LONDON FIRE BRIGADE

LFC-23-097y

Procurement of Misting Lance Technology

Report to:	Date:
Investment & Finance Board.....	28 September 2023
Commissioner's Board	18 October 2023
Deputy Mayor's Fire and Resilience Board.....	31 October 2023
London Fire Commissioner	

Report by:
Assistant Commissioner, Paul McCourt

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For publication

I agree the recommended decision below.

Andy Roe

London Fire Commissioner

Date This decision was remotely signed on 01 February 2024

PART ONE
Non-confidential facts and advice to the decision-maker

Executive Summary

The London Fire Brigade (LFB) operates in one of the most complex built environments in Europe. Frontline operational effectiveness can often depend upon the rapid deployment of firefighting equipment at scale, to mitigate against the growth of fire at an incident.

LFB does not currently carry equipment on front line appliances specifically designed to deal with fires occurring inside construction voids within buildings. This omission in LFB's tactical capability presents a risk for uncontrolled fire spread within voids, thus presenting additional risk to both public safety and to firefighter safety at incidents. Hence, this report seeks authority to commit capital expenditure of up to £242,714 for the procurement of misting lance technology and associated equipment. LFB plans to procure 122 misting lances in order to provide one piece of equipment per pump ladder appliance; each of LFB's 102 fire stations has a pump ladder appliance and, therefore, would have access to this equipment. The procurement will also include 10 additional lances for training and reserve stock. The costs include the development of a computer-based training package for all station-based staff, and level 1 and 2 operational incident commanders.

The report sets out the benefits of LFB having misting lance technology, which has been successfully used by other fire and rescue services in the United Kingdom. It explains that there would be benefits to firefighter safety and that other fire and rescue services have also found it beneficial for tackling fires in vehicles and wildfires.

The proposal supports the strategic ambitions set out in the Response section of the LFB's Community Risk Management Plan (CRMP) by closing the capability gap through the provision of technology and training, by "continuing to make improvements in our capabilities to respond to London's highest risks by upgrading and introducing new equipment and training". The current omission in LFB's tactical capability presents a risk for uncontrolled fire spread within voids, thus presenting additional risk to both public safety and to Firefighter safety at incidents. It also supports LFB's strategic ambitions to develop urban firefighting as a tactical core competency. This gap in capability has previously been recognised within the Transformation Plan and in LFB's Corporate Risk Registers.

Recommended decision

For the London Fire Commissioner

The London Fire Commissioner agrees that £242,714 be allocated from the CRMP reserve for the purpose of the procurement of misting lance technology and associated equipment, as set out in the report, and approves ongoing revenue expenditure of £10,980 per annum for maintenance costs.

1 Introduction and background

1.1 LFB operates in one of the most complex built environments in Europe. Frontline operational effectiveness can often depend upon the rapid deployment of firefighting equipment at scale, to mitigate against the growth of fire at an incident. This is recognised as a risk in LFB's Corporate Risk Register (risk OD1 - the increasing complexity of the built environment increases the risk to our communities and firefighters. This impacts LFB's ability and capacity to identify and mitigate hazardous factors in the built environment, for both new and legacy stock through Protection and Response activities). It was also recognised as a gap in capability in the Delivery Plan (Programme 3).

1.2 The proposal supports the Response section of LFB's Community Risk Management Plan (CRMP) by "continuing to make improvements in our capabilities to respond to London's highest risks by upgrading and introducing new equipment and training".

1.3 LFB does not currently carry any equipment on front line appliances specifically designed to deal with fires occurring inside construction voids within buildings. This omission in LFB's tactical capability presents a risk for uncontrolled fire spread within voids, thus presenting additional risk to both public safety and to firefighter safety at incidents. The proposal to provide misting lance technology to every pump ladder appliance means that LFB will be able to provide a better response in these situations.

1.4 The 'systemic failure' in the construction sector identified by Dame Judith Hackett (Independent Review of Building Regulations and Fire Safety) indicated that there is real potential for incorrect fire stopping in voids in some modern buildings.

1.5 LFB recognises that all buildings, regardless of age, are vulnerable to breaches in compartmentation due to damage, lack of maintenance and/or poor trade installations. Systemic failures in architecture or maintenance have resulted in incidents that have contributed to firefighter injuries and in some cases firefighter death.

1.6 LFB accident investigators have recommended that both equipment and training for firefighters are reviewed, to consider suitability for tackling void induced fires.

1.7 London's built environment presents the challenge of unseen fire spread; this is due to several factors including:

- Older building stock and those subject to multiple renovations or conversions under different building regulations, as these can present breaches of compartmentation and/or fire stopping.
- More modern buildings which are more vulnerable to unseen fire spread, due to poor standards of construction.
- Buildings made vulnerable to unseen fire spread, due to lack of maintenance and/or post-construction alterations, including the installation of utilities.

The number of compartmentation issues identified from Senior Fire Safety Officer (SFSO) reports in 2022 was 178, and therefore this can be regarded as a foreseeable risk.

- Fires involving roofs. On average the LFB attends 100 fires a year where roofs are involved. Nine incidents are recorded where voids are directly involved, and 83 where fire has spread to roofing through gaps or voids.

- Fires involving properties with cladding. The LFB has attended over 50 fires involving cladding materials in the past two years. The catastrophic impact of uncontrolled fires in clad buildings is universally recognised.

1.8 LFB's current initial response option is to cut open the building façade to expose the void, using saws, Halligan bars, or small tools, then applying water from a hose reel jet. Without misting lance technology, LFB currently does not have a suitable solution to provide operational incident commanders with a means of early intervention to deal with this type of risk.

1.9 Misting lance technology uses a high-pressure system to deliver finely dispersed water droplets into the fire compartment from the outside. A small opening is made into the compartment wall from the outside using power tools such as combi drills, then water mist is applied through the hole using a lance.

1.10 The application of the water mist system allows firefighters to suppress the fire conditions, without the need to fully open the compartment or void. In addition to fires within hidden voids, the equipment has other associated uses including fire suppression within commercial ducting, vehicle engine compartments, roof voids, basement fires, and supporting wildfire firefighting tactics.

2 Objectives and expected outcomes

2.1 Misting lances are a well-established and proven technology used within Fire and Rescue Services (FRS) both domestically and internationally with similar built environments to London. Merseyside, Leicestershire, and West Yorkshire FRS all carry misting lance technology on their front-line appliances. Hampshire and Isle of Wight, Cambridgeshire, Devon and Somerset and Kent FRSs also use misting lances and the technology is used in Brussels and Prague and fire services in the United States.

2.2 LFB considered three options to utilise misting lance technology: option 1 is to do nothing and has no costs but does not address the risks or LFB's gap in capability; option 2 is to provide misting lances on every pump ladder appliance at a cost of £242,714.00; and option 3 is to provide misting lances on every pump appliance on multi-appliance fire stations at a cost of £169,946.00. LFB considers option 2 to be the best option, as this provides operational incident commanders with the available specialist equipment to support and deliver on their tactical plans, in the earliest stages of a developing incident and it ensures that the provision of misting lance capability is not affected by the availability of pumps.

Benefits of Misting Lance Technology

2.3 The Business Case for the procurement of misting lances is attached at Appendix 2 and sets out in detail the project objectives how the use of this technology would be beneficial to LFB.

2.4 The provision of misting lance technology will have a direct benefit to the health and safety of firefighters by limiting their exposure in the fire compartment. Limiting time in the fire compartment will lower the exposure to heat and the inherent hazards of compartment firefighting.

2.5 The level of exposure to contaminants and products of combustion would be reduced as the firefighters using the misting lances would be away from carbonaceous material.

2.6 Using misting lance technology will reduce water damage to buildings from firefighting, as the lances provide a mist of high-pressure water at low quantity

2.7 Equipping fire appliances with misting lances will enable the provision of an immediately available firefighting capability for duct, void and cavity incidents.

2.8 Using this technology will create efficiencies by reducing the time in attendance at incidents and increasing/returning resource availability into the mobilising system. LFB will create a comparative report to measure current time at incidents in roofs and voids with post introduction.

Alternative uses

2.9 Fire and Rescue Services have also realised additional uses for misting lance technology, utilising the technology at incidents involving bin stores, bin chutes and vehicle fires (cars and vans in the load/luggage area and engine compartments).

2.10 Reports from Merseyside, Leicestershire and West Yorkshire Fire & Rescue Services have indicated reductions in time spent in attendance at incidents, as well as reductions in the quantity of water and resources required to safely resolve operational incidents.

2.11 Misting lance technology is also used by other fire and rescue services in the wildfire arena. The advantages of deploying misting lances in addition to percolating ('holey') hose, has previously been effectively demonstrated to LFB by the NFCC Wildfire leads from Northumberland Fire and Rescue Service.

2.12 Misting Lances produce a fine spray at high pressure, using a minimal volume of water,

therefore are considered an excellent option for use on wildfires.

2.13 Misting lances can create an increase in the humidity of dense vegetation, preventing fire spread through vegetative fuels. When deployed at scale, the technology can also be used for applying water to deep seated fires, as the lance can be driven into the ground, accessing fires and cooling fire gases beneath the soil surface.

2.14 The addition of the misting lance capability will introduce a new tactical advantage for efficiently creating firebreaks in deep seated wildfires. This will improve LFB's capability to respond to wildfires in line with organisational learning outcomes identified in the 2022 Major Incident Review, Extreme Weather Period.

Costs

2.15 The total costs for the introduction of misting lances includes the procurement of supporting equipment such as combination drills, and the development of a computer-based training package for all station-based staff, and level 1 and 2 operational incident commanders. These overall costs including fleet fitting, are detailed in Section 4 of the business case at Appendix 2.

2.16 The proposed capital expenditure is £242,714 and there will be an ongoing revenue requirement for maintenance costs of £10,980 per annum. The costs of this project will be met from the drawdown of the CRMP reserve

3 Equality comments

3.1 The LFC and the Deputy Mayor for Fire and Resilience are required to have due regard to the Public Sector Equality Duty (section 149 of the Equality Act 2010) when taking decisions. This in broad terms involves understanding the potential impact of policy and decisions on different people, taking this into account and then evidencing how decisions were reached.

3.2 It is important to note that consideration of the Public Sector Equality Duty is not a one-off task. The duty must be fulfilled before taking a decision, at the time of taking a decision, and after the decision has been taken.

3.3 The protected characteristics are: age, disability, gender reassignment, pregnancy and maternity, marriage and civil partnership (but only in respect of the requirements to have due regard to the need to eliminate discrimination), race (ethnic or national origins, colour, or nationality), religion or belief (including lack of belief), sex, and sexual orientation.

3.4 The Public Sector Equality Duty requires decision-takers in the exercise of all their functions, to have due regard to the need to:

- eliminate discrimination, harassment and victimisation and other prohibited conduct.
- advance equality of opportunity between people who share a relevant protected characteristic and persons who do not share it.
- foster good relations between people who share a relevant protected characteristic andpersons who do not share it.

3.5 Having due regard to the need to advance equality of opportunity between persons who share a relevant protected characteristic and persons who do not share it involves having due regard, in particular, to the need to:

- remove or minimise disadvantages suffered by persons who share a relevant protectedcharacteristic where those disadvantages are connected to that characteristic.
- take steps to meet the needs of persons who share a relevant protected characteristic thatare different from the needs of persons who do not share it.
- encourage persons who share a relevant protected characteristic to participate in publiclife or in any other activity in which participation by such persons is disproportionately low.

3.6 The steps involved in meeting the needs of disabled persons that are different from the needs of persons who are not disabled include steps to take account of disabled persons' disabilities.

3.7 Having due regard to the need to foster good relations between persons who share a relevant protected characteristic and persons who do not share it involves having due regard to the need to:

- tackle prejudice
- promote understanding.

3.8 An Equality Impact Assessment for this proposal was completed on 21 March 2023 and it was found to have a neutral impact on those with protected characteristics.

4 Other considerations

Workforce comments

4.1 Workforce engagement indicates that additional training and tools in the Firefighter's toolbox to deal with technically challenging fire dynamics will be welcomed. Trade Unions have been consulted and are supportive of the proposals. When the final equipment is selected this will be formally consulted with the representative bodies through the Brigade Joint Committee for Health and Safety at Work.

Sustainability comments

4.2 To ensure sustainability, all strategies, policies, and projects originating from the LFB should be analysed under the Sustainable Development Impact Assessment (SDIA) process. The SDIA process supports the Brigade to avoid or minimise environmental impact and take opportunities to improve social and economic outcomes in London through the service we provide.

Procurement comments

4.3 The procurement process will be carried out by Babcock Critical Services and will be carried out under a competitive tender process.

4.4 This will follow the usual process, where Babcock will produce a Tender Specification which details all the LFB requirements and gives them a score, which relates to the importance that the feature.

4.5 There are four companies that supply branches that meet the criteria detailed, so all of these will be invited to tender.

4.6 Once the tenders are received, they will be scored using the scores detailed in the tender specification. Additional scores will be included which cover the company's financial standing and ability to support the product over its expected life. In this case it would be a 7-year operational life.

4.7 The scoring is divided between technical compliance and financials, with a ratio of 60% of the score attributed to the procurement and financial aspects, with 40% on the products engineering aspects. The scoring process involves OP&A, FLEET and Babcock.

4.8 The product that scores the highest will usually be the one that is accepted; however, operational tests are also carried out which may highlight issues or concerns which might override the highest scoring product.

4.9 Babcock will negotiate the contract to supply the product with the selected supplier and will manage the ongoing support and repair of the product for the full operational life. The cost of this is covered within the slot price, which must be agreed as part of the procurement process.

4.10 The timescales for the procurement will be agreed once funding for the project has been approved.

Communications comments

4.11 Communication for this will be created closer to the launch of the equipment and training.

Change Group Feedback

4.12 LFB's Change Group considered the proposal, and its comments are summarised in Appendix 1.

5 Financial comments

5.1 There will be an ongoing revenue requirement for maintenance costs of £10,980 per annum which will be paid from the base budget within Property and TSS. The impact on the Capital plan for 2024/25 is also included as part of a revised capital plan as this report sets out £242,714 of capital expenditure. The costs of this project shall be met from the drawdown of the Fire Safety Improvement, of which there is currently a balance of over £29,000,000 and will be a one-off draw on this reserve.

6 Legal comments

6.1 Under section 9 of the Policing and Crime Act 2017, the London Fire Commissioner (the "Commissioner") is established as a corporation sole with the Mayor appointing the occupant of that office. Under section 327D of the GLA Act 1999, as amended by the Policing and Crime Act 2017, the Mayor may issue to the Commissioner specific or general directions as to the manner in which the holder of that office is to exercise his or her functions.

6.2 By direction dated 1 April 2018, the Mayor set out those matters, for which the Commissioner would require the prior approval of either the Mayor or the Deputy Mayor for Fire and Resilience (the "Deputy Mayor").

6.3 Paragraph (b) of Part 2 of the said direction requires the Commissioner to seek the prior approval of the Deputy Mayor before “[a] commitment to expenditure (capital or revenue) of £150,000 or above as identified in accordance with normal accounting practices…”.

6.4 The Deputy Mayor's approval is accordingly required for the Commissioner to procure the misting lance technology set out in this report.

6.5 The proposed procurement route is aligned with the London Fire Commissioner’s Scheme of Governance relating to Procurement and the contractual arrangements with Babcock.

List of appendices

Appendix	Title	Open or confidential*
1	Change Group comments	Open
2	Misting Lances Business Case	Confidential

Part two confidentiality

Only the facts or advice considered to be exempt from disclosure under the FOI Act should be in the separate Part Two form, together with the legal rationale for non-publication.

Is there a Part Two form: NO

Appendix 1

Comments from Change Group

The Change Group considered the proposal and the comments arising from the discussion are summarised below:

1. Has enough funding been asked for - to accommodate SERT, Capitalguard, spares? It was responded that the funding in the BC has been increased as a result.
2. Can it be confirmed in the BC that the training requirement is a CBT package and station drills (so no lances required for central training). It was responded that the CBT package has been added into the scope of the work.
3. Fleet/stowage - can it be included that discussions are being held in regard to stowage, you mentioned that the BC needs to be adjusted to reflect more accurate costs for Fleet modification. It was responded that a comment has been added alongside the costs.
4. It was noted the BC had a strong strategic fit - the project was noted as being of high importance and relatively low cost. There are a number of potential ways it could be funded, and it wasn't felt this had to be resolved before it is presented to IFB.
5. Could it be considered that the BC includes how we will quantify and measure the benefits. There needs to be a benefit which is around being compatible with our existing batteries, in order to reduce cost and stowage demand. It was responded that this will be added to the drill selection.
6. It was asked (by email) about whether the misting lances could just be kept on the OSUs – "I believe the response was that the most benefit will be had from having them as early on as possible in the incident. Is that correct?" It was responded that the misting lances will be a first line attack, and the delayed response of OSUs would create a delay that would impact on the effectiveness.
7. It was also asked about procurement (by email) - as this item will need to use the existing charging infrastructure which limits the market. SG responded that they are only looking for standard lances, and so our current market limitations would not inhibit the procurement.