



LONDON FIRE BRIGADE

Decision title

New Portable Radio Repeaters

Recommendation by
Assistant Commissioner, Operational Policy and Assurance

Decision Number
LFC-0423-D

Protective marking: **NOT PROTECTIVELY MARKED**

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Summary

Report LFC-0423 discusses the usage case and grounds for expenditure on dual -mode portable repeaters for operational use ("repeaters") and recommends the purchase of repeaters along with linking cable and batteries.

If approved, this procurement supports the Delivering Excellence aim of the Transformation plan by improving communications capability at incidents which will in turn provide a better and safer working environment for operational staff and an enhanced service to the public.

Decision

That the London Fire Commissioner approves the expenditure of £149,012 for the purchase by direct award to Radiocom of the Logic RCL Repeater.

Andy Roe
London Fire Commissioner

This decision was remotely
Date signed on Wednesday 07 October

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New Portable Radio Repeaters

Report to	Date
Operational Delivery DB	07 October 2020
Report by	Report number
Assistant Commissioner, Operational Policy and Assurance	LFC-0423

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Summary

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Recommended decision(s)

That the Operational Delivery Directorate Board supports the purchase by direct award of the Logic RCL1 Repeater.

Background

1. The Brigade currently uses portable repeaters to boost radio signals. The two main usages are when using radios inside buildings, for example, at a fire on the 14th floor of a high rise building, a repeater could be deployed at the bridgehead on the 12th to ensure that a robust communications system covers the whole incident ground ; or below ground e.g. in a sewer or drain. In all instances the repeater operates to extend the range of radio communications allowing firefighters to talk to each other while undertaking a wide variety of operations.
2. Currently a portable repeater is carried on each Command Unit, reserves are used for spares by the radio group and one has been provided to Babcock for training.
3. The current repeaters have been in use since 2010 and due to unavailability of replacement components they are coming to the end of their useful life. If more components fail repeaters will become un-serviceable which is a risk to operational procedures through delays in establishing effective incident communications.
4. Additionally, the Brigade is moving to replace its current radios with dual mode (analogue/digital) radios with these due to come into service in 2021. The new dual mode radios will require dual mode repeaters to operate in the circumstances described in para 1 above.
5. For these reasons the Brigade needs to purchase new repeaters as soon as possible.

6. Replacement repeaters were identified as a deliverable of the Fireground Radio project which commenced in December 2018 and £200k was budgeted as a capital cost for their purchase. When the Fireground radio project was merged into the RPE Replacement project in December 2019 all the funding including that allocated for repeaters was transferred to OPA.

LFB requirements

7. The Brigade has set the following requirements for a repeater:
 - High rise: That the repeater (working singly or as part of a dual repeater relay) allows a signal to be transferred from ground level (simulated IC position) to the top of 1 Canada Square (simulated high rise of 50 floors plus pyramid roof c.230m total height).
 - Below ground: That (working singly, as part of a dual repeater relay or with a 'leaky feeder') they should show improved signal range underground and allow for signal transmission at all test sites throughout a simulated underground environment (the simulated environment used was Iron Mountain Deep level document storage, this facility is 35 metres below ground level and consisting of two parallel tunnels approximately 400 metres in length with several corridors and storage rooms leading off with the test conducted in multiple locations throughout to simulate a firefighting/search operation).
 - Minimise interference: Suppliers must be able to demonstrate operationally acceptable modes of operations to minimise or eliminate radio interference while repeaters are in use.

Engagement with the Market

8. Initial supplier engagement was undertaken during March and April 2019. Key members of the project team met with 17 manufacturers and resellers from across the market. Due to London's varied and complex built environment, the repeater required several functions that are not standard in 'off the shelf' repeaters. Two repeaters were identified to us, the Logic RCL1 Repeater provided by Radiocom and the current solution in use provided by the Simoco TSR 2000.
9. The Simoco repeater was discarded early on. Although it meets our current requirements, it would not be suitable with the introduction of dual-mode radios.
10. The use of our current repeaters was demonstrated at a subsequent 'suppliers' day' in November 2019, this was well attended. As a result of this only Radiocom came forward with a potential solution.

Market research and response

11. The Brigade has undertaken extensive discussions with the market and independently researched the repeaters available. Currently only a single repeater, produced by Radiocom, is known to meet the Brigade's requirements.
12. Radiocom have subjected their repeater to the following tests and the Brigade has confirmed the results:
 - High rise: Tests were repeated at 1 Canada Square on 8 August 2020. A single repeater located on the 28th floor was able to boost signal between a radio on the ground floor and a radio on the 45th floor.

Two repeaters, one on the 28th floor linked by cable to one on the 45th floor, boosted signals up to the highest level of offices on the 50th floor and on into service levels within the pyramid roof.

The final test was repeated in digital mode demonstrating superior clarity and signal strength compared to analogue mode.

- Below ground: Tests were carried out at the Iron Mountain Deep level document storage facility in Stockwell on 26 August.
A single repeater considerably improved coverage below ground. A leaky feeder cable which propagates radio signals in confined areas was connected to the repeater, further improving coverage.

Two repeaters linked by cable provided good coverage in all areas tested including boosting the signal through fire doors.

- Minimise interference: Tests were carried out on 04 September 2020 at Park Royal Fire Station to ascertain if operating two repeaters on different channels at an incident caused interference to radio users.
A test of simultaneous working with one repeater on channel 2 and the other on channel 5 was carried out. The tests demonstrated that the repeaters should be sited 25 to 30 metres apart to avoid cross channel interference. This was considered to be operationally achievable in most circumstances where repeaters were anticipated to be used. Clear instruction will be issued on correct operational deployment of repeaters if use on different channels will be required.

13. Additionally, for information only, the Radiocoms repeater, the Logic RCL1, weighs under 12kg compared to 14.5kg for the current repeater and the drum of CAT 6 linking cable weighs 6.8kg compared to 18.5 kg for the current linking cable so being lighter the equipment will require less physical effort to deploy.

Grenfell Tower Inquiry recommendations

14. One of the recommendations from the Inquiry is to improve incident communications.

Grenfell Tower Inquiry: Phase 1 report overview by The Rt Hon Sir Martin Moore-Bick October 2019.

Chapter 33: Recommendations. 11 Equipment 33.21

"Some of the equipment in use by the LFB, in particular the radio equipment, was unreliable or in some cases failed to work at all. I therefore recommend a) that the LFB urgently take steps to obtain equipment that enables firefighters wearing helmets and breathing apparatus to communicate with the bridgehead effectively, including when operating in high-rise building"

Section 28.130 from the Phase 1 narrative of the Inquiry makes it clear that 'from the earliest stages of the incident the deployment of firefighters inside the tower was plagued by generally ineffective communications.'

15. New, more powerful radios are being procured as the first phase of this improvement, and the new repeaters would go a long way in enhancing the effectiveness of the radios at incidents in high rise buildings or in sub surface environments. The incident communications improvements will be completed by the main rollout of BA with integrated communications. The Repeaters and linking cable are considerably lighter than current LFB equipment so will require less physical effort to deploy, again, a recommendation from the Inquiry.

16. Additionally, it is proposed that instead of a single repeater per Command Unit it is proposed that two units are carried by each of the eight Command Units and one provided to Babcock for training (total of 17 repeaters). This additional resource would, as demonstrated by the testing above, significantly improve radio range in all environments tested while also providing a more resilient system as each Command Unit effectively carries a back up for instances where only a single repeater is required.

Costs

17. Total cost is £149,012, this is comprised of three elements:
 - 17 x repeaters at £7,284 each = £123,828, 16 x drums of CAT 6 armoured linking cable at £209 each = £3,344,
 - 16 x batteries at £1,365 each = £21,840.

Conclusion

18. The purchase of these repeaters will enhance radio signal propagation and therefore enable us to provide a more robust, continuous radio communications network at incidents which, in turn will improve the safety of our firefighters and deliver a better service to the public.
19. The report will be presented at Corporate Services Directorate Board for consultation.

Finance comments

20. This report recommends that the purchase of portable radio repeaters is agreed at a total capital cost of £149,012. This will be funded from the £900k Fireground Radios capital budget, which is currently profiled to 2021/22. This budget will be re-profiled to account for this expenditure.
21. If this additional expenditure is funded through borrowing this will result in capital financing costs of £34,273 annually, made up of £29,803 in minimum revenue provision and £4,470 in interest payments, based on a five-year asset life and an interest rate of 3%.

Workforce comments

22. Representative bodies have been kept abreast of progress throughout and are supportive of this work.

Legal comments

23. The General Counsel has reviewed this report and notes that the arrangement proposed is consistent with the Commissioner's power under section 5A of the Fire and Rescue Services Act 2004 to procure services they consider appropriate for purposes incidental to their functional purposes.
24. Furthermore, under section 7 (2)(a) of the aforementioned legislation, the Commissioner has the power to secure the provision of personnel, services and equipment necessary to efficiently meet all normal requirements for firefighting.
25. General Counsel has discussed this matter with the Procurement Officer responsible and notes that the proposed procurement, a non-competitive tender under and in accordance with a Crown Commercial Service Framework, will be undertaken in compliance with the Public Contracts Regulations 2015 and the Commissioner's Procurement Standing Orders.

Sustainability implications

26. Any new procurement activity will need to be undertaken in line with the GLA group Responsible Procurement policy. As part of delivery of this policy, the Greater London Authority group is currently in the process of affiliating with Electronics Watch, which requires the inclusion of additional terms and conditions for contracts with significant hardware purchases. The terms aim to improve the transparency of the supply chain and management of any non-compliance with labour standards identified with the support of Electronics Watch. Where hardware replacement of considerable value forms part of the requirement for any of the options proposed, additional terms covering ethical sourcing will need to be included in the tender.

Equalities implications

27. The London Fire Commissioner and decision takers are required to have due regard to the Public Sector Equality Duty (s149 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.
28. 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.
29. 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, Sexual orientation.
30. The Public Sector Equality Duty requires us, in the exercise of all our functions (i.e. everything we do), to have due regard to the need to:
 - a) Eliminate discrimination, harassment and victimisation and other prohibited conduct.
 - b) Advance equality of opportunity between people who share a relevant protected characteristic and persons who do not share it.
 - c) Foster good relations between people who share a relevant protected characteristic and persons who do not share it.
31. 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:
 - a) remove or minimise disadvantages suffered by persons who share a relevant protected characteristic where those disadvantages are connected to that characteristic;
 - b) take steps to meet the needs of persons who share a relevant protected characteristic that are different from the needs of persons who do not share it (;
 - c) encourage persons who share a relevant protected characteristic to participate in public life or in any other activity in which participation by such persons is disproportionately low.
32. The steps involved in meeting the needs of disabled persons that are different from the needs of persons who are not disabled include, in particular, steps to take account of disabled persons' disabilities.

33. 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, in particular, to the need to—
- a) tackle prejudice, and
 - b) promote understanding.
34. An Equality Impact Assessment (EIA) will be undertaken prior to purchase of the equipment.

List of Appendices

Appendix	Title	Protective Marking
1.	None	