

LMR Network Services Market Investigation

Scope for Competition and Market Definition

13 May 2022

This is one of a series of consultative working papers which will be published during the course of the investigation. This paper should be read alongside the issues statement and the other working papers which accompany it. These papers do not form the inquiry group's provisional findings. The group is carrying forward its information-gathering and analysis work and will proceed to prepare its provisional findings, which are currently scheduled for publication in June, taking into consideration responses to the consultation on the issues statement and the working papers. Parties wishing to comment on this paper should send their comments to MRN@cma.gov.uk by 27 May 2022.

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The Competition and Markets Authority has excluded from this published version of the working paper information which the inquiry group considers should be excluded having regard to the three considerations set out in section 244 of the Enterprise Act 2002 (specified information: considerations relevant to disclosure). The omissions are indicated by [✂]. [Some numbers have been replaced by a range. These are shown in square brackets.] [Non-sensitive wording is also indicated in square brackets.]

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Executive Summary

1. The purpose of this paper is to:
 - (a) Present our emerging thinking on submissions made by Motorola about the extent to which there is scope for competition in the market; and
 - (b) outline our emerging thinking on market definition.
2. This working paper is not seeking to undertake a competitive assessment of the market or assess whether a feature or features of the market give rise to an AEC – this will be considered elsewhere as our investigation continues.

Scope for competition

3. Motorola has made several submissions about the extent to which there is scope for competition in the market for the supply of communications network services for public safety and ancillary services in Great Britain. In these submissions it has suggested that the main form of competition which exists is 'competition for the market'. It has also set out its view that competition for the Airwave service has never taken place since the original tender and that there is no competitive interaction between the Airwave Network and ESN.¹
4. Our emerging view is that we agree with Motorola that the original tender process - which led to Airwave Solutions becoming a monopoly provider - was a relevant form of competition in this market. However, we consider that there are two other significant processes which have affected the levels of prices, quality and innovation.
5. First, on a number of occasions since the tender was concluded, negotiations have taken place between Airwave Solutions and the Home Office. These negotiations related to changes to contractual terms, including the price and duration of Airwave's service provision. On several occasions the negotiations resulted in significant changes to business and contractual relationships.
6. To the extent negotiations were uncompetitive and Airwave's customers achieved poor outcomes in those negotiations (such as high prices), this may be the result of features of the market, such as the market's monopoly structure. We therefore consider it appropriate to investigate how competition in negotiations, and the outcomes of negotiations, have been impacted by features of the market, including the monopoly market structure.

¹ [Motorola response to issues statement, para 11](#)

7. Second, ESN's key suppliers (which include Motorola) are investing in efforts to develop the ESN network and bring it to fruition. Greater efforts and investments made by ESN's key suppliers, are likely to lead to an earlier ESN launch date; lower levels of effort or investment will be associated with ESN launching later. The development of ESN is also likely to affect Airwave Solutions' revenue and profitability by impacting the length of time that customers use the Airwave Network.
8. We therefore consider it appropriate to investigate whether the dual role of Motorola is likely to have an impact on the level of effort Motorola is incentivised to make into developing ESN and the extent to which this may delay ESN and prolong Airwave's monopoly position. We also shall consider whether Motorola's dual role has the potential to disincentivise it from taking steps to improve the Airwave offering.
9. Whilst we agree that understanding the nature of competition in the original tender, and the terms of the original contract, have some relevance, our current view is that in order to understand how prices, quality and innovation are currently set within the market it is necessary to assess the Parties' relative market positions and incentives at the present time.

Market Definition

10. We have considered the relevant economic market by considering the degree of demand-side substitutability and, where relevant, supply-side constraints on Airwave Solutions. Our emerging view is that the market is the supply of communications network services for public safety and ancillary services in Great Britain. We consider that both the existing Tetra Airwave service and the LTE network services for public services (i.e. ESN) should be within the market as well as ancillary services.
 - (a) Whilst there are currently no alternatives to the Airwave Network in the short run, as described above, there is a long run competitive interaction between ESN and the Airwave Network. ESN will fulfil the same demand-side need as the Airwave Network and is being developed by suppliers who, in a well-functioning market, would be incentivised to acquire customers who currently use the Airwave Network as quickly as possible. The development of ESN will also impact the profits and revenues of Airwave Solutions. Our emerging view is that this long-run substitutability supports including LTE services in the market.
 - (b) Our evidence suggests that for many customers it is either difficult, or in some cases not at all possible, to choose a different provider for ancillary services than for the overall network. This suggests that many customers

do not have the option to choose a separate provider for these services. Our emerging view therefore is that because the competitive conditions for these ancillary services are likely to be similar as those for the overall network services, ancillary services should be included within the market.

Scope for Competition

Introduction

11. In this subsection we begin by setting out some relevant information from the CMA's guidelines in relation to the concept of competition in the context of market investigations, and by summarising Motorola's key submissions on how competition works and, in particular, the extent to which there is scope for competition for the services supplied by Airwave Solutions. We then set out the broad structure of how we will consider these submissions in this section of the paper.
12. Competition is a process of rivalry as firms seek to win customers' business. It creates incentives for firms to meet the existing and future needs of customers effectively and efficiently—by cutting prices, increasing output, improving quality or variety, or introducing new and better products, often through innovation. Supplying the products that customers want rewards firms with a greater share of sales. Beneficial effects of competition may also come from expansion by efficient firms and the entry into the market of new firms with innovative products, processes and business models, and the exit of less successful ones.² Investment that does not lead to the immediate acquisition of customers, but which may do so in the future, is a form of competition.
13. Competition can work in different ways both within and across sectors. Different competitive process can potentially affect different parameters of competition or market outcomes.
14. Motorola has made a number of submissions which relate to how competition works in general, or which relate to the scope for competition—in particular, a lack of scope for competition—in this market. Motorola has submitted that:
 - (a) The correct approach in the context of markets characterised by bidding and tendering is to examine the conditions of competition when competition for the market takes place, the contractual starting point in

² CC3 (Revised), [Guidelines for market investigations](#), paragraph 11.

2001 should be an integral part of our assessment as this was when the Airwave Network came about;³

- (b) competition had not taken place since the original tender process;
- (c) there is no market currently in a competition sense as Airwave services are currently supplied on terms agreed when the contract was tendered and subsequently amended,⁴ there had been no requirement to negotiate⁵ and economic bargains struck bilaterally along the way did not reveal anything about whether the market was working well; and
- (d) there was no competitive interaction between ESN and the Airwave Network as the parameters for the transition from the Airwave Network to ESN were determined at the tender stage of the ESMCP in 2015, and did not depend on the relative attractiveness of the commercial terms of the two networks,⁶ although ESN's development would affect Airwave Solutions' profitability, this effect arose purely from the fact that the Motorola might incur additional costs (such as capital investment costs) if the end date of the Airwave Network were to change.⁷

15. We make two broad observations on these submissions. First, the observation that there is currently no competition in a market—or that the current level of competition in a market is limited—may be a result of a feature or features of the market that are preventing, restricting or distorting competition. In a market where features of the market may be preventing competition:

- (a) Some processes that are currently observed in the market, in which a supplier sets price, quality or innovation levels, may not be subject to competition, but *could be* subject to competition were it not for certain features of the market;
- (b) some competitive processes that do not exist at all (even in an uncompetitive form) may exist were it not for certain features of the market.

16. Second, during the course of a contract, particularly a very long contract, changes in circumstances may lead one or both parties to seek to: agree changes to the contract; waive certain terms of the contract and/or address issues that are not governed, or not clearly governed, by the terms of the

³ Motorola's response to the Issues Statement, paragraph 2(c).

⁴ Motorola's response to the Issues Statement, paragraph 8.

⁵ Motorola response to the Issues Statement, Paragraph 16

⁶ Motorola's response to the Issues Statement, paragraph 13

⁷ Motorola's response to the Issues Statement, paragraph 12

contract. Whether, and how, these issues are addressed is reflective of (and has an impact on) competitive conditions in the relevant market.

17. In this section we consider three significant ways in which prices, quality and innovation may be set, and the extent to which there is scope for those processes to be subject to competition. We also consider parties' submissions on this point and present our emerging views on these submissions.
18. Our assessment is organised by reference to three categories of competitive process, namely:
 - (a) Tenders;
 - (b) competition by investing in ESN;
 - (c) negotiations.
19. In each section, we summarise the submissions made by parties before outlining our emerging thinking on the relevance of that form of competition and the extent to which it currently exists, or at least has the scope to exist in the absence of features of the market.

Tenders

20. This subsection begins by outlining the role of tenders in this market as context. We then set out submissions we have received, including from Motorola, that relate to tenders and the implications of competition through tenders for our competition assessment. Lastly, we set out our emerging views on these submissions.
21. There have been several bidding and tendering processes under which the LMR network has been built, operated and accessed by users:
 - (a) In the 1990s, a tender was issued by the Home Office for the provision of a national radio service for the police.⁸
 - (b) Subsequent competitions were launched for the fire and ambulance services via open competitive tender processes which began in 2002.
22. These tenders (which were awarded to Airwave Solutions) and the resulting contracts set out prices and certain non-price terms, including services

⁸ The 1996 OJEC notice was issued by the Home Office Police Department Procurement Unit and commented that the Home Office intended to award framework arrangement(s) for police in England and Wales and these agreements may also include provision for police in Scotland and Fire and Ambulance in England, Scotland and Wales

purchased, duration, service-levels (and related incentives and penalties) and exit terms at the time. The terms for the PFI contract for services to the police were set for the period of 2000 to 2020. The original PFI contract did not contain any provision for extensions and sought to provide for the transfer of network assets to the Home Office at the end of the period. The contracts for the Ambulance, Fire and Scottish Ambulance came into force during 2005-2006 and contained provisions for limited extensions.⁹

Parties' views

23. Motorola has made several submissions suggesting that the main form of competition which exists is 'competition for the market' and that the CMA should assess the market by reference to competition in the original tenders. Motorola has submitted that:
 - (a) The correct approach in the context of markets characterised by bidding and tendering is to examine the conditions of competition when competition for the market takes place; and
 - (b) the contractual starting point in 2001 should be an integral part of our assessment as this is when the Airwave Network came about¹⁰ and competition has not taken place since the original tender process.
24. The Home Office has also made a submission suggesting that competition during the initial tender has some relevance. It submits that, absent any agreement over new terms, it is obliged to support Motorola on the terms which were set in 2000, which it does not consider were competitive as only one company submitted a bid.¹¹
25. In the following subsection, we present our emerging thinking in relation to these submissions. We consider two main points:
 - (a) First, in light of Motorola's submission that the correct form of competition is 'competition for the market', we consider whether other competitive processes can exist in bidding markets and, in that context, assess whether we agree with Motorola's submission—namely that in order to assess competition in the services supplied by Airwave it is appropriate to consider the original tender, to the exclusion of all other forms of competition; and

⁹ The Ambulance contract came into force in July 2005, the Scottish Ambulance contract came into force in July 2005 and the Fire contract came into force in March 2006

¹⁰ [Motorola's response to the Issues Statement, paragraph 2\(c\)](#).

¹¹ [Home Office's response to the Issues Statement, paragraph 24\(b\)](#)

- (b) second, given Motorola's view that the contractual starting point should be a key part of our assessment, we consider whether, in the context of a forward-looking assessment of whether features of the market affect competition, the extent to which any assessment of competition in the original tender won by Airwave would be relevant to current and future market outcomes.

Competitive processes which can exist in bidding markets

26. In this subsection we consider the competitive processes which can exist in bidding markets. We agree with Motorola's submission that tenders are a relevant form of competition in bidding markets. However, we also note that in bidding markets, market outcomes can also be determined through other processes and the scope for competition does not necessarily conclude once a tender is awarded. This can be the case, because, for example:

- (a) There may be price or non-price factors which were not agreed within the original tender and the resulting contract.
- (i) This could be the case if not all relevant factors could be foreseen at the time the tender took place, especially in this case where the technology was relatively nascent at the time of tender and the technology is dynamic.
- (ii) There may be some non-price factors which it is difficult to contract for in advance, especially for a highly complex and bespoke solution such as the Airwave Network.

Where price or non-price terms have not been agreed, or cannot be fully specified, when a tender is awarded, firms subject to competitive constraints may have incentives to continue to perform well or deliver attractive terms after the contract is agreed. This might be the case, for example, if the firm believes that the customer will retender the contract in the future and wants to increase its chances of securing the new contract.

- (b) There may be opportunities to renegotiate contracts that have been agreed as the result of a tendering process. Even once a long-term contract has been agreed and awarded, there can be opportunities to renegotiate aspects of it. During any renegotiations, the bargaining position of both parties will likely be influenced by the extent of competitive constraints.
- (c) Dynamic competition may persist even once a contract is awarded. This might be, for example, through investments in new technologies (in preparation for future tenders) or efforts made by a firm that has won a

tender to implement the solution they won with (and then migrating customers away from the previously incumbent solution).

27. In this case we also note that the likely need for changes to the contractual arrangements, the clarification of uncertainties or to address new issues was envisaged at the time of the original contract ¹².
28. Therefore, whilst we agree with Motorola that in many circumstances tenders can be a relevant form of competition within bidding markets, we do not agree that this is the only form of competition which can exist. Our emerging view is that in bidding markets there can be competition from processes other than tenders and we consider the scope for these forms of competition (such as negotiations and dynamic competition) later in this paper.

The role of the original tender

29. In this subsection we consider Motorola's submission that the original tender should be a key part of our assessment.
30. We agree that the original PFI contract played an important role in setting out the terms on which the Airwave Network was originally supplied. However, given that it has been more than 20 years since the original tender took place our analysis of this has been reliant on evidence within the public domain. As set out in Annex 2, the available evidence suggests that there was limited competition within the original tender.
31. Whilst we agree that competition in the original tender has some relevance, we note that various terms of the original PFI agreement have been significantly altered through subsequent negotiations. As outlined later in this paper, the outcomes of negotiations will be impacted by the competitive constraints which a firm faces at that time and the extent to which they have incentives to offer attractive terms to retain customers. While past contractual terms might represent a starting point in any negotiation (or renegotiation), the eventual outcome of a negotiation – i.e. how far the terms move from that starting point – can be expected to be determined by the bargaining power of each party and, therefore, by the outside options it has at that time rather than at the time of the original contractual negotiations.
32. To the extent any elements of the original contract have continued (when in principle they could have been amended) this is likely more reflective of the bargaining power of each party over time and the extent of competitive

¹² For example, para (f) from the recitals sets out that [✂]

constraints than the competitiveness of the tender in which they were first set. This is particularly the case in relation to a contract that has been in force for over 20 years and where there have been significant developments in market context, including changes in control of the parties, the potential for new technologies and the extension of the contract term. However, we recognise that the terms of the original tender could in principle still have some relevance - for example, if these terms impacted the bargaining power of one or both parties in the future.

33. Therefore, we consider that the current market outcomes are determined to a larger degree by the prevailing competitive constraints on the negotiating parties and therefore that there is likely greater value in considering these more recent competitive interactions within the context of our forward-looking assessment of whether features of the market affect competition.
34. We also note that the original PFI contract only set out the terms on which the Police could access the Airwave Network. The terms for the Fire and Ambulance Services were determined through separate tender processes.
35. With respect to Motorola's submission that we should investigate competition in the original tender won by Airwave Solutions, our emerging view is that while such an assessment has some relevance, there is likely greater value in seeking to understand the nature of competitive constraints within the competitive processes that have more recently, or are currently, at play in the market (or processes that have the scope to be competitive), including negotiations and dynamic competition.

Conclusion on scope for competition in tenders

36. In this section we have outlined our emerging view that, whilst tenders are clearly a form of competition that is relevant in this market, there is also scope for other forms of competition – such as negotiations and dynamic competition – to exist once competition for the tender has concluded and over the life of the relevant contract. We consider that there is likely greater value in understanding the nature of competitive constraints within these more recent competitive interactions. We therefore do not agree with Motorola's submission that the correct way to assess this market is to consider the original tender to the exclusion of all other forms of competition.
37. We consider that this means that there is scope for any feature or features of the market to impact market outcomes by preventing, restricting or distorting competitive processes over time, rather than exclusively at the point the original tender takes place. However, for the avoidance of doubt, we note that

the assessment of whether there currently is, or has been, a restriction of competition is beyond the scope of this paper.

Competition by investing in ESN

38. This subsection begins by providing a brief overview of the role of competition by investing in ESN. We then summarise the relevant submissions we have received from parties, including from Motorola, on whether this form of competition exists in this market or could exist in the absence of features of the market. Lastly, we set out our emerging views.
39. The ESN tenders took place in 2014-2015. Contracts were awarded to three key suppliers: Motorola, EE, and KBR.¹³ Since 2015, each of these key suppliers have had the opportunity to make efforts and investments to contribute towards developing a new platform that would replace the Airwave Network.
40. We consider that one of the incentives for ESN's suppliers, including Motorola, to develop this new product innovation in a timely manner comes from the ability to derive profit as soon as possible from winning new customers from the Airwave Network and selling ESN's services to them. The development of ESN also directly impacts Airwave Solutions' revenue and profitability through impacting the length of time that customers use the Airwave Network. This means that ESN's suppliers' efforts and investments in developing a new product innovation represent a competitive interaction with Airwave Solutions.
41. We also note that the prospect of ESN being developed as a replacement for the Airwave Network could, in principle at least, affect the incentives of Airwave Solutions to maintain or improve aspects of its offering to the Home Office. This incentive may arise if efforts by Airwave Solutions to improve its current offering could delay or reduce the extent of switching by customers to ESN when it is eventually developed.
42. We consider that, absent any feature or features of the market (such as Motorola's dual role), we would expect competition to provide Motorola with strong incentives to bring ESN to fruition in a successful and timely way to win customers from Airwave Solutions, with Airwave Solutions also potentially taking action to delay or reduce the extent of switching.

¹³ The contract with KBR was subsequently terminated as part of the 2018/2019 as part of the project replan

Parties' views

43. Motorola has presented submissions in which it states that it does not consider that there is a competitive interaction between the Airwave Network and ESN and in particular that:
- (a) It cannot delay ESN or reduce its quality, in particular because the terms on which customers would be served and the timing of the migration were determined at the tender stage of the ESMCP¹⁴ and Motorola would face significant financial penalties for delays to ESN which it caused;¹⁵
 - (b) the transition from the Airwave Network to ESN was determined at the tender stage of the ESMCP in 2015, and does not depend on the relative attractiveness of the commercial terms of the two networks;¹⁶
 - (c) Airwave Solutions' profitability is affected by ESN only in the sense that Motorola might incur additional costs if the end date of Airwave changes, and not in the manner suggested in the Issues Statement (which is similar to the competitive interaction described in paragraphs 40 and 41 of this paper);¹⁷ and
 - (d) ESN was simply envisaged as a replacement for the Airwave Network and was never considered to be a possible alternative to the Airwave Network that would improve the Home Office's bargaining power in contract negotiations.¹⁸
44. The Home Office submitted that it considers that the availability of ESN should put competitive pressure on Airwave Solutions. It has submitted that there are many products and services that ultimately replace their legacy substitute and that, in the transition period, the innovative product imposes competitive pressure on the legacy product.¹⁹ It also submitted that it considers that Motorola's position that ESN will fully replace the Airwave Network is inconsistent with its own published positions, which refers to a future in which 4G/LTE and TETRA both co-exist.²⁰
45. EE submitted that the CMA should consider the dynamic competitive interactions between the Airwave Network and ESN.²¹

¹⁴ [Motorola's response to the Issues Statement, paragraph 13](#)

¹⁵ [Motorola's response to the Issues Statement, paragraph 76](#)

¹⁶ [Motorola's response to the Issues Statement, paragraph 13](#)

¹⁷ [Motorola's response to the Issues Statement, paragraph 10-11](#)

¹⁸ [Motorola's response to the MIR – Paragraph 163](#)

¹⁹ [Home Office's response to the Issues Statement – Paragraph 16](#)

²⁰ [Home Office's response to the Issues Statement – Paragraph 17](#)

²¹ [EE's response to the Issues Statement, paragraph 5](#)

46. With respect to Motorola's submissions we note that:
- (a) In relation to the submission referred to at 43(c), Motorola has not explained why investments in a solution that would replace an incumbent solution, take its customers, leading to profits, would not amount to competition. Therefore, we have focused on considering Motorola's other submissions in this paper.
 - (b) In relation to its submission referred to at 43(d), we consider that the relevant question for this paper is whether there is scope for competition by investing in ESN, rather than whether ESN is relevant to negotiations.
47. In the following subsections we consider Motorola's submissions that there cannot be competition between Airwave Solutions and Motorola (as a key supplier of ESN) because:
- (a) One product/service has been ultimately designed to replace another;
 - (b) there is no scope for Motorola to make greater or lesser efforts or investments depending on its incentives because contracts have been agreed setting out the terms on which customers would be served and the timing of the migration; and
 - (c) the transition from ESN to Airwave does not depend on the relative attractiveness of each network.
48. We note that in this subsection we are considering whether there is scope for any feature or features of the market to distort competition between Airwave Solutions and Motorola. For the avoidance of doubt, we are not seeking to assess whether there is such a restriction of competition.

Scope for competition when one product/service replaces another

49. We consider that across technological markets it is often the case that an existing product/service is ultimately entirely replaced by another and that there can still be scope for competition between them. This competitive interaction could take different forms, for example:
- (a) Before the new product/service is launched:
 - (iii) The provider of the new product/service may have incentives to develop its offering and make efforts to successfully bring this to fruition in a timely manner in the expectation of winning customers from the incumbent.

- (iv) The provider of the existing product/service may also take steps to delay or mitigate the impact of the new rival by for example, investing and innovating to keep its customers happy. As set out in Annex 1, before being acquired by Motorola, Airwave Solutions had identified ESN as a competitive threat and was developing strategies to prolong the operation of the Airwave Network. We note that these examples demonstrate that, in principle, this form of competition is possible.
 - (b) Once the new product/service is launched, there may be a period where it co-exists with the existing product/service. In this case, customers may be able to choose when to switch from one to another based on their relative attractiveness. This could create incentives for the provider of the new product/service to take steps to ensure a timely transition, whilst the provider of the existing product/service may take steps to delay switching away from their offering, for example, improving elements of PQRS.
50. Our emerging view in relation to Motorola's submission is therefore that even where one product/service has been designed to replace another, there remains scope for competition. This could take the form of efforts by the provider of the new product/service to bring its offering to fruition and win customers from the incumbent as quickly as possible, as well as potential efforts by the incumbent to delay or reduce the extent of switching by, for example, improving its offering.

Scope for competition given the terms of transition are set in contracts

51. In this section we consider the extent to which Motorola's obligations in relation to ESN are set out in contracts to such an extent that, even taking into account Motorola's dual role, Motorola's deliverables are so clearly defined that there is no scope for further influence by competition incentives. We want to understand if, absent its dual role, there would be scope for Motorola to make greater or lesser efforts or investments depending on competitive incentives, including in particular the incentive to win customers from the Airwave Network.
52. Our objective in this paper is not to assess the extent of those incentives, but rather whether there is *scope* for them to exist and give rise to competition but for features of the market. In particular, we consider:
- (a) Whether all aspects of Motorola's efforts and investments into developing ESN are stipulated in contractual agreements such that there is no further ability or incentive for Motorola (or anyone in Motorola's position) to increase its efforts in response to competitive incentives; and

(b) even if efforts and investments are set out in contractual agreements, whether there is scope for Motorola to avoid meeting deliverables, for example because it can renegotiate contracts to give it more favourable terms or can deviate from its contract because enforcement action is too costly, difficult or would otherwise be limited in its ability to emulate competition.

- *The nature of existing contractual agreements*

53. We are considering the extent to which all aspects of Motorola's efforts and investments in relation to the aspects of ESN that it is responsible for delivering (referred to as Lot 2) are stipulated in contractual agreements.
54. Our starting point is that it is generally accepted that in practice most contracts are incomplete. This is because it is practically impossible or excessively costly to identify all contingencies and describe them in a contract in a way that can be understood and verified by courts in any possible enforcement.²² We consider that it is especially unlikely that in practice all elements of solution such as the ESN network can be stipulated in a contract because of its complexity, its bespoke nature and the extremely wide range of features which are unlikely to be able to be conceived, specified and agreed in advance. This means that customers are always, to an extent, reliant on their contractual partner being incentivised to deliver their requirements.
55. Consistent with this, we have seen examples of areas which were either not stipulated within the contract with Motorola for Lot 2, or which left room for interpretation, for example:
- (a) The Lot 2 tender required the bidder to set out their proposals for interworking. However, by the time the contract had been awarded to Motorola, this particular component had not been priced or set out in detail. The Home Office was also still considering alternative technical approaches.
 - (b) The Lot 2 bid included the delivery of the Wave 7000 software (the contract was later changed to include the delivery of Kodiak in place of Wave 7000). Both pieces of software have required additional development. The Home Office has told us that there are about 30 items which it currently considers are defects, but Motorola considers are changes as the software is working as designed. This suggests that, as

²² There is significant economic literature setting out the challenges of complete contracting see, for example, "Incomplete contracts: where do we stand" by Tirole (1999) for a summary.

we might expect for a contract of this nature, these issues may not have been able to be sufficiently stipulated within the contract.

56. In addition, we note that even where requirements are fully set out within contracts, suppliers can undertake efforts to exceed these requirements. The extent to which suppliers choose to exceed contractual requirements will likely be impacted by their competitive incentives to do so.
57. We therefore consider that it is highly unlikely that in practice all aspects of Motorola's commitments in relation to ESN are set out in contracts and, even if this was the case, Motorola could always choose to exceed these requirements where its incentives are to do so. The implication of this is that the presence of a contract setting out efforts and investments which Motorola must satisfy would not eliminate the scope for competitive incentives to influence Motorola's behaviour.
 - *The ability to avoid meeting contractual deliverables*
58. In this subsection we consider whether even in a scenario in which Motorola was subject to contractual agreements that stipulated all specific deliverables in relation to ESN, it would be possible for Motorola to avoid meeting those deliverables and, therefore, that competitive constraints would benefit customers by providing an incentive to Motorola to meet those deliverables in any event.
59. We note that the purpose of this section is to consider whether there is scope for competitive constraints to have a positive impact on supplier behaviour rather than whether Motorola has actually avoided meeting any deliverables.
60. We consider that there may be several possible reasons why Motorola could avoid meeting its deliverables, including because (i) it can renegotiate the terms or (ii) it may be too costly, time-consuming, difficult or otherwise undesirable for the Home Office to enforce breaches of contract or the cost of non-compliance may outweigh the likely benefits of compliance.
61. With respect to the extent to which terms can and have been renegotiated:
 - (a) With regards to Motorola's submission that the timing of transition was determined at the tender stage, we note that the timing of transition has been delayed significantly from the original contractually agreed dates.
 - (i) When the contracts for ESN were awarded in 2015, it was envisaged that the transition of customers to ESN would begin in 2017 and be completed by late 2019. However, these dates were revised several times: the latest published dates in the July 2021 Full Business Case

were that mass transition would begin in April 2024 and Airwave shutdown would be achieved by the end of 2026.²³

- (ii) These changes were enacted through contractual adjustments, for example, CR110²⁴ originally pushed the date for full mobilisation of Lot 2 products to April 2018 and the Change Authorisation Note (CAN) 500 reset also subsequently amended the timelines again and moved towards incremental delivery.²⁵

We also understand that this revised timetable remains subject to uncertainty. The Home Office has told us that it is unclear when exactly it will have a version of Motorola's Kodiak application that is safe, reliable and secure enough that the transition from Airwave can start and complete but it now expects a further delay of around [X].

- (b) There have also been other significant changes to the terms of the Lot 2 contract. For example, under the Change Authorisation Note (CAN) 500 reset, Motorola and the Home Office agreed to replace Wave 7000 with Kodiak.

62. With respect to the likely effectiveness of the enforcement of contractual provisions, our starting point is that:

- (a) Within the context of a complex contract and multi-faceted project, enforcement is likely difficult, risky and time-consuming given the intrinsic challenges in disentangling the extent to which any failures can be attributed to a particular supplier; and
- (b) customers would likely prefer the contracted work to be delivered rather than receiving damages from enforcement. In this case, if successful, enforcement would most likely lead to the Home Office recovering damages, rather than securing the successful delivery of ESN. This means customers may be reluctant to pursue enforcement action as this could exacerbate delays in its deliverables whilst enforcement is underway. We have seen evidence that is consistent with this which suggests that, where it has felt that the functionality is lacking in Motorola's solutions, the Home Office has on occasion issued Contract Change Notices rather than raise disputes.

²³ These delays have resulted in contractual amendments, for example CR110 was agreed on 2 February 2017 and set a new, later date for full mobilisation of Lot 2 products of April 2018

²⁴ [CR110 Signed.pdf \(sharepoint.com\)](#)

²⁵

63. We have considered the likely effectiveness of specific contractual provisions. As outlined in the Dual Role Working Paper, we consider that:
- (a) The Deed of Recovery (DoR) contained a number of provisions setting out financial consequences for Airwave Solutions in the event that delays in the shutdown of the Airwave Network were solely attributable to Motorola. Whilst the DoR has incentivised some aspects of delivery by Motorola, [redacted] has undermined the effectiveness of this contractual provision; and
 - (b) the mechanism through which [redacted] also appears to be largely ineffective, as [redacted].
64. We also note that even where enforcement of contractual provisions is available, this might be insufficient to incentivise a supplier to perform if the costs of non-compliance outweigh the likely benefits of compliance.
65. Our emerging view is therefore that we do not agree with Motorola's view that there is no scope for competitive incentives to impact its approach in relation to ESN because contractual obligations mean that it cannot delay ESN or reduce its quality. We consider that there are limits to the extent to which contracts can stipulate all aspects of Motorola's deliverables, and even when these are set out, Motorola may be able to avoid meeting them. This means that the efforts and investments made by Motorola likely depend on its incentives. These incentives come, in part, from the ability to gain profits sooner by more quickly winning customers who currently use the Airwave Network.

Whether the transition depends on the relative attractiveness of each network

66. We have considered the extent to which the decision about when to transition from the Airwave Network to ESN will likely depend on the relative attractiveness of each network, and therefore whether this creates scope for competition but for the features of the market.
67. We understand that the Home Office will make the decision about if and when ESN is ready for transition based on input from users about whether it meets their needs. This decision will depend on ESN offering at least equivalent functionality to those provided over the Airwave Network and being operationally safe for ESN users.
- (a) The Home Office told us that it will make the decision about when to begin moving onto ESN based on when it is satisfied that the technology is correct and meets the requirements of the users. It told us it would make

this decision in agreement with the senior user representatives on the programme.

(b) Motorola told us that it believes that the blue light organisations have [redacted] in regards to the roll-out of ESN and that their acceptance that it fits their purpose will impact timing and roll-out. Motorola also told us that the functionality of Airwave sets a standard which they would likely compare ESN to.

68. Once the Home Office has, in close consultation with users, decided that ESN is ready for transition, individual police forces, ambulance services and fire authorities will transition at different points within a pre-determined window. In the transition period users who have already moved to ESN will still be able to communicate with those still using the Airwave Network through the interworking solution which is being developed by Airwave Solutions. The Home Office has told us that this interworking solution is critical to managing the transition period.

69. We understand that there is likely to be an element of choice amongst individual police forces, ambulance services and fire authorities about when exactly to transition within the overall window and that amongst other considerations, this will depend on their assessment of the extent to which ESN meets the needs which Airwave is currently meeting.

(a) The Home Office told us that it expects that mass transition to ESN will take place over [redacted]. It said that it is working with user organisations to decide the order of transition and the biggest single factor which determines this is when coverage will be available in a particular area.

(b) The Scottish Ambulance Service told us that the extent to which individual organisations can decide when to transition to ESN has yet to be fully agreed. However, it expects that no user organisation will be forced to migrate to ESN until it has adequate assurance that it is a credible alternative to Airwave in terms of coverage, resilience, cost and functionality.

(c) The National Fire Chiefs Council (NFCC) said that the transition will be user-led taking account of internal factors, such as other programmes of work and resource constraints, and external factors, such as the availability of operationally acceptable ESN coverage and that ESN is fit for purpose and does not pose additional operational risk.

(d) The Police said that no Chief Constable should be expected to agree to transition their force to ESN unless they are assured that the new system

will confer at least the same operational capabilities as currently provided by Airwave.

70. Our emerging view is therefore that that we disagree with Motorola's view that the transition from the Airwave Network to ESN does not depend on the relative attractiveness of both networks. We consider that, in a well-functioning market, there would be scope for competition through Motorola having incentives to bring ESN to fruition in a successful and timely way with Airwave Solutions also potentially undertaking efforts to delay or reduce the extent of switching.

Conclusion on competition by investing in ESN

71. Our emerging view is that there is a competitive interaction between Motorola (as a key supplier of ESN) and Airwave Solutions. The incentive for key suppliers (including Motorola) to invest in ESN comes from the ability to gain profits sooner by more quickly winning customers who currently use the Airwave Network. The development of ESN is also likely to have an impact on the profitability of Airwave Solutions as it will impact the length of time that customers use the Airwave Network. Airwave Solutions may therefore also have incentives to improve its offering to delay or reduce switching. These incentives could be impacted by features of the market, including Motorola's dual role – although we have not sought to undertake an assessment of this within this paper.
72. We do not consider that the scope for competition through investing in ESN is eliminated by the factors Motorola has identified, such as ESN being a replacement for the Airwave Network or all elements of ESN being set out in contracts.

Negotiations

73. This subsection begins by providing some context on the role of negotiations in this market. We then summarise submissions we have received, including from Motorola, about negotiations and their relevance to our competition assessment. Lastly, we set out our emerging views on these submissions.
74. As context, the four long-term contracts under which Airwave Services are provided²⁶ were subject to negotiations in 2015/16, 2017, 2018 and 2021. The Home Office led these negotiations on behalf of all the blue light

²⁶ Home Office on behalf of the police; Department for Communities and Local Government (later transferred to the Home Office) on behalf of the fire services; the Department of Health for the ambulance services in England and Wales; the Scottish Ambulance Service Board for the Scottish ambulance services.

organisations. These negotiations related to the extension or alteration of the original terms of the four contracts:

- (a) The 2015/16 negotiation was held around the time the ESN contracts were awarded and Airwave Solutions was acquired by Motorola. Amongst other changes, it resulted in the end date for all the Airwave Network contracts being aligned and provision made for how this date could be amended.
- (b) The 2017 negotiations related to the terms on which the Airwave Network would be accessed after 31 Dec 2019, which was linked to the re-planning of the ESN programme in early 2017 (which is discussed in the ESN Dual Role working paper).
- (c) The 2018 negotiations related to the extension of the operation of the Airwave Network to December 2022 and had the effect of varying certain of the matters set out in the 2016 Heads of Terms agreement
- (d) The 2021 negotiations related to the potential extension of the contracts beyond 2022 as it was not expected that customers would finish transitioning from Airwave to ESN before the end of 2026.

75. The outcomes of negotiations will depend on the relative bargaining position of both parties and the relative importance to each party of its business with the other and the strength of their relative outside options. The competitive constraint on firms in negotiations comes from the ability of a customer to switch, or threaten to switch, to competitors. This means that the competitive constraint on Airwave Solutions in any negotiations, and therefore the competitiveness of the outcomes of any negotiations, may be impacted by features of the market (such as a lack of alternatives itself, or features of the market that give rise to a lack of alternatives).

Parties' views

76. Motorola has made several submissions suggesting that there no scope for competition through negotiation, including that:
- (a) There has been no requirement to negotiate, including on terms such as the price and duration of the contract, as the terms on which the blue light services access the Airwave Network were set in the original PFI agreement and in the 2015/16 negotiation (which gave the Home Office

the right to extend the contract on the same terms as long as they required);²⁷

- (b) economic bargains struck bilaterally along the way do not reveal anything about whether a market is working well;
- (c) the only 'negotiations' that have been taking place since 2016 [~~✂~~]²⁸; and
- (d) the Home Office has significant bargaining power as it is the sole customer of the Airwave Network, the Home Office has been able to, for example, successfully lower prices outside of contractually agreed terms, defer significant payments and refuse to make payments,²⁹ the Home Office's bargaining power was particularly strong in 2016 as Motorola required its consent to complete their purchase of Airwave.³⁰

77. In the following subsection, we consider the extent to which there is scope for competition through negotiations in this market, and in particular:

- (a) The extent to which there is potential for competition through negotiations given Motorola's view that there has been no requirement to negotiate, and negotiations do not reveal anything about how a market is working; and
- (b) in light of Motorola's submission that the Home Office has bargaining power, we consider whether there is still scope for features of the market to harm competition even if customers have bargaining power

The potential for competition through negotiations when there is no requirement to negotiate

78. In this subsection we consider the extent to which there is potential for competition through negotiations to exist in this market by considering the extent to which contractual terms have been amended over time, even if there was no formal requirement to do so.

79. We note that, since 2015, there have been four sets of negotiations which resulted in material amendments to the terms on which the blue light services access the Airwave Network. Motorola in its submissions also appears to accept that terms have been amended over time. It told us that, whilst other suppliers take the position that once a contract is signed it cannot be

²⁷ [Motorola response to the Issues Statement, Paragraph 16](#)

²⁸ [Motorola submission on the MIR, para 4](#)

²⁹ [Motorola's response to the Issues Statement, section 3.2](#)

³⁰ [Motorola's response to the Issues Statement, paragraph 22](#)

adjusted, where possible it tries to accommodate the customer, including by providing discounts that it was under no obligation to provide.

80. We have considered Motorola's view that the only amendments made since 2016 [REDACTED]. We do not see the relevance of the reference to [REDACTED]. Any negotiation will start with one party making a request of the other. Whether such a request is made, and how the other party chooses to respond to the request, can be indicative of competitive conditions. The party making the demand is more likely to be successful if it has the implicit or explicit threat to pursue an outside option, whilst the party being presented with the demand has the choice of whether to accept it or not. We therefore do not agree that amendments made through a process initiated by [REDACTED] do not constitute a form of negotiation.
81. We also note that we have seen evidence that suggests that negotiations have not solely been initiated by the Home Office and that, regardless of who initiated the process, both parties have regarded the price of any extension of the Airwave Network as subject to negotiation:
- (a) There is evidence that in late 2017/early 2018, Motorola was actively encouraging the Home Office to start renegotiations (rather than the other way around);
 - (b) in the 2021 negotiations, Motorola set out its objectives and strategy for the upcoming negotiations before the Home Office had approached it; and, as part of these negotiations, it made the case to the Home Office that the Airwave core charge should increase by £[REDACTED]m to fund its proposed capex investment; and
 - (c) in 2018, Motorola set out internally what it was prepared to trade off within negotiations.
82. Despite Motorola's view that there has been no requirement to negotiate there have been several negotiations over time and negotiations are a relevant mechanism through which price and non-price outcomes are set. We consider that whilst negotiations are not currently a competitive process, in that the Home Office has no competitive alternatives available to switch to, there could be scope for such competition to exist in the absence of features of the market, such as the lack of alternatives. However, we note that it is beyond the scope of this paper to assess the impact of the features of the market on such competition.

The impact of customer's bargaining power

83. In this sub-section, we consider Motorola's submission that the Home Office has bargaining power in negotiations and that the existence of this bargaining power means that features of the market cannot restrict, distort or prevent competition.
84. Our starting point is that, in principle, even if customers have some bargaining power in negotiations features of a market may still nevertheless restrict, distort or prevent competition, such that outcomes are worse than they would be in a well-functioning market.
85. We note that this paper is not seeking to undertake a competitive assessment; our conclusion is simply that the presence of a degree of bargaining power (even significant bargaining power) does not mean that features of the market cannot still restrict, distort or prevent competition. The assessment of whether any bargaining power held by the customer is sufficient to allay concerns about features of the market that could otherwise harm competition will be considered through the market investigation, including our analysis of profitability.

Conclusion on negotiations

86. Our emerging view is that negotiations are a relevant mechanism through which price and non-price outcomes are set. We consider that despite Motorola's submissions that there has been no requirement to negotiate, both Parties have initiated negotiations and changes to the contractual terms on which customers access the Airwave Network have been made. We consider Motorola's view that the Home Office has bargaining power does not eliminate the possibility of competition being impacted by features of the market.

Emerging conclusions

87. In this section we have considered Motorola's submissions which relate to competition. Our emerging view is that when seeking to identify how any features could impact competition and outcomes, we should consider the competitive processes which exist over time, as well as competition at the point the tender took place. Whilst we agree that tenders have played an important role in this market, there are other competitive processes which exist in the market, or could exist but for features of the market, such as negotiations and competition by investing in ESN.

Market Definition

88. Market definition is the process by which the CMA identifies the boundaries within which competition occurs for particular services, such as which firms compete for which customers' business.
89. Defining the market helps the CMA to focus on the sources of any market power and provides a framework for the assessment of the effects on competition of features of a market.³¹ In doing so the CMA may conclude that the market should be defined more widely or more narrowly than the goods and services or areas of supply set out in the Terms of Reference.³²
90. As set out in our Guidelines, market definition is a useful tool but not an end in itself, and identifying the relevant market involves an element of judgement. The boundaries of the market do not determine the outcome of our competitive assessment of a market in any mechanistic way. The competitive assessment takes into account any relevant constraints from outside the market, segmentation within it, or other ways in which some constraints are more important than others.³³ Market definition and the assessment of competition are not distinct chronological stages of an investigation but rather are overlapping and continuous pieces of work, which often feed into each other.
91. Our starting point for assessing market definition was the set of products and services identified in the terms of reference for this investigation, namely 'the supply of LMR network services for public safety (including all ancillary services) in Great Britain', described as follows in the terms of reference (see paragraph 3).³⁴

'LMR network services for public safety' means – services provided through a secure private communications network, based on land mobile radio technology, that is used by personnel involved in public safety (namely the police, emergency and fire services, and those who need to communicate with such services) when in the field;

'Ancillary services' means – services that are interlinked with the provision of LMR network services for public safety and for which customers have limited alternative suppliers including for example

³¹ CC3 revised, paragraph 132.

³² CC3, Revised, paragraph 131 and para 26

³³ CC3 revised, paragraph 133

³⁴ Terms of Reference, 25th October 2021

services such as those provided at the testing facilities for radio terminals used by LMR network public safety users.

92. We consider the two main dimensions of market definition—the product dimension and the geographic dimension—in turn.

Product Market Definition

93. In forming its views on market definition, the CMA considers the degree of demand-side substitutability. In some markets, supply-side constraints will also be important.³⁵

Parties' views

94. We have received several submissions which are relevant to our assessment of market definition:
- (a) Motorola submitted that ESN will replace the Airwave Network and there is no competitive relationship between the Airwave Network and ESN³⁶;
 - (b) the Home Office submitted that the fact that ESN is intended to replace Airwave Network confirms that ESN is a potential demand and supply side substitute for the Airwave Network and could be in the same economic market as the Airwave Network³⁷;
 - (c) EE submitted that the CMA should consider the dynamic competitive interactions between the Airwave Network and ESN³⁸; and
 - (d) the Home Office submitted that the inclusion of ancillary services is appropriate as the CMA should consider all services that are potentially relevant to an adverse effect on competition.³⁹
95. Motorola has also made submissions to the effect that no market exists because the supply of LMR services is undertaken through a single contract⁴⁰, and because there is no scope for the Home Office to switch. These arguments have been considered under the “scope for competition section” as the arguments do not relate to market definition, but are wider arguments about the existence or not of competition (or the scope for it).

³⁵ CC3 (Revised), [Guidelines for market investigations](#), paragraph 130

³⁶ [Motorola's to the MIR, Paragraph 155](#)

³⁷ [Home Office response to Issues Statement, Paragraph 15](#)

³⁸ [EE's response to the Issues Statement, paragraph 5](#)

³⁹ [Home Office's response to the MIR, Page 3](#)

⁴⁰ [Motorola's response to the Issues Statement, 2.1\(8\)](#)

96. In the following section we consider:
- (a) Whether LTE network services for public services (which describes the prospective ESN services) should be included as part of the market;
 - (b) the extent to which ancillary services are in the same product market as the LMR network, or whether these ancillary services are a separate product market.

LTE network services (ESN)

97. ESN is the network which is being designed to replace Airwave. Among other benefits, it is expected to be able to provide users with greater mobile broadband functionality than the Airwave Network. The Government put contracts for the delivery and roll-out of ESN out to tender in 2014 and awarded them to multiple suppliers (including Motorola Solutions Inc) in 2015. It is intended that once ESN has been built, and all users transferred to it, the Airwave Network will be switched off. This is currently expected to be 2026 at the earliest.
98. Although ESN is still in development and therefore is not available as a short-run alternative for customers of Airwave to switch to, we consider that there is scope for competitive interactions between ESN and Airwave Solutions, as set out in the previous section, for example in paragraphs 38 to 71.

CMA assessment

99. As set out in the earlier part of this paper, both dynamic and static competition are relevant in this market.⁴¹ A supplier may face different constraints when competing statically than when it competes dynamically. Therefore, when considering the appropriate product market, we have considered demand-side and supply-side substitutability through both lenses.

- *Demand-side substitutability*

100. Substitutability in the short run may be different from substitutability in the longer term. In the short run firms compete using the products in their existing portfolios. In the longer term, firms may compete by improving their product portfolios.⁴² This is relevant to our assessment of substitutability in this case

⁴¹ Static competition refers to competitive efforts taken by firms that results in customers being won or lost in the short term (for example, within a year). This might include reducing the prices offered in a negotiation. Dynamic competition refers to competitive efforts that lead to winning customers some time after the competitive effort is made (for example, investments made today may result in winning new customers several years in the future).

⁴² [Guidelines for market investigations](#), paragraph 136.

because, as discussed in the *Scope for Competition* section, competition in the supply of LMR network services for public safety takes place (or there is scope for competition to take place) in a number of different ways, with some being broadly short-term in nature, with others taking place over the longer term.

101. Dynamic competition between the Airwave Network and ESN described in paragraphs 38 to 71 falls within this category of longer-term competition, because it involves the efforts and investments made by ESN's suppliers to develop a new offering⁴³ which would serve as a replacement for LMR network services and therefore 'steal' Airwave Solutions' customers in a timely manner (i.e. induce demand-side substitution). It can also include efforts by Airwave Solutions to retain customers and prevent or delay them switching to ESN.
102. The CMA's assessment of the relevant market in the context of this sort of longer-term competition may be concerned with identifying firms that have the capability to introduce new or improved substitute products.⁴⁴ In this respect:
 - (a) ESN is being developed to meet the same fundamental demand-side need that the Airwave Network has met, namely providing communications services including mission-critical push-to-talk (MCPTT) functionality for Great Britain's blue light emergency services. In this sense, the Airwave Network and ESN are the only two solutions that exist or are in development that meet or have the potential to meet this demand-side need;
 - (b) ESN is planned to replace the Airwave Network for Great Britain's emergency services when it is developed. Once the Home Office, in consultation with users, has decided that ESN is ready for transition, Airwave Solutions' customers are expected to switch to ESN. The transition to ESN is expected to happen over a period of time within which individual customers will have some choice as to when they switch. In this period users who have already moved to ESN will be able to communicate with those still using the Airwave Network through the interworking solution which is being developed by Airwave Solutions. There are no other alternatives to ESN under development, and no others are expected to be developed. In this respect, from the perspective of

⁴³ That is, a set of products and services which, although they differ in terms of their pricing and supplier structure, would as a whole replace the Airwave Network and services. For the purposes of market definition, it does not appear to us that the differences in pricing and supplier structure affect that definition. As far as users are concerned, both the Airwave Network and services and ESN comprise the network and services they will use for emergency communications services.

⁴⁴ [Guidelines for market investigations](#), paragraph 136.

Airwave Solutions, ESN represents the only significant long-term competitive threat that could reduce its customer base and Airwave Solutions stands to lose 100% of its customer base to ESN;

(c) From the perspective of ESN's key suppliers, all (or virtually all) of the profits they can expect to earn by developing ESN's services and selling them to customers will be derived from organisations that are currently customers of Airwave Solutions. If ESN's key suppliers were to reduce the efforts or investments that they were making to develop ESN, such that ESN would be delayed or otherwise deteriorated as a viable alternative to Airwave, the beneficiary of such a reduction in innovation efforts would be mainly or exclusively Airwave Solutions.

103. In light of the above, any efforts and investments made by ESN's key suppliers to develop the ESN solution can be interpreted as efforts towards 'stealing' customers from Airwave Solutions and replacing it as a solution for Airwave Solutions' customers. Because Airwave Solutions' only demand-side competition comes from dynamic competition from ESN's key suppliers developing a new solution, and ESN's only demand-side alternative from which ESN can 'steal' sales is the Airwave Network, our emerging view is that this supports widening the market to include LTE services.
104. In assessing the demand-side substitutability between the Airwave Network and ESN, we have thus far focused on longer-term substitutability. We note that in the short run, and in particular prior to the development of ESN, there is no scope for demand-side substitution between the Airwave Network and ESN: a customer that is negotiating with Airwave Solutions cannot realistically seek to get a better deal by threatening to walk away from negotiations and switch to ESN, because ESN is unavailable as an option. Accordingly, while market definition would often take account of short-run competition, in this case our focus on longer-term substitutability is appropriate. We will take the lack of short-run substitutability into account in our competition assessment where it is relevant.
105. We reiterate that the boundaries of the market do not determine the outcome of our competitive assessment of a market in any mechanistic way. We note that the alternative approach would have been to exclude LTE services from the market on the basis of short-term substitutability. In this case we would have taken the longer-term substitutability between the Airwave Network and ESN into account within our competition assessment as relevant. This means that we consider that the assessment of our theories of harm would be the same irrespective of whether LTE services are inside or outside the market.

Ancillary products and services

106. There is a variety of ancillary products and services which Airwave Solutions provide in addition to access to the core network itself. These include radio terminals, control rooms, training and the provision and installation of equipment within vehicles.

CMA assessment

107. We are considering the extent to which ancillary services are in the same product market as the LMR network, or whether they are a separate product market on the basis of demand-side substitution or, in its absence, supply-side considerations.
108. The way in which these products and services are provided differs across the blue light services:
- (a) The Police contract is solely for network access, with the Police Forces separately procuring their own control rooms and terminals. Individual Police Forces are able to purchase additional products or services from Airwave Solutions (or in some cases from alternative suppliers), including enhanced coverage, support services and radio terminals. Where they are purchased from Airwave Solutions, the prices for these are set out in the Police Menu Pricing catalogue at prices which have been agreed with the Home Office.
 - (b) Under their contracts, the Ambulance services receive a managed service, which provides them with control rooms, air-to-ground, vehicle installation, radio terminals and a service desk (all via Bundle 2, with a number of services provided via subcontractors) in addition to access to the core network (via Bundle 1). The Fire services receive access to the Airwave Network as well as equipment to connect control rooms to the network. The Ambulance and Fire services can also decide to purchase additional products and services at pre-agreed prices set out within Airwave Catalogues.
109. On the demand-side, evidence from users suggests that many user groups report there being little or no alternatives available for many ancillary services:
- (a) Police Scotland said that some additional services which they require cannot be supplied by any other supplier. These services include additional control room interfaces, special coverage solutions and requirements for additional capacity. It also notes that even if alternative solutions were available, they would have to meet rigorous security standards.

- (b) The Ambulance Response Programme (ARP) said that Ambulance Trusts need to procure some discretionary services from Airwave Solutions. The most common of these is the Airwave radio service which forms part of the end-to-end managed service (comprising of control rooms, radio terminals and access to the core network) which at present can only be procured through Airwave Solutions.
 - (c) The National Fire Chiefs Council (NFCC) said that most of the additional products and services which individual fire services procure can only be obtained through Airwave Solutions because of the nature of the Firelink contract and the need for these products and services to directly interface and work on the Airwave Network and with existing Airwave equipment.
 - (d) The Scottish Fire and Rescue service said that under its current managed service provision it is not possible to procure services or equipment other than via the Airwave call off contract.
110. Where some users have identified or considered potential substitutes, they report that in practice their ability to switch away from using Airwave Solutions for these services can be limited by factors including existing contractual provisions and the need for these solutions to technically interface with the Airwave Network:
- (a) The Scottish Ambulance reports that the procurement of managed services for Integrated Communication Control System (ICCS) and Terminal provision can be competed. However, when it explored removing handheld terminals from their current service bundle, Airwave Solutions only offered a 15% reduction in their service charge, whereas the Scottish Ambulance thinks that a reduction of at least 50% is more reasonable.
 - (b) The ARP reports how it has amended the agreement with Airwave Solutions to create competition and a more modular approach for some discretionary services, including the de- and re-installation of radio equipment and the provision of additional control room capacity. However, it needs to pay a fee for accreditation of all services that use the Airwave Network.
111. In contrast, several Police constabularies report there being greater competition for certain ancillary services. For example, the West Midlands force reports that it only buys services from Airwave Solutions which are offered on the Menu Services. Other products/services are procured directly from the relevant suppliers on a competitive basis, this includes handheld devices, vehicle radios, ICCS and Airwave support services.

112. The evidence above suggests that, for many customers it is either difficult, or in some cases not at all possible, to choose a different provider for ancillary services than for the overall network. This suggests that many customers do not have the option to choose a separate provider for these services. We therefore consider that the competitive conditions for these ancillary services are likely to be similar as those for the overall network services. On this basis our emerging view is that ancillary services should be included as part of the market.

Geographic Market Definition

113. As noted above, our terms of reference concern the supply of LMR network services (including all ancillary services) for public safety in Great Britain.
114. In addition, we understand that LMR services (including all ancillary services) are typically acquired and supplied to the whole of Great Britain. A key reason for this is to ensure that emergency services operating across different parts of the country are able to communicate with each other.
115. Therefore, for the purposes of this investigation, we are taking the geographic market as Great Britain.

Emerging Findings on Market Definition

116. Our emerging view is therefore that the market is the supply of communications network services for public safety and ancillary services in Great Britain.

Annex 1

1. We have considered how Airwave Solutions had perceived the competitive threat from ESN before it was purchased by Motorola and how it planned to respond to this.
2. We have found evidence that indicates that Airwave Solutions was considering pursuing a number of strategies to prolong the operation of the Airwave Network before it was purchased by Motorola including:
 - (a) Relying on inherent ESN program delays to drive the likelihood of extensions;
 - (b) relying on users to delay transition, if there is a significant service gap between ESN and the Airwave Network (or encouraging the end user community to highlight risks);
 - (c) use of legal challenges as a delay mechanism;
 - (d) developing a 'hybrid network', blending LMR (Tetra) and LTE (4G) as a solution to address service gaps;
 - (e) developing a hybrid solution for a region (e.g. Scotland);
 - (f) offering its services to Lot 2 and 3 contractors (e.g. offering the use of Airwave's RAN infrastructure to host part of the ESN, as a means of lowering the cost and risk of delivering ESN); and
 - (g) influencing the Government to change strategy and/or looking to partnership arrangements with HMG.
3. In 2016, a paper for the Airwave Board summarised the strategic considerations and options available to Airwave if change of control consent (in relation to the Motorola acquisition) was not granted by HMG. This paper set out a number of strategies, as follows:

3.1. Defend strategy: Legal Challenge, extensions, control cost [High Value/Medium Risk]

*Defending the existing revenue stream will remain the top priority. **Inherent program delays will increase the likelihood of extensions** and a "Defence in Depth" strategy is being employed which seeks to delay the advance of the ESN on multiple fronts. **The legal challenge delayed the program start and whilst Airwave has agreed to suspend litigation, its argument in pursuit of damages remains.** Also, if EU regulations for state aid have been breached then the program may be further reviewed. The Airwave service is*

the exemplar that the ESN will be measured against. **If a significant service gap is evident, users could also delay transition.**

3.2. Flanking strategy: Hybrid solution [Medium/ Medium Risk]

Police and Crime Commissioners (PCC's) are taking more fiscal and operational responsibility. As the ESN is not mandatory, **PCCs will have the opportunity to question the suitability of the ESN for their force.** Many Forces have a significant rural responsibility. If the ESN coverage fails to meet the expectations across these areas, then a **viable alternative may be to blend Tetra and 4G, to deliver a local "hybrid" network.** This local hybrid network would continue to rely on Tetra to deliver a ubiquitous critical voice & data services and a prioritised 4G service to deliver high capacity in high density areas. This is similar to the national offer Airwave recently prepared for the Authority. A local rather than national approach, is also in line with recent changes in UK and EU government procurement strategy

3.3. Fragment strategy: hybrid solution for a region (Scotland) [high value/ high risk]

Scotland represents an extremely challenging environment for the ESN rollout and therefore a suitable candidate for an alternative regional offering. The local offer could be enhanced to enable the MNO partner to leverage the Airwave transmission infrastructure, to deliver consumer and business 4G services. Although additional infrastructure will be required to provide complete LTE coverage.

3.4. Develop strategy: Supply services to Lot 2 and 3 contractors [Low value / Low risk]

Many of the capabilities to deliver Lot 2 are already present in Airwave. Specifically, service management, testing and supplier management. This functionality could be integrated into the Motorola offering, potentially lowering their cost and risk of delivery. The two most significant challenges for Lot 3 will be to cost effectively meet the coverage and availability expectations of the users. Airwave could offer the use of our RAN infrastructure to host part of the ESN. With its inherent high coverage and high availability, this will lower the cost and risk of delivering the ESN.

4. In a separate document titled "Airwave Solutions Limited - Airwave Growth Strategy" and dated 4 June 2015, a markets strategy for Airwave is set out. This paper states that:

Airwave will replicate success as a market leader by developing leadership positions in new niche markets through the exploitation and evolution of existing capabilities.

The end state for the strategy will see Airwave managing a high bandwidth, high coverage, highly resilient radio access network that is a host for a number of mobile communication technologies. Each of these technologies will be delivering a service to a niche market that is dependent on the availability of wireless communications. Whilst many of these markets are only embryonic today they are gaining momentum and significant investments being made.

Examples of include:

- DCMS program £1bn connecting the last 5% of the population to super-fast broadband
- 14 police forces delivering transformational savings by implementing mobile apps (Pronto)
- OfGen create the low carbon fund (£500m) to support DNOs to trials of smart grids
- DoT budgeting £20m for trials for connected cars with a further E200m budgeted for RD
- Scottish government budgeting £30m for telemedicine applications

In order to position Airwave as a significant player in these emerging markets **there will need to be critical focus to development a stronger relationship with government.** The outcome of this relationship would be early involvement in government-sponsored trials, the opportunity to acquire spectrum to support these initiatives and access to government sponsored working groups that are developing strategy such as the OfGen W6 that are setting the direction for smart grid trials. The focus should be on the initiatives that provide the largest near-term benefit such as rural broadband. This could provide an avenue to acquire cost effective spectrum that could support the other opportunities such as smart grids or connected cars.

5. [✂]

Annex 2

1. In this section we present submissions made by Motorola relating to competition in the original tender– and our assessment of them.
2. Motorola has submitted that it considers that the original tender was competitive, in particular because:
 - (a) Over 50 bidders expressed an interest in the project, and the fact that only one bidder remained at the end of the process was simply a function of the competitive process, the high-risk profile of the project and the vast capital outlay required by the successful bidder⁴⁵; and
 - (b) the nature of the service means that an additional bidder would not have created competitive tension on price as comparing offers from different suppliers would have been challenging if not impossible. The Home Office could not have specified its requirements in sufficient detail to be able to select a supplier purely – or even predominantly - on the price offered.⁴⁶
3. Motorola’s economic advisers have also submitted that even with a single bidder, the Home Office and BT would have been in a bilateral monopoly situation, and there is no reason to presume that relative bargaining power was highly asymmetric. It considers that this means there was no unilateral market power at the procurement stage; it was open to the customer to agree the terms with which it was satisfied.⁴⁷
4. The Home Office has told us that, absent any agreement over new terms, it is obliged to support Motorola on the terms which were set in 2000, which it does not consider were competitive as only one company submitted a bid.⁴⁸

CMA assessment

5. We have considered the submissions made by Motorola and its economic advisers on the competitiveness of the original tender. Given the historic nature of the tender, our assessment has largely drawn on information in the public domain. In particular we have considered:
 - (a) The extent of competitive tension in the original tender; and

⁴⁵ [Motorola response to consultation, Para 31](#)

⁴⁶ [Motorola response to the MIR, Para 95](#)

⁴⁷ [DotEcon response to consultation, para 1.26](#)

⁴⁸ [Home Office’s response to the Issues Statement, paragraph 24\(b\)](#)

- (b) the extent of the Home Office's bargaining power in subsequent negotiations

Competitive tension in the original tender

6. In markets characterised by bidding and tendering processes, firms bid on the basis of the service they can offer to supply customers with bespoke products. In the context of such processes, the competitive constraint on firms comes from a customer's willingness to award a contract to a rival rather than to switch to a different bespoke product.⁴⁹
7. Our view is that bidding markets require more than one viable bid (or more than one bid that is perceived by rivals to be viable) to be made for any competitive constraint to be exercised on the bidding parties. In this case we understand that:
 - (a) A Prior Information Notice was published by the Home Office (through the Police Information Technology Organisation, PITO) in the Official Journal of the European Communities in July 1995. This received 70 responses.
 - (b) After the publication of the project advertisement in January 1996, three bidding consortia were formed which passed a pre-tender assessment.
 - (c) However, by April 1997 only BT remained as the sole bidder. Commercial negotiations between the Home Office/PITO and Airwave Solutions therefore began in late 1998.
8. We therefore do not consider the original tender to have been subject to a strong competitive process – a view shared by the NAO⁵⁰ and Home Office. Whilst PITO took action to attempt to ensure value for money within negotiations such as using a should-cost model and a public sector comparator, we do not consider that this addressed the fundamental lack of competition for the contract.
9. We note that the Home Office itself considers that the terms of the original Airwave contract cannot be considered to be competitive.⁵¹ This is a view shared by the House of Commons Committee of Public Accounts who state that "there is no substitute for full competitive tendering"⁵²

⁴⁹ CC3 (Revised), footnote 76.

⁵⁰ [NAO Public Private Partnerships: Airwave report](#), 2002, paragraphs 2.10 to 2.15.

⁵¹ [Home Office's response to the Issues Statement](#), paragraph 24(b)

⁵² [HC 783 01.02.PDF \(parliament.uk\)](#), para 3

10. We have also considered Motorola's submission that the bespoke nature of the Airwave Network means that more bidders would not have likely resulted in more competition on price. We do not consider that the fact that a product or service is complex means that greater competition within a tender cannot lead to better pricing outcomes. For example, as noted within the Dual Role Working Paper, in the tender for Lot 2 of ESN – a similarly complex and bespoke solution - the presence of HP incentivised Motorola to make a keen pricing offer.
11. Our emerging view is therefore that there was a lack of competition within the original Airwave Network tender.

Bargaining power of the Home Office

12. We have considered the relative bargaining positions of the Home Office and BT in agreeing the original contract.
13. The outcomes of negotiations will depend on the relative bargaining position of both parties and the relative importance to each party of its business with the other and the strength of their relative outside options (i.e. their alternative strategies in relation to the relevant product or service).
14. We recognise that the Home Office in theory had the option to “do nothing” and to not proceed with negotiations. However, we do not consider that this was a realistic option given the existing radio systems were not meeting operational requirements, as noted by the NAO.⁵³ We consider that in contrast BT was in a strong position as it was the sole potential supplier for the Airwave Network. This was also the view of the NAO.⁵⁴
15. We therefore consider that it is likely that the Home Office had less bargaining power than BT in negotiating the original Airwave contract.

⁵³ NAO Public Private Partnerships: Airwave report, 2002, paragraphs 3.14

⁵⁴ NAO Public Private Partnerships: Airwave report, 2002, paragraphs 2.34