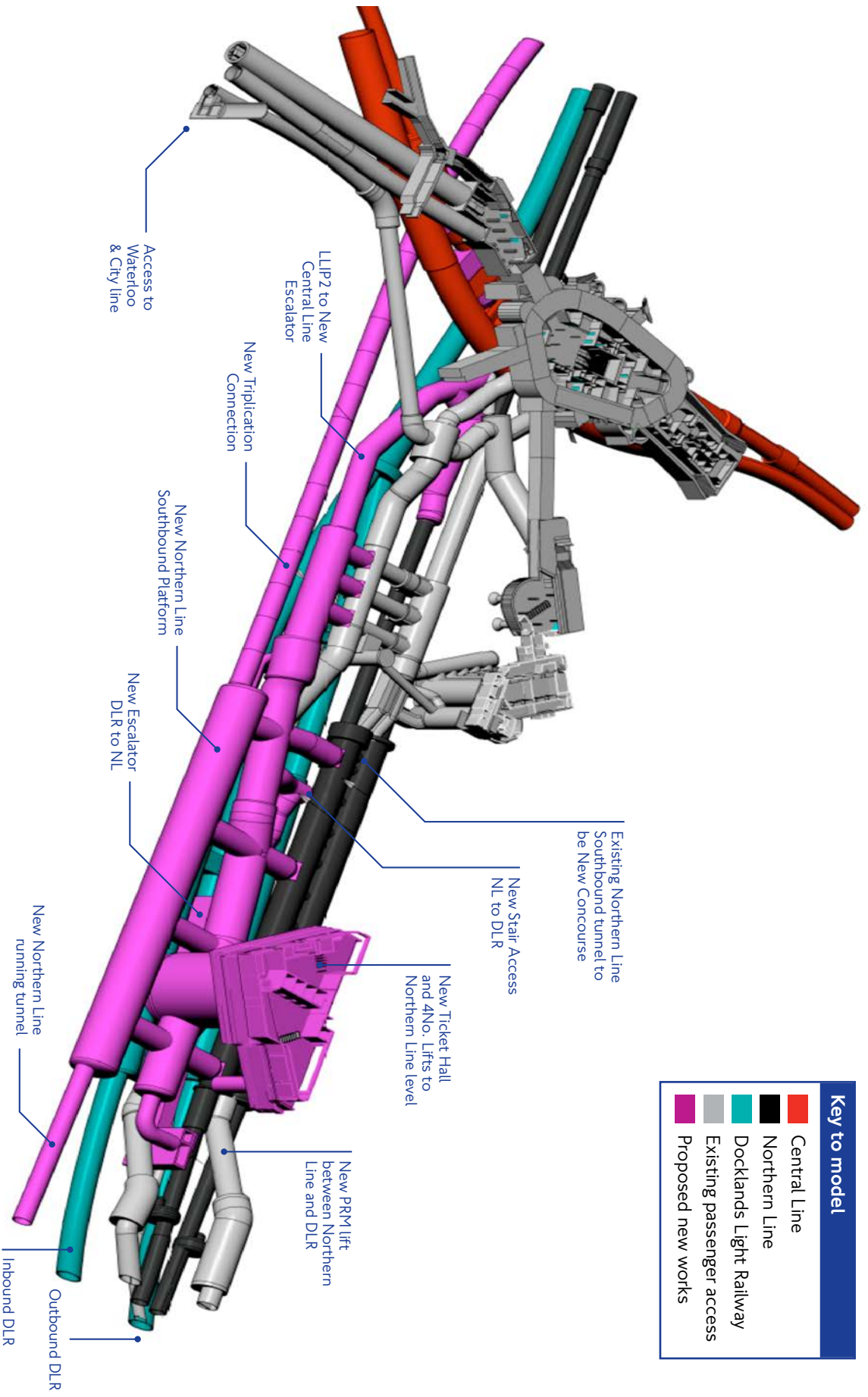




Figure A3. The Whole Bock

Note that the new ticket hall and the provision of lifts (rather than escalators) for vertical transportation were not requirements in themselves, rather, they were the design solution proposed in the Base Case

A 3.5 **Engineering Base Case**

During RIBA D, the project team employed a continuous process of stage approvals (CDT) to progress the engineering design. The CDT process was designed to ensure that all key discipline engineers and stakeholders were effectively part of an enlarged design team contributing to the evaluation and recommendation of engineering alternatives for the evolving congestion relief design. With the objective that they were very much owners of the final solution, having very much been a part of the journey. The CDT's formally met at facilitated forums.

The RIBA D study commenced with CDT 1, and design was effectively locked down in a final CDT 12 which presented the final RIBA D Base Case in terms of scope, time and cost. En route,

- CDT 6 primarily reviewed the construction methodology of the scheme via the single worksite at 10 KWS and the opportunity that additional land may offer in terms of time. This resultant schedule was reviewed by Sir Robert McAlpine;
- CDT 8 froze the final scheme layout that met the objectives of the project, Option 7/B2, and included the requirement for the additional CLL. It further established the need for a secondary works access site. Redcross Way was confirmed by LU as an available secondary work site for material storage and construction logistics; and

- CDT 12 further developed the design and sought opportunities to improve on the emerging schedule following the design changes associated with the change in the passenger demand matrices. The Bucklersbury shaft emerged as the most opportune secondary access in terms of construction methodology.

While mitigating the schedule impact of the additional works identified in CDT 8, CDT 12 did not fully assess the overall cost or TWA risk, which were subsequently found to be unacceptable in terms of the strategic aim in respect of the former and too high a risk in terms of the latter.

Base case scheme at the end of the RIBD D design (Option 7/B2) is illustrated in fig A2 below.

A 3.6 **Land and Property Issues**

RIBA C+, with Option 7, stated that the preferred option could be delivered from a construction site based on the footprint of the building at 10 King William Street (KWS).

The frozen scheme at CDT 8, Option 7 / B2 was also based on the land take of 10 KWS only.

CDT 6, prior to the additional Central Line Link (CLL), clearly established that the acquisition of additional land, specifically the block of land bounded by King William street, Abchurch Lane, Cannon street and Nicholas Lane, known as the Whole Block would provide best value in terms of project delivery. A Qualitative Risk Assessment (QRA)

was undertaken that supported the CDT decision. A final risk and opportunity analysis, based on the original QRA, was undertaken in Jan 2012, achieving the same results.

Prior to knowledge of the impact of the demand matrices change and the CLL, the project continued to exploit the opportunity of developing better value options to deliver the scheme via 10 KWS only. For 10 KWS, the freehold and leasehold property interests would need to be obtained by negotiation or ultimately via the Compulsory Purchase Order (CPO) authorised under the TWAO.

CDT 8, CDT 12 and follow on analysis subsequently concluded that while the schedule could be mitigated in terms of construction duration, the increased TWAO risk associated with the secondary Bucklersbury works site, schedule risk from constrained sites and the subsequent increase in costs, was unacceptable to LU.

Between CDT 6 and CDT 12, the project continued its work in establishing and meeting property owners affected by the whole scheme. It emerged that there may be an opportunity for the negotiated acquisition of all of the properties on the Whole Block, a worksite occupying the block bounded by King William Street, Abchurch Lane, Nicholas Lane and Cannon Street.

The purchase of the Whole Block significantly mitigates the schedule risk associated with the construction methodology by facilitating both an entry and exit to the main work site. It also mitigates the length of time that a secondary works site access would be required and the associated TWA risks. However purchasing the Whole Block

increases the likelihood of objections from affected owners & occupiers; but this could be mitigated by negotiation, by keeping an open mind and being prepared to be flexible, in the event that say just one of the principal owners proves to be intransigent. The Whole Block in its entirety cannot be obtained by CPO due to one freehold being Crown Land.

Ongoing consultation with the Corporation of London (CoL) showed their support for the purchase of 10KWS with their preference being the comprehensive development of the Whole Block. However while the Whole Block offers a significantly improved OSD in terms of planning and potential viability, it must be recognised that this is not a primary reason for the purchase, which is to facilitate the delivery of the transport scheme. At a public inquiry into the TWAO the need to take third party land for the transport purpose in the public interest will need to be robustly made.

Redevelopment of the Whole Block would give the potential to provide access to the new ticket hall from Cannon Street which would benefit the transport case and which is likely to be supported by CoL, and provided a footprint able to accommodate escalator vertical transport where this was supported by the demand modelling.

TfL Board approved a property acquisition strategy to secure the freehold and leasehold interests on the Whole Block site in March 2012.

A 3.7 Programme

The original (Nov 2011) key milestones for the project (based on construction from the Whole Block) are:

Milestone	Date
Board / Mayoral Approval of TWAO submission	April 2014
Secretary of State TWAO Approval	September 2015
Construction Start	January 2016
Construction Complete	December 2020
Project Complete	December 2021

A 3.8

Key Issues

A 3.8.1

Northern Line Blockade

A suspension of the City branch of the Northern line, Camden to Kennington, will be required in full or in part over a period of up to five months. This is to enable the junction works to take place between the existing running tunnel and the new realigned running tunnel. This phase will also include a period of through running at Bank.

In the Base Case design, the complexity of existing tunnel alignments, both at the southern and northern tie in points, exclude the opportunity to undertake these connections with a step plate construction. This has led to the need for constructing the tie in points using more conventional access headings, which have the knock on effect of extending the required closure.

This key risk forms part of the criteria for the dialogue stage of ICE procurement, where bidders will be encouraged to bring forward innovative solutions to reduce the length of the closure.

In addition, the project team has commenced detailed investigative work along with Surface Transport to understand fully the mitigations required to manage the closure period and also maximise any other service opportunities and will also look to identify other areas within the business that could utilise the blockade.

A 3.8.2

TWAO

In order to secure the relevant powers to construct and operate the scheme, it will be necessary to submit an application for an Order under the Transport and Works Act 1992 to the Secretary of State for Transport.

The aim is to submit an application for a TWAO in 2014 following early contractor involvement route. Approval of an application for a TWAO is a matter reserved to the TfL Board and also requires the consent of the Mayor.

A 3.8.3

Enabling and Utility Works

In order to reduce risk to the project programme and implement lessons from other station capacity upgrades, certain early works are proposed to be undertaken in advance of the main works. Only concept design works associated with critical enabling elements will be included, such as listed building protection and utilities

A 4.0

Project Delivery Strategy

An appraisal of the possible options and risks presented two delivery strategy options. The options are discussed in further detail below and based on the following durations:

- Procurement – both options – commences April 2012 with a nine month duration;
- TWAO – both options – 24 month duration including enactment of powers; and
- Construction: – durations based in Sir Robert McAlpine report Option 1 – 7.5 Years; Option 2 – 5.75 Years (primary assumption of acquiring whole plot by negotiation).

A 4.1

Option 1- The Base Case

LU progresses the opportunities in negotiating the purchase of 10 KWS and continues with the submission of a TWAO application supported by the RIBA D Designer;

1. LU issue a complete ITT in April 2012 to initiate a traditional one stage D&B tender to price the design and delivery of the RIBA D scheme on an NEC3 Option C style contract (see additional procurement note);

2. The detailed design would be undertaken by the D&B contractor (consortia) while the RIBA D designer is supporting LU with the TWAO;
3. Any functional value management or design / construction methodology innovation will be strictly within the 'limits of deviation' submitted as a part of the TWAO;
4. Limited opportunities exist for improvement in cost and schedule through market competition. Design / construction methodology improvements will be limited to value engineering of specific design elements within the TWAO submitted design;
5. Any benefits of further negotiation on purchase of land for the whole block would be lost as the TWA would already have been submitted. Any significant design change could pose significant risk to a successful TWAO; and
6. Critical path follows the TWAO through to construction.

A 4.2

Option 2 – Innovative Contractor Engagement

1. LU defers the submission of a TWAO application and undertakes an innovative contractor engagement procurement route;
2. The Design & Build contractor (consortia) is selected based on their response to Requirement Specification. They adopt and update the design to include any of their innovative changes and complete the preparation of the TWAO application;
3. The design submitted as a part of the TWAO is owned by the consortia that

will execute the works. Any Over Site Development (OSD) can be included as a part of that consortia design;

4. Benefits of market innovation are maximised for the client by the virtue of the fact that the winning consortia's innovation in design and construction methodology will be the one that goes through the TWA. The winning consortia will support the TWAO application; and
5. Additional time allowance in deferring the TWAO submission would allow LU to continue negotiation for the potential purchase of the whole block and any associated beneficial design changes to be included in the TWAO.



A 5.0

Project Procurement Strategy

The project issued OJEU Notice (reference 2011/S 224-363980) under the Utilities Negotiated Procedure on 18 November 2011. Following expressions of interest (Eoi) and a prequalification questionnaire (PQQ) LU shortlisted four consortia to engage in the dialogue stage and proceed to the Invitation to Tender (ITT).

The procurement strategies associated with the delivery options above are as follows.

A 5.1

Option 1 – Base Case

Issue a complete ITT in April 2012 to initiate a traditional one stage D&B tender to price the design and delivery of the Concept frozen scheme on an NEC3 Contract Option C. Following evaluation run a BAFO stage with 2 successful bidders to develop the LU/Supplier integrated team arrangements in advance of contract award.

Features of this approach are:

1. Limited opportunity for innovation to influence the TWAO application; and
2. Some price and schedule competition on scheme with constrained site.

A 5.2

Option 2 – Innovative Contractor Engagement.

Issue a partial ITT, based on a Requirements Specification, in April 2012 to initiate an innovative tender to price the design and delivery of a scheme to meet LU's requirements.

The ITT will be supplemented and finalised during the ITT process so that a scheme tender price can be submitted by each shortlisted bidder on a NEC3 style contract. (Note that the implementation details of this option were subsequently amended in line with the development of the ICE Process. The bidders were issued with Invitation to Proceed (ITP) documents at the start of ICE, and the final ITT was issued to them for pricing following the submission of the bidders Request to Proceed documents.)

Following evaluation, LU would run a BAFO stage with 2 successful bidders to develop the LU/Supplier integrated team arrangements in advance of contract award.

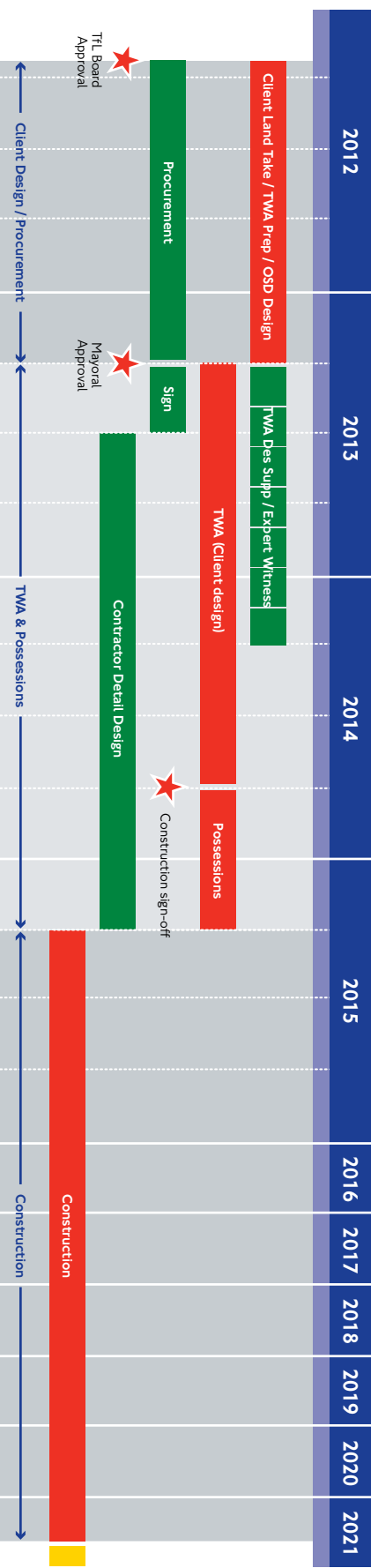
Features of this approach are:

1. LU will provide the RIBA D scheme information and other Project design options, but the ITT will be to provide a scheme that satisfies the LU Requirements Specification (Compliant Bid);
2. Provides opportunity for suppliers to bring technical and commercial innovation that can influence the TWAO application;
3. LU to make a commercial agreement with shortlisted bidders so that bidders' innovative ideas are commercially protected during ITT while they are in the competitive process, and that LU can reach a commercial agreement to adopt these ideas should a bidder not be successful; and
4. LU to make a contribution (proposed at £200k) to each bidder provided they engage in the dialogue.

The delivery lifecycle associated with the Base Case and ICE Options is illustrated in Figure A4 below.

Figure A4. Delivery Strategy Options

1. Base case



2. ICE

