Committee report

Subway Tunnel Lining Technical Support – award of contract

Committee Strategy and Programmes

Date of meeting 10 May 2019 **Date of report** 17 April 2019

Report by Senior Director (Subway)

1. Object of report

To recommend for approval the award of a contract for the provision of tunnel lining technical support to COWI UK Ltd.

2. Background

2.1 Requirement summary

Effective management of the 10.5km twin tunnel infrastructure is vital to the safe and reliable operation of the Subway. To provide assurance of the on-going fitness for purpose of the tunnels, SPT engages suitably qualified engineers to undertake a detailed survey and Condition Assessment on a 5 yearly basis. The most recent such survey and assessment was undertaken in early 2018. As expected in a tunnel over 120yrs old, the survey identified areas requiring remediation and categorised them in terms of their level of criticality and assigned a recommended timeframe for rectification. The 2018 assessment identified 19 priority 1 and a further 414 priority 2 areas for which remedial works should be undertaken within 2 years. A further 11,000 lower priority areas were identified where remediation within 5 years was recommended.

Between 2015 and early 2018 SPT engaged in a programme of tunnel lining improvement works which was carried out by Freyssinet. It should be noted that the work undertaken by this contract centred on the highest priority sections of the Subway system (five out of fifteen sections). The range and location of issues outlined in the latest Condition Assessment (undertaken post Freyssinet works) highlights the importance of a rolling programme of works to manage the tunnel infrastructure.

As a result of the Freyssinet contract, there is now a much improved understanding of the common problems affecting the tunnel infrastructure, and a library of common methods to remediate the problems. Furthermore, it is important that the engineering consultants understand the practical considerations of carrying out the work whilst optimising possessions and access arrangements thus minimising disruption to operations and other on-going in-tunnel activities. Successful management of these risks will be of heightened importance as the Rolling Stock and Control System Project progresses to phases requiring extensive tunnel access.

It is anticipated that the requirement for a Consultancy to provide on-going Technical Support for the tunnel infrastructure will remain for some period of time until the 5 yearly survey and assessment reports find that the number of remedial issues reduce to an acceptable level. A long term relationship with the winning consultancy will ensure increasing efficiencies, that the risks are managed to an adequate level, and that cost benefits can be achieved.

SPT is therefore seeking to secure the technical support of a consultant with specialist expertise and experience in tunnelling, geotechnical, environmental, structural, and civil engineering.

2.2 Aims and objectives

The overall aims and objectives of the tunnel lining technical support contract are:

- To ensure accurate and appropriate scoping of a tunnel lining works contract which minimises the risk of any issues which may affect the delivery of the Subway service, whilst maximising cost certainty and ensuring that works are correctly targeted;
- To ensure tunnel lining works are undertaken in accordance with suitably robust designs that optimise improvements in a cost effective manner, with risks controlled and minimised during and after the implementation phase;
- To ensure continual improvements in quality and efficiency throughout the duration of the works contract, without compromising safety;
- To ensure best value through building on lessons learned from the 2015-2018 tunnel lining improvement contract;
- To ensure requisite depth and breadth of technical expertise are available prior to and during delivery of the works contract; and
- To establish a defined risk based approach to management of key long standing defects including historical cracks in the tunnel lining and water ingress at St George's Cross.

3. Outline of proposals

3.1 Scope of services

SPT invited consultants to tender for a technical support contract to:

- Develop a detailed scope of work, along with associated reference designs and requirements (including a bill of quantities), for issue as part of an Invitation to Tender (ITT) for a five-year tunnel lining works contract with a Principal Contactor (PC). The designs will principally cover priority 1 and 2 defects from the 2018 tunnel condition assessment and annulus void filling between Hillhead and Kelvinhall. Designs will build on those developed as part of the 2015-2018 project and subsequent to appointment of the PC, will be subject to continual review throughout the duration of the works, taking account of the PC's capabilities and performance, any encountered issues, and any observed opportunities to innovate in order to improve quality and/or efficiency.
- Provide technical support during the tendering of the works contract (for example, presenting reference designs to tenderers and responding to technical queries).

- Act as Principal Designer for the tunnel lining works in accordance with Construction, Design and Management (CDM) Regulations 2015.
- Develop and implement a crack mapping scheme to obtain details of existing cracks. Develop acceptability criteria (based on risk, reflecting likelihood and severity of potential crack growth) and assess each crack against the criteria in order to identify any requirements for repair, continuous monitoring or periodic measurement.
- Undertake specific review of water ingress in the outer circle near the entry headwall at St George's Cross (i.e. around OKBSG148 (OAR155+3)), identifying the likely cause, assessing resultant risks to the infrastructure, defining remedial measures in order to mitigate the associated risks, and overseeing implementation of such measures through the tunnel lining works contract and/or through internal SPT resource, where appropriate.

3.2 Tender assessment process

The tender was issued via the SPT Design Technical and Professional Services (DTPS) Framework as a mini competition against Lot 7 (Civil and Structural Engineering) in February 2019.

The invitation to tender was issued as an NEC Profession Services Contract with Main Option G, which provides for the appointment of a consultant for an agreed period of time based on a priced task schedule and staff rates for different grades of staff.

The tender assessment and award was based on the most economically advantageous tender against a 60:40 quality:cost split. Quality was given a higher rating as the experience and expertise of the specialist engineering team are key requirements. Cost assessment was based on submitted cost estimates for three pre-defined lump sum tasks, namely: development of scope of work for the PC works contract, crack mapping and St George's Cross water ingress review.

The tender quality submission required tenderers to respond to a set of questions to prove their experience and design capability and fully explain their delivery plans and methodology proposals in order to provide a level of confidence in their understanding of the brief. The questions also allowed tenderers to identify where they considered they could add real benefit and value to the commission.

Three submissions were received in response to the tender.

The evaluation results are:

Supplier Name	Quality Score	Price Score	Total Price + Quality
COWI UK Ltd	60	28	88
Arup	60	19	80
WSP UK Ltd	40	40	79

4. Conclusion

The submission by COWI UK Ltd was assessed to be the most economically advantageous tender taking account of both quality and price as outlined in the tendering criteria.

5. Further information

Costs for the initial three tasks are pre-defined (£132,420), for all other tasks the consultant will submit priced task schedule for SPT approval. This will include technical support tasks prior to and throughout the duration of the proposed five year works contract. The rates for all such task schedules will be capped at those specified in the initial proposal. Accordingly, the contract in effect will act as a call off to provide the level of support required and react to the varying needs of the works programme.

An annual technical support budget of £250,000 per annum may be required throughout the five-year duration of main works contract. This may not be evenly distributed across all years, with higher demand expected in the early years of the contract. The call off nature of the contract 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.

6. Committee action

It is recommended that the Committee approves the award of a contract to COWI UK Ltd for a six-year term contract for tunnel lining technical support for an initial value of £132,420 with future years up to £250,000 per annum.

7. Consequences

Policy consequences	*None identified.*
Legal consequences	*The award of the contract is to be made as a call off against the SPT Design Technical and Professional Services Framework.*
Financial consequences	*The call-off contract costs will be accommodated within the capital budget.*
Personnel consequences	*None identified.*
Equalities consequences	*None identified.*
Risk consequences	*After the initial pre-works phase of this commission, the level of input will be dependent on the needs of the main works construction programme.*

Name	**Charles Hoskins**	**Name**	**Gordon Maclennan**
Title	**Senior Director**	**Title**	**Chief Executive**

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