



Subway Modernisation: New Rolling Stock, Signalling and Control Project – Client Technical Advisor Services – award of contract

Committee Strategy and Programmes Committee

Date of meeting 18 March 2016

Date of report 29 February 2016

Report by Assistant Chief Executive (Operations)

1. Object of report

To recommend that the Committee approve the award of contract for the Client Technical Advisor Services in support of the New Rolling Stock & Controls project to Atkins Ltd.

2. Background

2.1 New rolling stock & control project

Members will be aware that the New Rolling Stock & Control project, a key element of the Subway Modernisation programme, consists of the introduction of a new fleet of trains, a Communications Based Train Control (CBTC) signalling and control system, a new Operational Control Centre (OCC), Platform Screen Doors (PSDs) and further enhancements to the depot and depot maintenance equipment. This will support a world class Subway system that provides improved frequency, increased capacity and flexibility of operations for the subway.

Following the Partnership approval of award of contract for the rolling stock contract to the Stadler Bussnang AG/Ansaldo STS consortium, it is now the intention of SPT to appoint a single service provider to the role of Client Technical Advisor (CTA), to provide professional technical support, advice and expertise to SPT during the design, construction, installation, test and commissioning and acceptance phases of the project.

2.2 Needs summary

The scope and scale of the rolling stock project is unprecedented in Subway's recent history. The Subway system has fundamentally remained unchanged over the years and as such the Subway organisation is currently structured to operate and maintain the existing assets and does not have an extensive compliment of engineering resources available to respond to all elements of the New Rolling Stock and Control project scope. The design and manufacture/construct process will generate a significant volume of documentation, information and technical queries throughout the duration of the contract. It is necessary that SPT has sufficient breadth and depth of technical support, via professionally qualified engineering resources, to ensure that

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SPT can robustly assess, challenge and accept the supplier's proposals and, where required, provide requisite technical site presence at key stages of the programme. This will allow efficient and effective management and delivery of the rolling stock contract and ensure a best value technical solution is delivered for our customers and guarantee the legacy of Subway.

Engaging a Client Technical Advisor team is key to:

- ensuring there is appropriate specialist engineering support to review design documentation submitted for approval/acceptance by the Rolling Stock manufacturer, to ensure that the design documentation meets the Technical Specification as agreed under the Manufacture and Supply Agreement (MSA) and to enable SPT to comply with its obligations under Construction Design Management (CDM), Railway and Other Guided Transport Systems (ROGS) regulations, Railway Vehicle Access Regulations (RVAR) and any other relevant regulations and standards as applicable.
- providing competent engineering support to assure SPT that the integrated system is fit to proceed through each phase of the gate review process, as defined in the Technical Specification.
- guaranteeing availability of on-site engineering support to attend manufacturing, installation, integration and testing events as necessary to ensure that both the client's and the manufacturer's verification and validation obligations under EN50126 are being met.
- ensuring adequate technical support to SPT in the attendance at design, technical assurance, safety assurance, or other project meetings as agreed, or as specifically requested by SPT, in support of its application for Safety Certification, as required prior to the commencement of passenger service.

3. Outline of proposals

3.1 Programme of delivery

The proposal to engage these resources at this time has been planned to coincide with the award of the rolling stock contract. While the exact duration and phasing of the CTA support requirements is subject to the sequence of activities detailed within the Rolling Stock project delivery programme, which is yet to be finalised, the expectation of support requirements is based on the following indicative milestones:

Milestone	Year 1				Year 2				Year 3				Year 4				Year 5				Year 6			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
MSA Contract Award	♦																							
Integrated System Concept Design Accepted	♦																							
System Requirement Specification Accepted		♦																						
Rolling Stock - Concept Design Accepted			♦																					
Rolling Stock - Detailed Design Accepted				♦																				
Rolling Stock - Final Design Accepted								♦																
Rolling Stock - First Train FAT Accepted											♦													
Rolling Stock - First Train on Site											♦													
Rolling Stock - First Train into Service												♦												
Rolling Stock - Final Train into Service																♦								
Manufacturer Testing Facility - Design Accepted			♦																					
Manufacturer Testing Facility - Commissioning Completed							♦																	
OCC - Design				♦																				
OCC - Groundworks Construction Completed							♦																	
OCC - Commissioning Completed								♦																
Integrated System - Commissioning Completed																								
Integrated System - Outline Design Accepted			♦																					
Integrated System - Detailed Design Accepted (Mixed Operation)							♦																	
Integrated System - Detailed Design Accepted (Full Operation)											♦													
Integrated System - Final Design Approved												♦												
CBTC (Phase 1) - Commissioning Completed																♦								
CBTC (Phase 2) - Commissioning Completed																							♦	
Client Acceptance of Integrated System																								♦

3.2 Scope of works

It is a prerequisite to a project of this scale and complexity that a wide range of technical specialities will be required over a significant period of time; with varying levels of resource utilisation. The CTA is therefore required to ensure that appropriate levels of resource are available throughout the duration of the project, as indicated in section 3.1 above.

The CTA will be required to:

- Review and comment upon the Rolling Stock manufacturer's submitted project plans and procedures, as required;
- Accept manufacturer submitted design documentation as meeting the Technical Specification and all relevant legislation and applicable standards;
- Provide advice, guidance and recommendation against any point of discussion, preference or derogation within relevant legislation and applicable standards and assist the client in determining a suitable standard where no applicable standard exists;
- Assure the client that each design is safe, operable and maintainable in line with the client's expectations and the Concept of Operations;
- Support the client in the identification and management of system and sub-system interfaces and in the final integration of the system;
- Assure the client that the products built (i.e. trains, integrated signalling system and associated equipment) confirm to the accepted design and any relevant legislation and applicable standards;
- Visit the manufacturer's premises to attend and witness factory acceptance, sub-system and integration testing, as required;
- Attend SPT's Broomloan Depot (and its satellite sites) to witness and accept site acceptance, system test and commissioning and integration testing, as required;
- Review Test and Commissioning reports to provide evidence that the client's and manufacturer's verification and validation obligations under EN 50126 are being met;
- Attend monthly meetings at manufacturer and/or client sites, as agreed or as specifically requested by SPT; and
- Support the client in completing its requirements and obligations under ROGS, to ensure a Safety Certificate is obtained prior to the commencement of operational service.

The CTA will be required to provide Subject Matter Experts (SME) support to SPT in the discipline areas detailed below, as a minimum:

- Rolling Stock;
- Signaling, Communications and Control Systems;
- Track and Infrastructure;
- Civil Engineering;
- Mechanical and Electrical (M&E);
- Reliability, Availability, Maintainability and Safety (RAMS);
- Environmental; and
- Safety Verification.

Finally, the CTA will be required to support and advise SPT in the review of any documentation submitted under its Safety Verification Scheme; including relevant Cases for Safety submitted by the manufacturer in support of any approval and in its own application for a Safety Certificate from the Office of Rail and Road (ORR). It should be noted that the acceptance of any Cases for Safety and the application for a Safety Certificate remains the responsibility of SPT, as Duty Holder for the system.

3.3 Tender assessment process

The tender was issued via the SPT Design & Technical Services (DTS) Framework as a mini competition against Lot 4 (Civil & Structural Engineering) and Lot 6b (Independent Expertise on New Trains and Signalling Control Systems) in November 2015 to ensure coverage for all the necessary services..

The invitation to tender was issued as an NEC Profession Services Option E: Cost Reimbursable form of contract, which is a time charge contract with the consultant being reimbursed against evidence of time spent. This type of contract was selected as the consultant's level of input will vary and be dependent on the rolling stock manufacturer's programme and issues as they arise from site and the design process. In order to get a fair cost comparison between tenderers, an activity schedule with high level forecast utilisation (considered to be a reasonable estimate of support input hours required throughout the various stages of the Rolling Stock project) was issued as a model for the tenderers to complete with their proposed rates for the various grades of staff within their proposed team.

The tender cost model was weighted to ensure tenderers proposed having greater chartered and experienced engineer input, rather than more junior resources, reflecting the level of technical risk inherent in the project.

The tender assessment and award was based on the most economically advantageous tender against a 70:30 quality:cost split. Quality was given a higher rating as the experience and availability of the specialist engineering team were key requirements, and the tender process sought to identify an organisation that not only had the correct evidenced experience and qualifications, but were also able to clearly convey how they would best deploy and manage their resources to meet the client brief. The questions also allowed tenderers to identify where they considered there was risk and/or opportunity in delivering the commission and where they could add real benefit and value.

Six submissions were originally received in response to the tender, though one party later withdrew from the process. The five remaining tender submissions that progressed for assessment were from the following organisations:

- Atkins Ltd
- Aecom (formerly URS Infrastructure and Environment Ltd)
- SNC Lavalin (formerly Interfleet Technology)
- Mott MacDonald
- SYSTRA Ltd

3.4 Tender assessment results

The final tender scores are summarised in the following table:

Tenderer	Weighted Cost Score (out of 30)	Weighted Quality Score (out of 70)	Combined Score	Rank
Atkins Ltd	19.7	70.0	89.7	1
Mott MacDonald	20.4	66.4	86.8	2
Aecom	30.0	54.5	84.5	3
SNC Lavalin	15.1	55.2	70.3	4
Systra	15.1	40.5	55.6	5

When assessed against the tender award criteria, Atkins Ltd was deemed to have the best quality submission.

Atkins Ltd was able to demonstrate to the panel through its tender submission, presentation and interview that it has experienced Subject Matter Experts (SMEs) in the full range of engineering disciplines that will be necessary to provide the level of technical assurance and advice required on such a diverse and complex project. Further, the Atkins Ltd team provided examples whereby the core technical team proposed for the rolling stock and control systems project had recent experience of working together on similarly complex projects, in a technical assurance and/or safety verification role in the UK and elsewhere.

Atkins Ltd clearly demonstrated their understanding of the resourcing issues related to providing technical support to a project that will vary in its requirement through the duration of the project lifecycle. The Atkins Ltd team was able to detail the level of technical support it believed SPT would require through each stage of the project and how the consistent and reliable delivery of this support would be managed through the provision of a tried and tested team structure and via a suite of well-established processes and procedures; this verified through a proven delivery record on similar projects. Crucially they explained in detail, their resource resilience plans, which included specific named individuals as 'stand by' or complimentary resources.

While each of the tenderers offered project management support from a local Glasgow office with a level of technical support being provided from other UK and European offices, the breadth of local technical support, the fact that there were no external resource requirements and the proposal that further resource would be moved to Glasgow to support peaks in the programmed workload provided additional assurance to the panel, that the dedicated team proposed by Atkins Ltd would be retained for the duration of the project and be managed and deployed to meet the project needs.

Atkins Ltd demonstrated the breadth of their understanding of the specific requirements of the rolling stock and control systems project through a complete and comprehensive review of the high level activities initially proposed by SPT in the tender documentation, a key differential between Atkins Ltd and other tenderers. The Atkins Ltd submission comprehensively assessed the level of support SPT had initially identified, proposing a detailed breakdown of activities and key interventions

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that they believed would be required to ensure the successful delivery of the project and the attainment of a Safety Certificate from the ORR.

The Atkins Ltd technical team elucidated on this input assessment during their presentation and through their extensive experience of similar projects both in the UK and abroad, identified further specific areas of activity and risk that had not been identified by either SPT or the MSA Contractor that would require immediate and long term management.

Further, the identification of possible added value and additional support that Atkins Ltd could provide, in areas such as Unattended Train Operation, depot management and system maintenance, gave the panel additional confidence in the true value of their submission.

As specific members of the proposed Atkins Ltd team were also directly involved in the installation of the current subway signalling and control system, their knowledge of the subway system and its peculiarities and constraints meant that they were able to provide comprehensive information on how the migration strategy between the old and new systems might be managed and the associated risks mitigated.

Overall the Atkins Ltd proposal provided the panel with the highest degree of confidence that they fully understood the scope and level of technical support required and that they would be able to deliver this commission in a collaborative, supportive and professional manner.

4. Conclusions

The tender submission by Atkins Ltd was assessed to be the most economically advantageous tender taking account of both quality and score as outlined in the tendering criteria and is recommended as the preferred tenderer.

5. Further information

As noted, the proposed contract is a reimbursable (time charge) form of contract, which in effect will act as a call off to provide the level of support required and react to the varying needs of the construction programme.

Based on analysis and consideration of the rolling stock programme, it is anticipated that the input of these services will vary throughout the duration of the delivery programme and will be very much dependant on arising issues and emerging need against the submitted information from the rolling stock manufacturer. As such a spend profile for CTA input cannot be accurately defined at this stage, however an expected level of input has been forecast based on industry advice on similar projects and from querying the tenderers as part of the tender review process. It is currently forecast that spend on CTA inputs, could on average, equate to circa £270,000 per annum for the duration of the rolling stock contract (including risk and contingency). The rolling stock contract is forecast to last for a period of approximately 5-6 years, though there may be a need for ongoing technical support beyond this period in support of any arising issues with the new system.

It is therefore proposed to award a contract of 5 years initial duration with an optional further 2 year extension (reviewed and awarded on a year by year basis after year 5), potentially requiring a total overall budget of £1.9m, should the full 2 year extension be taken up. The call off nature of the contract however allows flexibility on the actual amount required and effective management will be in place to ensure that call offs against the contract are delivered efficiently and within the approved budget.

6. Committee action

The Committee is recommended to approve the award of a contract to Atkins Ltd to provide Client Technical Advisor Services for the New Rolling Stock & Control project with a contract budget of up to £1.90m (excl. VAT) to cover an initial 5 year award (£1.35m), with the option to extend for a further 2 years (£550k).

7. Consequences

Policy consequences	<i>None identified.</i>
Legal consequences	<i>The award of the contract is to be made as a call off against the SPT Design & Technical Services Framework.</i>
Financial consequences	<i>The costs proposed are accommodated within the 2016/17–18/19 Subway Modernisation capital budget.</i>
Personnel consequences	<i>None</i>
Equalities consequences	<i>None</i>
Risk consequences	<i>Reduction of risk to the Rolling Stock project through the appointment of a technical support services. As this is a reimbursable (time recharge) commission, the level of input will be dependent on the needs of the main works construction programme. A risk & contingency allowance has been included within budget.</i>

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