

London gets FIRED-uP with smarter fire engines London Fire Brigade, United Kingdom

Background

London Fire Brigade (LFB) is one of the largest firefighting organisations in the world, providing services to a resident population of 8.2 million people. It attends some 115,000 emergencies every year, including about 27,000 fires. Its fleet consists of over 500 vehicles, including pumping appliances, aerial platform ladders, fire rescue units and other specialist vehicles. Key environmental issues for LFB are reducing carbon emissions, waste, and water consumption, and preventing ecological harm. This ties into the Brigade's overall target for a 45% reduction in CO₂ emissions from its operations by 2020, measured against a 1990 baseline. Other greenhouse gas and particulate matter emissions are not currently measured, however there is a need to address these in line with evolving air quality policy for London and the Mayor's targets.

Procurement objectives

In 2012 LFB was granted funding for the FIRED-uP project – a partnership with the City and Fire Brigade of Ghent, Belgium. This is funded under the EU Competitiveness and Innovation Programme with the aim of promoting public procurement of innovation. The focus of FIRED-uP is on the environmental performance of frontline firefighting vehicles and how this can be improved by applying new ideas and technologies. The first phase of the project was dedicated to research and market engagement, the results of which are described in a series of reports published on the [project website](#). Based on these activities, LFB selected vehicle telematics and equipment tagging as the two areas of greatest interest for procurement. Two framework agreements were awarded in November 2014 and pilots are currently being run on the newly developed systems.

Implementation of approach

The market engagement phase provided valuable input for the specification of the telematics and tagging systems, and the choice of procurement procedure. As the requirements were complex and would benefit from discussion with potential suppliers, the competitive dialogue procedure was chosen. An output-based specification was used, meaning that suppliers were asked to commit to performance levels, rather than to provide a defined list of parts or meet specific standards. This allowed greater room for innovative proposals to be put forward, but also made the evaluation process more difficult.

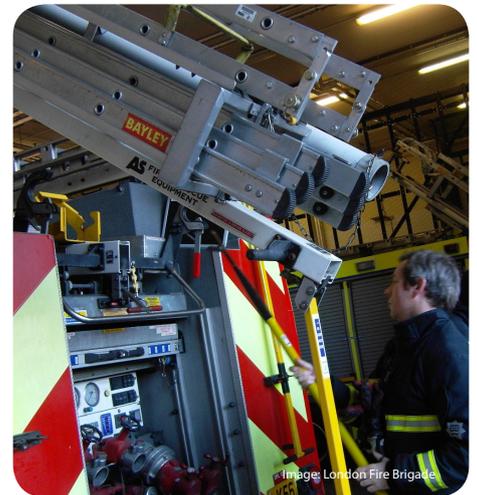
Subject matter of the contract: Lot 1 – Single operator framework agreement for supply of vehicle telematics hardware and software; Lot 2 – Single operator framework agreement for supply of equipment tagging system

Selection criteria: A pre-qualification questionnaire (PQQ) was developed to meet the specific needs of the project. This covered the following aspects of economic and financial standing, previous experience and technical capacity – with levels adapted to ensure that a range of businesses including small and medium-sized enterprises (SMEs) could compete:

- Previous experience related to Lot(s) applied for
- Technical capacity to monitor R&D/market developments in area of contract and train staff
- Quality assurance, health and safety and environmental management measures
- Financial standing and eligibility under Article 45 of Directive 2004/18/EC

Technical specifications: Lot 1 – The telematics system must report against a total of 36 indicators related to vehicle usage and performance, including:

- Real-time location
- Fuel consumption (linked to vehicle activity) and fuel tank volume
- Engine use (various parameters)
- Pump usage
- Emissions



The system is expected to provide secure access to accurate and relevant data regarding the above parameters, which represent the Authority's minimum requirements. The methods by which this information is gathered, stored, transmitted and compiled into reports are matters to be addressed by bidders in their tenders. Reports must be available in specified formats such as via an online portal, e-mail reports and raw data which can be used within other systems. Bidders are free to propose additional functionality for the system, and such proposals will be evaluated under the Award Criteria.

Lot 2 – Each vehicle carries approximately 250 items of equipment for use in firefighting, search and rescue operations. Tenderers are required to describe the technology and methodology they would use to tag these items and the associated hardware and software for scanning, inventory and exception reporting (i.e. reporting when there are deviations from expected stocks). The system should record item names, description and location, time and date of scanning, and maintenance records where relevant (daily, weekly, and quarterly checks.) Reporting should be possible both on-vehicle and via the Lot 1 telematics system.

Award criteria (for both lots):

Methodology — 30 %
Environmental impact — 12.5 %
Innovative character — 12.5 %
Maintenance and warranties — 10 %
Whole-life cost — 35 %

Contract performance clauses: A range of User Acceptance Criteria were developed for the Pilot for each Lot. These address matters such as vehicle availability, system and data availability, fuel consumption, emissions, maintenance events and technical support during the Pilot. These will be developed into more sophisticated key performance indicators for use in any subsequent contracts awarded under the frameworks.

Results

The procurement process took just under one year from advertisement and publication of the PQQ to award of both frameworks. A total of 25 companies/groupings submitted expressions of interest, of which eight were selected to participate in the dialogue (including four SMEs.) Initial Outline Proposals were submitted and this was followed up with dialogue meetings and the opportunity for inspection of LFB's existing fire engines and equipment. Final tenders were invited from four bidders for Lot 1 and three bidders for Lot 2. These included both a fixed cost for the six month Pilot and a list of priced items (including hardware, software, installation, data transmission and technical support) which can be purchased by any authorised user of the frameworks from the appointed suppliers during the lifetime of the frameworks. The frameworks are accessible to any Fire and Rescue Service in Europe or other bodies purchasing on their behalf.

LFB is piloting the two solutions during the period January – June 2015. Results from this Pilot will be presented at a workshop and final conference to be held during summer 2015. The results from the Pilot will determine whether the solutions are adopted across LFB's fleet and will also be made available to other interested brigades. The frameworks are available for use up until November 2018, further details and a User Guide can be obtained from the below contact.

Environmental impacts

Emergency response vehicles contribute to emissions and air pollution in urban areas, and also have a high footprint in terms of materials and embedded energy. In order to address these impacts, better information is needed about how vehicles and equipment are used and maintained. For example, it may be possible to reduce fuel consumption by adjusting driving behaviour on non-emergency journeys, or to alter the specification or maintenance requirements for equipment items. Monitoring water usage by pumping appliances can also help to ensure best use of this valuable resource. The overall objective of the FIRED-uP pilots is to enable more efficient management of frontline vehicles.

The introduction of progressively tighter vehicle standards such as EURO VI is reducing the tailpipe emissions from individual vehicles. However the size of fleets, usage patterns and emissions from other stages in the vehicle life-cycle mean that a significant carbon footprint still exists. Emissions of greenhouse gases and particulate matter occur in the design, manufacture, delivery, use and end-of-life of vehicles (referred to as the vehicle cycle) and the extraction, refining and transportation of fuels (referred to as the fuel cycle). Road transport alone contributes about one-fifth of the EU's total emissions of carbon dioxide (CO₂) and about 40% of its emissions of nitrogen oxides (NO_x). Decreasing emissions from transport requires behaviour change as well as improvements in technologies and infrastructure. The data gathered within FIRED-uP is expected to enable assessment of alternative fuels for firefighting vehicles based upon actual patterns of usage, as opposed to industry standards.

Lessons learned

Procurement of innovation takes time and is very different from the procurement of an existing solution. While the information gathered during the market consultation helped LFB to develop its requirements and expectations, there was still a lengthy process of ensuring bidders understood our objectives and were able to deliver within the envisioned timescales. In hindsight, there may have been a need for a 'detailed proposal' stage following discussion of outline proposals and vehicle inspections, but prior to final priced bids being submitted. This would have made it easier for suppliers to price accurately against the requirements and to ensure their subcontractors were in a position to deliver all required components and services.

The selection of participants for a competitive dialogue is also particularly challenging, as the authority's requirements will not be fully developed at the selection stage. Given the resources required to hold dialogue meetings and produce and evaluate successive rounds of documentation, it is common for only 3-4 participants to be invited. This can limit the field of competition and possibly work to the authority's disadvantage. One solution would be to invite a higher number of participants to submit brief outline proposals, with a reduction in the numbers then taking place by applying the award criteria. Alternatively, use of the new Innovation Partnership procedure may be suitable where the authority wishes to develop or pilot systems with more than one company simultaneously.

LFB and Ghent will report on all activities and outcomes from the project in the final report to be published in 2015.

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