Mobile radio network services

Provisional Decision

Appendices

19 October 2022

Members of the Competition and Markets Authority who conducted this inquiry

Martin Coleman *(Chair of the Group)*

Humphrey Battcock

Colleen Keck

Jeremy Newman

Interim Chief Executive of the Competition and Markets Authority

Sarah Cardell

The Competition and Markets Authority has excluded from this published version of the appendices 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 Some numbers have been replaced by a range.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.

CONTENTS

Appendix A: Terms of Reference

1 The Competition and Markets Authority (CMA) in the exercise of its power under sections 131 and 133 of the Enterprise Act 2002 (the Act) hereby makes an ordinary reference to the Chair of the CMA for the constitution of a group under Schedule 4 to the Enterprise and Regulatory Reform Act 2013 for an investigation of the supply of LMR network services for public safety (including all relevant ancillary services) in Great Britain.

2 The CMA has reasonable grounds to suspect that a feature or a combination of features of the market for the supply of those goods and services in Great Britain prevents, restricts or distorts competition.

3 For the purposes of this reference:

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

Appendix B: Additional background information

1 This Appendix sets out additional background information on the original Airwave procurement and some relevant developments up to the decision in 2013 to procure the ESN. It covers:

(a) The background to the decision to procure a single, national[1] communications network for the police;

(b) The choice of Private Finance Initiative (PFI) as the procurement method;

(c) The progress of the procurement, including after competitors to BT had withdrawn from competition;

(d) The provision of additional central government funding in the early years following the procurement;

(e) The roll-out of the Airwave Network;

(f) The procurement processes that led to the ambulance services, and the fire and rescue services, becoming users of the Airwave Network;

(g) Concerns the Home Office had about the financial position of Airwave Solutions in the later years of its ownership by Macquarie, and how this informed some decisions about the ESN procurement;

(h) Airwave Solutions' performance; and

(i) The decision in 2013 to procure a new emergency services communication system (ESN).

The Airwave Network procurement

2 This section is based on published information, available in the National Audit Office's 2002 report 'Public Private Partnerships: Airwave',[2] the report of the Committee on Public Accounts which followed it (also called 'Public Private Partnerships: Airwave) and the minutes of the evidence taken by that committee.[3]

The situation before the Airwave Network contract

3 Before the Airwave Network procurement, independent police authorities procured their own radio communications services. As a result, they used different systems, installed and updated at different times.[4]

4 During the 1980s, the Association of Chief Police Officers in England and Wales asked the Home Office to investigate and develop a strategy for the provision of modern radio

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[1] In this Appendix, 'national' is used to mean covering Great Britain but not Northern Ireland.
[2] NAO (2002), Public Private Partnerships: Airwave (HC730).
[3] Committee of Public Accounts (2002), Public Private Partnerships: Airwave (HC783).
[4] Committee of Public Accounts (2002), Public Private Partnerships: Airwave (HC783), Minutes of evidence, Questions 13 and 14.

systems for the police. The NAO reported that this request was 'a key factor' leading to the Major Review of radio Communications in the Police and Fire Services of England and Wales. This review's conclusions were endorsed by the then Home Secretary in April 1993.[5]

5 The police and fire services in Scotland carried out a similar review, which produced broadly similar results.[6]

6 The reviews reported that existing police radio systems did not meet requirements. The Home Office's view of shortcomings in existing systems included the following:

(a) Congestion. The existing radio channels were often very congested, meaning that police officers were unable to gain access when required. This could lead to officers losing the ability to call for rapid response when required.

(b) Inflexibility. The existing systems did not allow for re-assignment of capacity to overcome congestion, or to provide command and working-level channels.

(c) Insecurity. The majority of police radio systems were unencrypted and messages could be intercepted with simple scanning receivers.

(d) Interference. Interference from commercial radio use in neighbouring countries caused severe problems to police radio systems in the south and east of England, and some way inland.

(e) Lack of inter-operation. Vehicle-mounted radios operated on a different frequency from handheld radios, frustrating communications between officers in vehicles and those on foot, without the use of a second radio.

(f) Lack of roaming. Police officers were not able to maintain contact with their control rooms when outside their force areas.

(g) Lack of management information. The systems did not provide information to commanders about the status and location of police officers.[7]

7 In addition to this, the government had declared its intention, in the early 1990s, to surrender access to the radio frequencies that were used by the systems then in use, after 2004. This meant that each police constabulary would need to replace its existing systems by this date.[8]

8 Many radio systems would have needed to be replaced before 2004, because they could not be expanded or upgraded. In the mid-1990s, some police forces were using systems that were already more than 15 years old, while only two forces had radio systems that were less than five years old.[9]

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[5] NAO (2002), Public Private Partnerships: Airwave (HC730), paragraph 1.2.
[6] NAO (2002), Public Private Partnerships: Airwave (HC730),paragraph 1.2.
[7] NAO (2002), Public Private Partnerships: Airwave (HC730), Figure 1, based on information provided by the Home Office.
8 NAO (2002), Public Private Partnerships: Airwave (HC730), paragraph 1.4.
[9] NAO (2002), Public Private Partnerships: Airwave (HC730), paragraph 1.4.

Decision to replace with a national network

9 In 1993, the Home Office concluded that a new system was required, and that it should be procured on a national basis.[10] At this time, it was planned that the new system would also support the fire and rescue services, but in 1996 the fire service withdrew from the programme.[11]

10 A national procurement was preferred over local procurements for replacement systems, on the grounds that local procurements were unlikely to achieve any economies of scale. Additionally, the absence of a European standard for the interfaces between systems meant that it might not have been possible to link police forces together and maintain adequate levels of security through encryption.[12]

11 The Home Office explained its preference for a national procurement over a series of local procurements as follows:

> Firstly, it allows better co-ordination between police forces and that is a key gain from having a single system which straddles the whole country. Secondly, it allows what is called roaming, that is to say police from one area to come to the help of another and then use their own equipment. Thirdly, it enables us to concentrate our expertise, especially in new technology as complicated as Airwave's, also it allows some economies of scale in the resource put into managing the system and there may be economies of scale in the procurement.[13]

Choice of PFI as the procurement route

12 The use of PFI as the procurement route was considered a way of engendering innovation by allowing the private sector to develop solutions for the new service. To support this, each short-listed bidder would be required to produce a project definition study.[14]

Management structure for the project

13 In 1998, the part of the Home Office responsible for the project was transferred to the Police Information Technology Organisation (PITO), a Non-Departmental Public Body established to provide a procurement, contract management and advisory service for communications and information technology used by police forces.[15]

14 Although this body was not formally established until 1998, it was effectively a continuation of the procurement and project team that had been set up in the Home Office in 1993, and the National Audit Office's report refers to the in-house team as 'PITO' in its 2002 report. We do the same here, for consistency and ease of cross-reference.

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[10] NAO (2002), Public Private Partnerships: Airwave (HC730), paragraph 1.
[11] NAO (2002), Public Private Partnerships: Airwave (HC730), paragraph 1.
[12] NAO (2002), Public Private Partnerships: Airwave (HC730), paragraph 1.5.
[13] Committee of Public Accounts (2002), Public Private Partnerships: Airwave (H783), Minutes of Evidence, response to question 2.
[14] NAO (2002), Public Private Partnerships: Airwave (HC730), paragraph 1.9.
[15] NAO (2002), Public Private Partnerships: Airwave (HC730), paragraph 2.

The Airwave PFI procurement

15 In July 1995, the Home Office sent a Prior Information Notice to the Official Journal of the European Union (OJEU), notifying its intention to award a contract for a national communications service. This notice prompted 70 responses.[16]

16 In January 1996, the Project Notice was published in the OJEC.[17] Following this, three potential bidding consortia were formed.[18] These are listed in Table B-1.

Table B-1: Consortia formed to bid for the Airwave PFI contract

Consortium	Lead company	Tetra equipment developer	Other primary members
Consortium 1	O2	Motorola Limited (1) Nokia Telecommunications Limited (1)	TRW Integrated Engineering Division
Consortium 2	Racal Network Services Limited	Ericsson Limited (2) Bosch Telecom (3)	Fluor Daniel Limited N M Rothschild Smith Consultancy
Consortium 3	NTL	Philips Communication Systems	ICL

Notes: (1) After being awarded the Airwave PFI contract, O2 appointed Motorola Limited as the sole infrastructure provider.
(2) Ericsson Limited withdrew from the TETRA market in 1996.
(3) Bosch Telecom withdrew from the TETRA market in 1996.
Source: NAO (2002), Public Private Partnerships: Airwave (HC730).

17 Also in January 1996, the Fire Service withdrew from the procurement.[19] The Home Office has explained that the plan up until that time was for both the Police Service (England, Scotland and Wales) and Fire and Rescue Services (England, Scotland and Wales) to be initial users of the new system:

> [I]n 1996 the Fire Service decided that the requirements of the police for their system were more complex than the requirements of the Fire Service, so they disengaged from the procurement, although they have stayed on the potential sharers' register.[20]

18 From that time onwards, the procurement involved only the police service as committed users of the service to be delivered.

19 The Outline Business Case was produced in April 1996.[21]

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[16] NAO (2002), Public Private Partnerships: Airwave (HC730), paragraph 2.9.
[17] Official Journal of the European Union (OJEU) Project Notice, 1996
[18] NAO (2002), Public Private Partnerships: Airwave (HC730), paragraph 2.9.
[19] NAO (2002), Public Private Partnerships: Airwave (HC730), Appendix 1.
[20] Committee of Public Accounts (2002), Public Private Partnerships: Airwave (HC783), Minutes of Evidence, response to question 3.
[21] NAO (2002), Public Private Partnerships: Airwave (HC730), Appendix 1.

20 In August 1996, PITO issued an Invitation to Tender for project definitions studies.[22] By this time, the quoted figures for a bidder to undertake such a study had risen from a 1994 estimate of £500,000 to a range from £2.5 million to £10 million.[23]

21 Although three potential bidding consortia had been formed, and all three had passed the pre-tender assessment, by April 1997, only one potential bidder remained, led by O2[24], which at the time was owned by BT. First, NTL decided to join the consortium led by Racal Network Services Limited to produce a stronger bid. Following the withdrawal of Ericsson Limited from the TETRA market, Racal Network Services Limited dropped out, citing uncertainties over police support for the project and doubts over potential returns.[25]

22 PITO was concerned that the absence of competition would make it difficult to demonstrate that any offer from the remaining bidder represented value for money. It considered options and consulted, in addition to its three principal advisers, the Home Office Procurement Unit, HM Treasury, the then PFI Panel and the Association of Chief Police Officers.[26]

23 Additionally, to counter the risk that the project might be cancelled, BT proposed to PITO that any assessment of value for money could be supplemented by the use of a 'should-cost' model (see paragraphs 28 to 34).[27]

24 The options, and PITO's view of them, are set out in Table B-2.

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[22] NAO (2002), Public Private Partnerships: Airwave (HC730), Appendix 1.
[23] NAO (2002), Public Private Partnerships: Airwave (HC730), paragraph 2.13.
[24] NAO (2002), Public Private Partnerships: Airwave (HC730), Appendix 1.
[25] NAO (2002), Public Private Partnerships: Airwave (HC730), paragraph 2.14.
[26] NAO (2002), Public Private Partnerships: Airwave (HC730), paragraph 2.15.
[27] NAO (2002), Public Private Partnerships: Airwave (HC730), paragraph 2.17.

Table B-2: Options reviewed by the Airwave project team after competitive tension had been lost

Option	Reasons given by PITO to reject options
1 Continue with O2	None.
2 Re-run single procurement of a national system	There would be no new parties interested in bidding. There would be a negative reaction from O2.
3 Implement fallback	User requirements would not be met. There would be few opportunities for sharers to join thus losing the opportunity for the unit cost to the police being reduced. Police forces would be burdened with the responsibility for replacing their radio systems. Expected benefits from Airwave would be lost.
4 'Do-nothing'	Postponing the procurement for three or more years so allowing the TETRA supply market to mature would see consolidation of the market and there would be no new major players beyond those already in the competition. Some police forces would obtain replacement systems in the interim and would resist, on value for money grounds, any move towards establishing, in the future, a national radio communications network.
5 Adapt procurement strategy to engender competition (e.g. a series of regional procurements)	There would be a need to restart the competition, which would delay the procurement of the service by at least two years. Delaying the procurement would erode support from the police forces.

Source: NAO (2002), Public Private Partnerships: Airwave, Figure 10.

25 PITO considered that abandoning the project was not an acceptable option, because existing radio systems were not meeting operational requirements. Further, because of the shortcomings of the existing systems, the project team considered that the best option would be the one that posed the least risk of delay to implementing a replacement system.[28]

26 Based on these arguments, Ministers approved the proposal to proceed with a single bidder.

27 In October 1997, O2 was awarded the contract for a project definition study.[29]

The 'should-cost' model and the public sector comparator

The 'should-cost' model

28 BT proposed the use of a 'should-cost' model to support the assessment of value for money.

O2 realised that PITO, in the absence of a competitive procurement, might struggle to demonstrate to the Home Office and police forces that the price of Airwave was the best available in the market. To counter the risk that PITO might

[28] NAO (2002), Public Private Partnerships: Airwave (HC730), paragraph 2.15.
[29] NAO (2002), Public Private Partnerships: Airwave (HC730), paragraph 2.15.

cancel the project, O2 suggested that any assessment of value for money could be supplemented by the use of a should-cost model.[30]

29 The 'should-cost' model involved compiling information about the costs of the Airwave Network, to permit direct comparisons with BT's estimated costs. Provided BT supplied detailed information quantifying the assets and labour needed to deliver the Airwave Network, PITO considered that with its advisers it was able to assess the reasonableness of this information, and that it could derive independent pricing of components from information in the public domain. PITO also considered that its 'should-cost' model would be useful for benchmarking exercises during the term of the contract.[31]

30 The project definition study contract, agreed in October 1997, obliged BT to provide the Home Office with component and labour quantities for the project. However, the flow of quantity-related information from this work was slower than PITO had anticipated.[32]

31 Challenges to building the 'should-cost' model identified by the NAO included:

(a) Quantifying labour-only activities that BT intended to outsource. 'For a long time, O2 did not have a clear understanding of what was required. For example, discussion about the amount of software development needed to integrate the various systems in Airwave were concluded in October 1999, two months after the production of the final version of the should-cost model.'[33]

(b) Cost of components. 'Reliable cost information for TETRA equipment proved not to be readily available because the technology was so new. PITO estimated these costs using various sources…[h]owever, because of different levels of functionality there were considerable discrepancies depending on the chosen supplier. Records of how PITO converted the raw cost information it had obtained into figures input into the model were not retained, so we have been unable to verify the reasonableness of the process. As a result, PITO has lost the opportunity to establish a robust database of costs for use in the future. Such a database…would have assisted in pricing future change to the service and in future benchmarking exercises.[34]

(c) Financing costs. BT refused to disclose how it intended to finance the project. Charterhouse (PITO's financial adviser) advised PITO to design the model so that the output reflected pre-finance and pre-tax cash flows. Charterhouse also recommended requiring a breakdown of costs so that meaningful comparisons could be made. BT refused to disclose costs on a component-by-component basis, but agreed to provide cost information for six capital and six operational cost lines.[35]

32 PITO began work on the should-cost model in 1997 and continued refining it until August 1999.[36]

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[30] NAO (2002), Public Private Partnerships: Airwave (HC730), paragraph 2.17. See also Committee of Public Accounts (2002), Public Private Partnerships: Airwave (HC783), Minutes of Evidence, response to question 202.
[31] NAO (2002), Public Private Partnerships: Airwave (HC730), paragraphs 2.18 and 2.19.
[32] NAO (2002), Public Private Partnerships: Airwave (HC730), paragraph 2.20.
[33] NAO (2002), Public Private Partnerships: Airwave (HC730), paragraph 2.20 (a).
[34] NAO (2002), Public Private Partnerships: Airwave (HC730), paragraph 2.20 (b).
[35] NAO (2002), Public Private Partnerships: Airwave (HC730), paragraph 2.20 (c).
[36] NAO (2002), Public Private Partnerships: Airwave (HC730), paragraphs 2.20 and 2.22.

33 The should-cost model calculated an internal rate of return (before financing and tax) of 17 %.[37] It calculated the total cost of the Airwave Network as £990 million.[38]

34 PITO used its should-cost model to challenge discrepancies between its estimates and O2's cost information, and both PITO and O2 told the NAO that these discussions led to a reduction in the estimated unit cost of base stations.[39]

The public sector comparator

35 In February 1999, PITO reached the view that a public sector comparator would also help with its assessment of the value for money of BT's offer. This option had previously been discounted, in the 1996 Business Case, on the basis that the PFI procurement would be the most appropriate method of procurement.[40]

36 A working version of the public sector comparison was completed in September 1999. At this point, negotiations with BT were advanced; the Agreement was signed in February 2000.[41]

37 The public sector comparator included contingency provision of £70 million and risk provision of £170 million (both net present costs). The NAO's review concluded that the risk provision would have been more accurately valued at £150 million.[42] The Home Office said later (in 2002) that a risk value of around 10% of total value for a technically advanced and complex project is considered reasonable.'[43]

38 The estimated net present cost of the public sector comparator was £1,610 million, compared with the BT price of £1,470 million.[44]

Commercial negotiations

39 Commercial negotiations with BT began in December 1998.[45] The NAO described these as 'problematic', noting the following aspects:

(a) without an alternative supplier, 'PITO had to work hard to deliver a deal that it and other stakeholders in Airwave were prepared to accept'.[46]

(b) The possibility that not all police forces would choose to sign up to use the Airwave Network might have created downwards pressure on BT's price. However,

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[37] NAO (2002), Public Private Partnerships: Airwave (HC730), paragraph 2.22.
[38] NAO (2002), Public Private Partnerships: Airwave (HC730), Figure 11.
[39] NAO (2002), Public Private Partnerships: Airwave (HC730), paragraph 2.21.
[40] NAO (2002), Public Private Partnerships: Airwave (HC730), paragraph 2.27
[41] NAO (2002), Public Private Partnerships: Airwave (HC730), paragraph 2.27 and Appendix 1.
[42] NAO (2002), Public Private Partnerships: Airwave (HC730), paragraphs 2.30 and 2.31.
[43] Committee of Public Accounts (2002), Public Private Partnerships: Airwave (HC783), Appendix 1 to the Minutes of Evidence.
[44] NAO (2002), Public Private Partnerships: Airwave report, 2002, paragraph 2.32. For 'net present cost, see Committee of Public Accounts (2002), Public Private Partnerships: Airwave (HC783), response to question 145.
[45] NAO (2002), Public Private Partnerships: Airwave (HC730), Appendix 1.
[46] NAO (2002), Public Private Partnerships: Airwave (HC730), paragraph 2.34.

uncertainty about take-up 'eventually became a price affecting risk' that PITO addressed by agreeing to pay for the Core Service regardless of police take-up'.[47]

(c) PITO was not content with BT's proposed terms in five key areas: the limit of liability; the liability cap for the pilot; liquidated damages' service credits; and benefit-sharing if other services subscribed to Airwave. Negotiations on these points took seven months, with the outcome acknowledge by PITO as 'not ideal', but within the acceptable range.[48]

(d) Although PITO had begun developing a fallback option – in which individual police forces, acting collectively if they chose to, would procure their own digital radio systems – in June 1997, this stopped in August 1997 due to a lack of resources. It was restarted in late 1998, and produced a fallback strategy in December 1998. However, work on an implementation plan was not resourced and so it was not available at the time the contract was awarded.[49]

40 In June 1999, the Association of Chief Police Officers published a report into the feasibility of a locally-procured solution. The NAO reported:

> Despite the fact that the group's estimated cost was similar to that calculated in the should-cost model, PITO avoided using the findings productively for two reasons. Firstly, the timing of the publication of the group's findings was late in the procurement with the negotiations already well advanced and most pricing issues, through comparisons with the should-cost model and public sector comparator, explained. Re-examining issues in the light of the group's findings would have further delayed the award of the contract. Secondly, PITO was committed to the objective of procuring a national police radio system, something that was not assured if the group's alternative won support among stakeholders.[50]

41 In January 2000, one month before the contract was awarded, the Treasury asked PA Consulting to examine the procurement of the Airwave Network 'in the light of emerging recommendations from a Cabinet Office review of major government IT projects':

> PA Consulting focused on risk management, deliverability and issues regarding the contract and made recommendations for changes in these areas. PITO issued a detailed response, which indicated that it would implement some of these changes, including improving how it documented the management of identified risks. [51]

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[47] NAO (2002), Public Private Partnerships: Airwave (HC730), paragraphs 2.36 and 2.37.
[48] NAO (2002), Public Private Partnerships: Airwave (HC730), paragraph 2.35.
[49] NAO (2002), Public Private Partnerships: Airwave (HC730), paragraphs 2.38– 2.39.
[50] NAO (2002), Public Private Partnerships: Airwave (HC730), paragraph 2.40.
[51] NAO (2002), Public Private Partnerships: Airwave (HC730), paragraph 2.41. This review led to the publication in May 2000 of the report '*Review of Major Government IT Projects, Successful IT, Modernising Government in Action*'

Contract award

42 The PFI Agreement for provision of the Airwave Network was executed on 29 February 2000.[52]

Additional central government funding

43 Following the Association of Chief Police Officers' review (see paragraph 40), several police authorities initially refused to sign service contracts, on the basis of their own best value obligations.[53]

44 In July 2000, the Home Office made available £500 million for the first three years of the PFI Agreement. This was intended to cover all contracted core service costs and also some capital and revenue costs in those years.[54]

Airwave Network roll-out

Police service users

45 Lancashire Police Service carried out the pilot for the Airwave Network, which started in November 2000, just over eight months after the PFI Agreement had been signed.[55]

46 Operational testing lasted six months, compared with a planned period of four months.[56] In September 2001, PITO accepted the pilot, subject to the following conditions:

(a) An option to return to pilot status if coverage on major roads was not resolved by February 2002 or to extend conditional acceptance;

(b) 10 % of the core service charge to be withheld until a resolution of coverage on major roads was reached; and

(c) An agreement that a permanent price reduction would be negotiated if coverage could not be brought up to the contracted level, but reached a level with which police forces were content.[57]

47 Roll-out to other police service areas began in September 2001.

48 By August 2004, all but one police service had contracted to use the Airwave Network. British Transport Police entered into a contract in March 2006 (this contract was 'deemed to have commenced' in August 2002).

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[52] PFI Agreement for the Public Safety Radio Communication Service (PSRCS), 29 February 2000
[53] NAO (2002), Public Private Partnerships: Airwave (HC730), paragraph 1.21.
[54] NAO (2002), Public Private Partnerships: Airwave (HC730), paragraph 1.22.
[55] NAO (2002), Public Private Partnerships: Airwave (HC730), paragraph 3.2 and Schedule 1.
[56] NAO (2002), Public Private Partnerships: Airwave (HC730), paragraph 3.3.
[57] NAO (2002), Public Private Partnerships: Airwave (HC730), paragraph 3.15.

49 The end date of the PFI Agreement was set as the last date on which the last of (subsequently agreed) individual service contracts came to an end (ie 9 May 2020 in line with the end of the Northern Constabulary service contract).[58]

50 Originally, each police service contract had its own end date. In 2016, the Home Office negotiated a number of contract changes with Airwave Solutions as part of the 2016 change of control negotiations, including a 'universal' end-date for all users' service contracts of December 2019, which itself was subject to change.

The Ambulance services procurement process

51 The Department of Health (now the Department of Health and Social Care) ran an open competitive process for a new communications system, split into two 'bundles': 'Bundle 1' (the radio network service) and 'Bundle 2' (radio terminals, control room equipment and mobile data terminals).

52 However, competition for Bundle 1 was limited:

> the Home Office contract for the Airwave network was in place and the rollout to police forces was ongoing. The significant cost of putting in place a second, competing national network and the lack of available radio spectrum limited the ability for other potential suppliers to bid. One supplier (Cogent) expressed an interest in bidding a 'network 6' solution and passed the qualification stage of the procurement, but later withdrew from the process for these reasons. NTL also intended to bid, offering to re-sell the Airwave Network, but ultimately withdrew from Bundle 1 during the procurement process.[59]

53 There was slightly more competition at the initial stage for Bundle 2. However this reduced at later stages:

> Through the course of the procurement the number of bidders reduced to two at the BAFO stage: Airwave O2 Limited (now Airwave Solutions Limited) and NTL. NTL submitted a non-compliant bid at the final stage and then withdrew it, so there was technically only one bidder at the very last hurdle). Airwave were the successful bidder for Bundle 2.[60]

54 In July 2005, the Department of Health entered into a project agreement with Airwave O2 Limited,[61] under which ambulance services in England may buy network services. This agreement provided for the Welsh Ambulance Services NHS Trust to join as a party, which it did in January 2007. The first ambulance service (North East Ambulance Service NHS Trust) to become an Airwave Network customer joined in November 2007.[62]

[58] Although this was disputed by ASL which considered the appropriate date was in December 2020.
[59] Ambulance Radio Programme (ARP) responses to Q3 of the RFI dated 28 January 2022.
[60] Ambulance Radio Programme (ARP) responses to Q3 of the RFI dated 28 January 2022.
[61] This was the name at the time for the company now known as Airwave Solutions.
[62] Airwave customer list provided in response to RFI dated 25 October 2021.

55 In July 2006, the Scottish Ambulance Service Board entered into a project agreement under which Scottish ambulance services could buy services from Airwave O2 Limited. The Scottish ambulance services started to use the Airwave Network in August 2010.

56 The Ambulance (England and Wales) project agreement had an end date of July 2016. The Scottish Ambulance Service project agreement had an end date of July 2017.

The Fire and Rescue Services procurement

57 The Department for Communities and Local Government published a Contract Notice in the OJEC on 29 October 2002. Longlisted bidders were invited to submit a proposal on 31 July 2003, and Airwave Solutions was invited to submit a Best and Final Offer on 18 March 2005.[63]

58 After submitting a Revised Final Offer on 31 August 2005, the Department for Communities and Local Government notified Airwave O2 Limited that it intended to award the contract (called the Firelink Project Agreement) to it on 24 February 2006.[64]

59 The Department for Communities and Local Government entered into the contract on behalf of itself, the Scottish Government and the Welsh Government. In April 2016, this responsibility was transferred from the Department for Communities and Local Government to the Home Office. The contract is managed by Mott MacDonald on behalf of the Home Office, the Scottish Government and the Welsh Office.[65]

60 The Firelink Project Agreement originally had an end date of December 2016, which was extended to December 2019 at the time of Motorola's acquisition of Airwave Solutions.[66]

Airwave Solutions' finances from 2007 to 2015

61 At acquisition in 2007 by Macquarie,[67] Airwave Solutions' balance sheet was valued at £2.1 billion, including £780 million equipment and property assets, and over £1.3 billion of goodwill and other intangible assets.[68] GDCL took on nearly £2 billion of debt, comprised of a £1.5 billion external floating rate loan maturing in March 2014, and £500 million of internal loans.[69]

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[63] Firelink project agreement and schedules, 29 March 2006, Recitals.
[64] Firelink project agreement and schedules, 29 March 2006, Recitals.
[65] Firelink presentation slides, 26 October 2016.
[66] Motorola response to putback, 22 July 2022
[67] See Section 2. Airwave Solutions was acquired by Guardian Digital Communications Limited (GDCL), a company controlled by Macquarie Communications Infrastructure Group, a Macquarie fund listed on the Australian Stock Exchange, and Macquarie European Infrastructure Fund II, a Macquarie unlisted investment fund (collectively referred to in this document as 'Macquarie').
[68] Emergency Services Mobile Communications Programme (ESMCP): Contingency planning and ASL negotiation plan.
[69] Emergency Services Mobile Communications Programme (ESMCP): Contingency planning and ASL negotiation plan, paragraph 3.2.

62 In the years following 2007, GDCL's debt increased to over £2.4 billion by 2013, of which £2 billion was external debt.[70]

63 In 2010, the Home Office asked the Office for Government Commerce to assess Airwave Solutions' financial status. This was prompted by concerns over the high levels of debt carried, and the critical nature of the services supplied. The Home Office noted that:

> At the time of acquisition, the business was modelled as one which would operate in perpetuity. The model projected strong growth, both in the number of users and in the value-add services they would procure.[71]

64 In 2014, Macquarie sought and obtained a Scheme of Arrangement from the High Court, extending the maturity of the external debt.[72,73]

65 In 2014, the Home Office was preparing the Invitation to Tender for ESN, the successor to the Airwave Network. After the Scheme of Arrangement was granted, the Home Office considered contingency plans, based on concerns about Airwave Solutions' financial capacity to maintain services through the planned period of transition to ESN.[74]

66 The Home Office was concerned that there were 'material risks of financial failure later in the [PFI] contract life', and that this 'could potentially put at risk part of the critical national infrastructure':

> ASL [ie Airwave Solutions] itself is therefore likely to come under financial pressure during the latter years of the contract, towards the end of 2018-19. In addition, long before that point, there is a real risk of key ASL personnel leaving, potentially to work for eg successful ESN bidders.
>
> At the point at which ASL starts losing cash, there is a risk that the ultimate owners of GDCL will push ASL into administration or liquidation. This poses a risk for users remaining on the network, and while the Government has a parent company guarantee against Macquarie European Infrastructure Fund (MEIF) to reimburse it for costs incurred as a result of contract breaches, invoking this would require a prior service failure on a system which is part of the critical national infrastructure.
>
> While it is reassuring that GDCL looks to be financially secure until at least 2017, its high levels of debt and ownership of ASL gives rise to a material Airwave service continuity risk during the lengthy transition period to ESN from 2016 to 2020.[75]

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[70] Emergency Services Mobile Communications Programme (ESMCP): Contingency planning and ASL negotiation plan, paragraph 3.4.
[71] Airwave Services Limited, Forward Projection.
[72] Emergency Services Mobile Communications Programme (ESMCP): Contingency planning and ASL negotiation plan, paragraph 3.11.
[73] Internal Home Office email, 7 May 2015, referring to press story of 6 May 2015.
[74] Emergency Services Mobile Communications Programme (ESMCP): Contingency planning and ASL negotiation plan, paragraph 1.1.
[75] Emergency Services Mobile Communications Programme (ESMCP): Contingency planning and ASL negotiation plan, paragraph 1.1.

67 The Home Office was also concerned that under the existing agreements and service contracts, Airwave Solutions was not obliged to provide services to many police areas where contracts were due to expire before 2019.

68 Initial discussions with Airwave Solutions about how to achieve transition to ESN resulted in Airwave Solutions proposing a blanket extension of all the service contracts to 2020. The Home Office considered this unacceptable on grounds of cost.

69 The Home Office considered that its contingency options, in a scenario where financial distress in Airwave Solutions created a risk of partial or total loss of Airwave coverage before transition to ESN, were to:

(a) negotiate with Macquarie to ensure continuation of service throughout the transition period;

(b) use contractual step-in rights to take over the Airwave Network service;

(c) use statutory powers to take over the Airwave Network service; or

(d) purchase Airwave Solutions and take over the Airwave Network service.

70 The Home Office's view was that options (b), (c) and (d) would present significant challenges, both legal and practical. Its proposed approach was twofold:

(a) To seek a deal with Macquarie that included acceptable extensions to relevant service contracts (preferably in terms of months rather than years); and

(b) to revise the transition period to be set out in the invitation to tender for ESN, from four years to two and a half years, with 'a reasonable amount of contingency built in for the event of overruns'.[76]

71 During 2015, Home Office concerns about the financial risk in Airwave Solutions continued, and contingency plans and financial monitoring were recommended.[77]

Airwave Solutions' operational performance

72 Section 4 of the PFI Agreement specifies the requirements of the service, including coverage and other delivery standards. It specifies 'service availability' requirements for all police services, defined as the percentage of 'successful communications' in the following circumstances:

(a) Within a force area, at least 99.80%;

(b) For calls from a user outside the 'home force area' to the home force area, at least 99.96%;

(c) In 'fall-back mode', in which users are communicating via a base station with other members of the same Talk Group, at least 99.98%.[78]

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[76] The transition period in the Full Business Case (August 2015) and the eventual contract (December 2015) was slightly shorter than this, at 27 months.
[77] Home Office documents, slides 14–16.
[78] The PFI Agreement, 29 February 2000, [✂].

73 Airwave's service contracts with police services, ambulance services and fire and rescue services include provision for required levels of service.'

74 The service contracts set out performance targets for different uses (eg radio voice services, communications control interface services, disaster recovery services). For example, for the police services, voice call availability must be 99.74% or a service credit will be applied. The contracts set out 'severity' ratings for failure to meet each target, and service credits are calculated according to this weighting, and other relevant factors.

75 The police service level and service credit regime are 'intended to refer to the PFI ethos of "no service, no payment"'. However, for certain services, the credit (penalty) is designed to be higher than the equivalent payment for the delivered service:[79]

> The service level and service credit regime is intended to reflect the Private Finance Initiative ethos of 'no service – no payment' with service credits designed to reinforce the service level structure and not intended to be implemented in a punitive way. However, in order to reflect the Customer's concerns, certain Network Services benefit from the service credit regime in a manner that is disproportionate to the associated Contract Charges being charged by the Contractor. In particular, to provide an appropriate incentive to the Contractor, any failure to provide Radio Voice Services beyond a specified time threshold will generate service credits, which significantly exceed the charge that the Customer pays for that service.[80]

76 In general, the Airwave Network is considered to be a highly resilient network, and when the NAO reported in 2016 it noted that availability had averaged 99.9% between 2010 and its review.[81] Over the ten years to the end of 2020, Airwave Solutions has paid 0.07% of revenues back to the three main emergency service users.[82]

77 Service credits as a percentage of revenues from the three main emergency service users over the years 2011 to 2020 are set out in Table B-3.

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[79] See, for example, [✂] of Avon and Somerset Police's contract.
[80] Police services model contract, [✂].
[81] NAO (2016),), Upgrading emergency service communications: the Emergency Services Network (HC 627), page 7.
[82]Motorola's responses to Q4 of the RFI dated 30 July 2021, and Q9 of the RFI dated 13 December 2021.

Table B-3: Service credits payable by Airwave Solutions to the emergency services customers from 2011 to 2020 (expressed as a percentage of their respective revenues for that year)

%

Service	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average refund
Police	0.03	0.06	0.04	0.08	0.17	0.05	0.06	0.05	0.10	0.12	0.07
Fire	-0.84	0.92	0.45	0.95	2.18	0.27	0.53	0.93	0.24	1.07	0.67
Ambulance	-5.94	-1.91	1.70	0.49	0.78	-0.28	-0.22	0.10	0.04	0.78	-0.44
Weighted average	-0.62	-0.15	0.31	0.20	0.37	0.02	0.06	0.13	0.10	0.30	0.07

Note: negative numbers indicate that in that year, the customer paid Airwave Solutions in respect of service credits.
Source: Motorola's responses to Q4 of the RFI dated 30 July 2021, and Q9 of the RFI dated 13 December 2021.

78 The Ambulance Radio Programme at the Department of Health has shared concerns about the service provided by Airwave Solutions with us. We note that not all these concerns necessarily relate to matters set out in the service level agreements:

> With specific regard to Bundle 1 Services, over the full term of the contract the service has been delivered effectively and has provided a secure and broadly consistent level of service. However, in more recent years, compounded in part to delays in the introduction of ESN, this part of the solution has shown increasing signs of fragility. The asset base is arguably beyond 'end-of-life' status. Notwithstanding the limitations of the Airwave Network, technology trends have moved on and the Airwave Network has [✂]. The impact of ageing infrastructure has also arguably contributed to an increasing number of potentially serious service outages and Airwave's effectiveness in responding to these incidents (particularly in terms of notifying and updating end-users) has at times been poor. However, over the last 12 months, performance has broadly stabilised.
>
> In terms of Bundle 2 Services, it is a broadly similar picture. Airwave (and its key subcontractor) has shown an increasing reluctance to maintain the existing infrastructure and has actively sought to dilute the existing liability and service credit regime when negotiating variations or extensions. In some areas, equipment and solutions (and the accompanying skills to maintain these solutions) has become scarce.[83]

The decision to procure ESN

79 In 2010, following the General Election, the Minister for the Cabinet Office added Airwave Solutions to the 'deal room' discussions with major suppliers[84] (an initiative to seek reduced prices from a number of major suppliers, called 'strategic suppliers'). In the view

[83] Ambulance Radio Programme (ARP) responses to Q12 of the RFI dated 28 January 2022, and additional information provided on 23 September 2022.
[84] The Emergency Services Mobile Communications Programme: background to assurance work.

of the Home Office in a 2017 briefing note, ‘Macquarie took a belligerent approach, demanding a 15 year contract extension in return for any price reduction, and discussions broke down’.[85]

80 In early 2011 the Emergency Services Mobile Communications Programme (ESMCP), was started.[86] The government set up this programme to look at options for replacing the Airwave Network service when the contracts would end; at the time, this was forecast as May 2020 for police services.[87]

2013 Outline Business Case

81 In December 2013, the ESMCP Board considered and agreed the Outline Business Case for the ESN procurement. The Outline Business Case set out the strategic, economic, financial, commercial and management cases for the procurement.[88]

82 The strategic case for moving to ESN was based on three principal drivers for change:

(a) contracts with Airwave Solutions were due to expire in May 2020;

(b) current contracts with Airwave Solutions did not represent lowest cost for the taxpayer; and

(c) the emergency services increasingly needed high-speed mobile data capabilities which Airwave Solutions could not support.[89, 90]

83 The Outline Business Case recommended replacing the Airwave TETRA system with a mobile data-based technology, using infrastructure shared with other users:

(a) TETRA is not capable of delivering the enhanced data capabilities that are required to enable mobile working for the Emergency Services, eg access to back office systems and patient telemetry. It cannot meet the full user requirement without the addition of mobile broadband services provided either through a public MNO or through a dedicated network

(b) TETRA’s long term (10+ years) viability is questionable. It is approaching end of life although some countries (notably Germany) are still rolling out their TETRA networks. The UK network would need considerable investment to replace obsolete equipment were it to continue beyond 2020

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[85] The Emergency Services Mobile Communications Programme: background to assurance work.
[86] NAO (2016), Upgrading emergency service communications: the Emergency Services Network (HC 627), page 5.
[87] NAO (2016), Upgrading emergency service communications: the Emergency Services Network (HC 627), paragraph 1.10.
[88] Emergency Services Mobile Communications Programme (ESMCP) Outline Business Case, 4 December 2013.
[89] NAO (2016), Upgrading emergency service communications: the Emergency Services Network (HC 627), paragraph 1.10: Emergency Services Mobile Communications Programme (ESMCP) Outline Business Case, 4 December 2013.
[90] Emergency Services Mobile Communications Programme (ESMCP) Outline Business Case, 4 December 2013.

(c) It would be difficult to implement a new TETRA network because this would require radio spectrum in a suitable band (around 400MHz) and most of the spectrum in this band is either used by ASL [ie Airwave Solutions] or the MOD [ie Ministry of Defence]

(d) Transition to a new TETRA network would be very difficult because roaming between networks is limited or non-existent and would require full national rollout of a parallel system before national users could transition

(e) TETRA systems in the UK and elsewhere have not been subject to rapid evolution compared with consumer based products because the customer base is so much smaller and the market is confined to a small number of specialist suppliers. A TETRA radio now looks almost identical to one from 2000 whereas a modern smartphone eg iPhone 5 released in 2012 has evolved to be vastly more capable than its 2000 equivalent. This situation will continue and the divergence of capability between TETRA and public mobile networks will increase over the lifetime of ESN to such an extent that users will probably stop using it except in extremis.[91]

84 The financial case considered whether a capital based (government buying the capital investment needed to build the new network) or 'resource-based' (government paying according to a contract for services and interim milestones delivered) was preferable. It concluded that both options had the same financial cost, of £[✂].[92]

85 ESMCP called this approach, of replacing the Airwave TETRA system with a mobile data-based technology, using infrastructure shared with other users, the 'Emergency Services Network' (ESN).[93]

Timelines

86 Table B-4 shows the procurement, roll-out and emergency services take-up dates for the procurement of the Airwave network.

87 Table B-5 shows the procurement dates for ESMCP, and the original expected dates for implementation of ESN and Airwave switch-off.

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[91]Emergency Services Mobile Communications Programme (ESMCP) Outline Business Case, 4 December 2013. See also NAO (2016), Upgrading emergency service communications: the Emergency Services Network (HC 627), paragraph 1.11.
[92] Emergency Services Mobile Communications Programme (ESMCP) Outline Business Case, 4 December 2013.
[93] NAO (2016), Upgrading emergency service communications: the Emergency Services Network (HC 627), paragraph 4.2.

Table B-4: Airwave procurement and roll-out timeline, with joining dates of emergency service users

Month	Event
March 1993	Publication of the final report of the Review of Radio Communications in the Police and Fire Services
July 1995	Publication of the Prior Information Notice
January 1996	Project Notice published in the OJEU
January 1996	Fire service withdrew
April 1996	Outline Business Case produced
August 1996	Invitation to tender for project definitions studies issued
April 1997	BT left as the single bidder
October 1997	BT awarded a contract for a project definition study
September 1998	BT completed its project definition study
December 1998	Commercial negotiations with BT started
June 1999	Publication of the Association of Chief Police Officers' review of Airwave
October 1999	BT submitted its best and final offer
January 2000	PA Consulting's examination of the procurement
January 2000	Final Business Case produced
February 2000	BT awarded the contract for Airwave
June 2000	First police service contract signed (Metropolitan Police)
July 2000	Government announced £500 million available to fund the first three years
October 2000	Second police service contract signed (Lancashire)
November 2000	Pilot phase begun
January 2001	Bedfordshire Police
February 2001	Avon and Somerset Police
	Gloucestershire Police
	Gwent Police
	North Yorkshire Police
	Suffolk Police
March 2001	Cumbria Police
	West Mercia Police
	Leicestershire Police
April 2001	Hampshire Police
	Stafford Police
	Norfolk Police
May 2001	Warwickshire Police
	Merseyside Police
	Cheshire Police
	Devon and Cornwall Police
	Northamptonshire Police
	Strathclyde Police
June 2001	Pilot extended
June 2001	Dyfed-Powys Police
	Northern Scotland Police – latest contract expiry date before the Heads of Terms agreement: 9 May 2020
	Northumbria Police
	Surrey Police
	Thames Valley Police
	Cambridgeshire Police
	Greater Manchester Police
	Kent Police
	West Midlands Police
July 2001	Dumfries and Galloway Police
	Grampian Police
	South Wales Police
August 2001	Dorset Police
	Hertfordshire Police
	North Wales Police
	South Yorkshire Police
	Sussex Police
	Wiltshire Police
	Essex Police
September 2001	PITO conditionally accepted the pilot
September 2001	Roll-out commenced

September 2001	Lincolnshire Police
	Durham Police
October 2001	Central Scotland Police
	City of London Police
November 2001	Derbyshire Police
	Cleveland Police
	Lothian Police
February 2002	Fife Police
May 2002	Humberside Police
November 2002	Tayside Police
August 2004	Nottingham Police
July 2005	Ambulance (England) project agreement; agreement provided for Ambulance (Wales) to buy services too
March 2006	Fire and Rescue Services joined
March 2006	British Transport Police (under the terms of the contract, deemed to have a commencement date of 5 August 2002
July 2006	Ambulance (Scotland) joined
January 2007	Ambulance (Wales) joined

Source: NAO (2002), Public Private Partnerships: Airwave (HC730); Motorola's Response to Question 3 of the CMA's request for 'off-the shelf' material.

Table B-5: ESN timetable with milestone dates as expected in February 2016

2011	ESN programme started (ESMCP)
August 2012	Strategic Outline Business Case approved
December 2013	ESN Outline Business Case approved by programme board
April 2014	Contract notice published in the OJEU[94]
August 2015	ESN full business case approved by programme board
September 2015	ESN contract with KBR signed
December 2015	Contracts with Motorola and EE signed
May 2016	Final technical design
August 2016	Test rig delivered
April 2017	All ESN functionality completed
September 2017	Sufficient coverage achieved to start transition. Transition commences
December 2017	EE coverage complete
December 2019	Transition completed date. Airwave turned off.

Sources: NAO(2016), Upgrading Emergency service communications: the Emergency Services Network (HC627),

[94] OJEU Contract notice published on 18 April 2014

Appendix C: Key Airwave Solutions Contracts

Introduction

1 The purpose of this appendix is to set out the CMA's understanding of the contractual relationships between Airwave Solutions / Motorola, the Home Office and users of the Airwave Network (Motorola's customers).

2 We aim to describe in particular:

- the contractual position in 2000, 2016 and subsequently (2018, 2021 and now); and
- the extent to which key contract terms were settled in 2016 and/or to which they were subject to further negotiation and agreement.

3 This appendix will first provide a high-level overview of what appears to us to be important aspects of key contracts, before turning to a more detailed description of those contracts, of the way they relate to one another and of their terms most likely to be relevant to the competition assessment. This includes a consideration of what was agreed in 2016 (and since) in relation to these terms and how therefore it appears to us the contractual position now stands. The appendix accordingly sets out our understanding of facts and matters that support our competition assessment in section 4 of our provisional decision report in particular

Summary of particularly relevant contract terms

The PFI Agreement[95]

4 The PFI Agreement was entered into by the Police Information Technology Organisation ('PITO'), the original contracting public authority, and the original service provider, British Telecommunications plc ('BT'), in 2000. This followed a tendering process in which BT was ultimately the only bidder and after negotiation of the relevant terms. The current parties to the agreement are the Home Office and Airwave Solutions Limited ('ASL').

5 The agreement is essentially a framework arrangement. It sets out ASL's obligations to provide a Land Mobile Radio network and services under separate contracts with service recipients and the Home Office's obligation to pay[96] for them, for a fixed period beginning in 2000. The end date of that period was set as the last date on which the last of (subsequently agreed) individual service contracts with the blue light emergency services (see below) came to an end (a date later set as 9 May 2020).[97]

6 The PFI Agreement contains provisions setting the charges that will be paid by the Home Office and service users for the network and services; however, it does not itemise the specific price figure or the components of the charges. Instead, there is a baseline figure provided, which is subject to an indexation formula on an annual basis. It also contains

[95] PFI Framework Arrangement for The Public Safety Radio Communications Service.
[96] See paragraph 38 below.
[97] Although this was disputed by ASL which considered the appropriate date was in December 2020.

provisions for benchmarking the charges, as well as the performance, quality, and service as a whole. This process is intended to enable independent assessment of whether those charges materially exceed prices that would be appropriate for the market conditions and to enable parts of the Agreement to be varied or terminated in relation to services not determined to be value for money.

7 Prior to the agreement of the HoTs in 2016, the PFI Agreement did not contain terms relating to or contemplating the extension of the contract period. It sets out circumstances in which the agreement may be terminated or will expire. The former includes where control of the service provider changes without the Home Office's approval. The latter includes where the end of the contract period is reached. It also seeks to provide for the transfer of network assets to the Home Office or an alternative service provider at the end of the agreement (by termination or expiry).

8 In that latter regard, the agreement requires the network/service provider to prepare a plan so that an alternative provider could provide the network services. That plan should divide the network assets into 'transferable' and 'non-transferable' ones. Assets are transferable where they are not part of the service provider's existing networks for providing services to other customers. They are non-transferable where they are part of those networks and are used to provide such services. The Home Office is given the option to acquire the transferable assets at fair market value when the agreement ends.

9 The agreement also contains provision for variation. Either the Home Office or ASL can request that changes are made to the terms. Certain variations, as explained further below, have been made.

Service contracts

10 Airwave Network Services are provided by ASL to users under service contracts that are separate from, but largely mirror the framework set out in, the PFI Agreement. There are separate contracts with individual police forces (based on standard model terms of the PFI Agreement) and contracts under which services are provided to the fire and rescue and ambulance services. The contracts with the fire and rescue and ambulance services are national contracts rather than with individual local or regional services.

11 The service contracts were, in the first instance, for fixed terms (of between 10 and 15 years). They began on various dates and so had differing end dates (though these are now standardised – see below). Some of these contracts – for fire and rescue and ambulance services – were capable of extension for up to five years subject to the agreement provisions therein.

12 Like the PFI Agreement itself, each of them requires the network/service provider to prepare a plan for the transfer of the network services to an alternative provider on termination or expiry of the contract. Again, the plan should divide up the assets and identify those which are transferable to the Home Office or other relevant authority if they wish to acquire them.

Subsequent variations

13 Some of the terms of the PFI Agreement and the service contracts have subsequently been amended following negotiations between the Home Office and Motorola (and where

relevant other authorities). Those amendments affect the duration of the contracts and the pricing.

14 In 2016 the Heads of Terms ('HoTs') were agreed. These provided for a uniform end date for the PFI Agreement and the services contracts and the shutdown of the Airwave Network. It was initially set as 31 December 2019, but the HoTs provided that it could be extended firstly by agreement and then by the Home Office unilaterally issuing notices setting a date. The HoTs set out that the price payable during periods of extension would be, essentially, the price already payable under the contracts.

15 In other words, the Home Office and Motorola agreed, subject to any further negotiation and agreement, a unilateral option for the Home Office to extend the provision of the Airwave Network and Services at an agreed price.

16 Other variations have been negotiated and agreed in 2016 and since. Some of those also relate to the duration of the contracts and the price.

17 In particular, the HoTs (and subsequent settlement agreements in 2016) also provided for the payment to the Home Office of credits to settle certain price benchmarking disputes. [✂] 31 March 2016 and 31 December 2019 [✂]. The HoTs, and the subsequent 2016 settlement agreements, also set out the Home Office's agreement to waive the benchmarking provisions in relation to the main services under the PFI Agreement and services contracts (initially) until 1 January 2021.

18 Additionally, the HoTs (and a subsequent agreement) provided for the amendment of the PFI Agreement to include obligations on ASL to provide, and the Home Office to pay for, interoperability technology to be used in the period of transition between the Airwave Network and ESN.

19 At the same time as the HoTs, the Home Office and Motorola agreed a Deed of Recovery ('DoR') relating to the latter's dual role in the Airwave Network and the delivery of ESN. The DoR provided for discounts to the charges for the Airwave Network and Services - [✂]% - where Motorola was the sole cause of delays of more than 90 days to the delivery of ESN. Those discounts were subsequently reduced following further negotiation and agreement in 2018 to [✂]% and then [✂]% to coincide with Motorola's delivery of key ESN milestones.

20 In February 2017, the Home Office and Motorola negotiated and agreed changes to the charges payable for the Airwave Network and Services in the event that their provision extended beyond 31 December 2019. In particular, discounts to the Home Office in the form of credits of £[✂]m a month (over 9 months from 1 January 2020 and up to a cap of £[✂]m) if monthly Airwave charges exceeded £[✂]m.

21 Finally, for present summary purposes,[98] following further negotiations, in 2018 and 2019 the Home Office and Motorola agreed to extend the end date for the PFI Agreement and the services contracts, and the shutdown of the Airwave Network, to 31 December 2022. They also agreed that the core service charges payable for the Airwave Network and Services from 1 January 2020 would be discounted by [✂]% (such discount being

[98] Further detail about this and other matters is set out below.

additional to those which had been agreed in 2016 and 2017). Since then, the Home Office has [✂], and the shutdown date of the Airwave Network, as 31 December 2026.)

22 The net effect of these subsequent negotiations and agreed variations nonetheless is that, subject to any further negotiation, the Home Office retained a unilateral option to extend the provision of the Airwave Network and Services at an agreed price (based on the charges payable under the PFI Agreement and the services contracts).

Background

23 The Airwave Network is a secure private mobile radio communications network for organisations involved in public safety in Great Britain. The police, fire and rescue and ambulance services operating in the field, as well as other public services, communicate with each other securely using the network. There is currently no other secure communication network in place for emergency services in Great Britain.

24 The design, building, financing and operation of the Airwave Network were commissioned by PITO through a public procurement process initiated in 1996.[99] In February 2000, PITO (subsequently replaced by the Home Office) entered into a Private Finance Initiative Framework Agreement (the "PFI Agreement") with BT. In 2007, the subsidiary company Airwave O2 Limited, which owned and operated the Airwave Network, was acquired by Macquarie Communications Infrastructure Solutions. Its name was subsequently changed to Airwave Safety Communications Limited and further changed to Airwave Solutions Limited ("ASL"). In 2016, Motorola Solutions Inc ("MSI") acquired ASL. MSI is also a key supplier in the design and rollout of ESN, through its subsidiary Motorola Solutions UK Limited ("MSUL"). In this appendix, the term Motorola is used to refer to MSI and to MSI and its subsidiaries, including ASL, collectively as the context requires.

25 The Airwave Network was initially only supplied, pursuant to the PFI Agreement and a series of associated individual service contracts (the "Police Services Contracts"), to the police services. Other organisations seeking access to the Airwave Network were identified as sharer organisations ("Sharers"). However, over time separate agreements were entered into on behalf of the fire and rescue and ambulance services by the relevant government authorities.

26 The result of those developments is that ASL is contracted to provide the Airwave Network to the Home Office and the other relevant authorities.

27 The relevant contracts that accompany the PFI Agreement are the Police Services Contracts (also referred to collectively in some of the relevant documents as the "Home Office Contracts"), and there are other associated services contracts:

- an agreement dated 29 March 2006, originally entered into with the First Secretary of State (subsequently the Secretary of State for Communities and Local Government) (DCLG) for the provision of the Airwave Network to fire and rescue services ("the Firelink Project Agreement"). The Firelink Project Agreement was

[99] OJEC contract notice published on 23 January 1996.

transferred from DCLG to the Home Office pursuant to the Transfer of Functions (Fire and Rescue Services) Order 2016, with effect from 1 April 2016;

- an agreement with the Department of Health dated 19 July 2005 for the provision of radio-based voice and data communication services for England and Wales (the "Ambulance Contract"); and
- an agreement with the Scottish Ambulance Service Board dated 18 July 2006 for the provision of radio-based voice and data communication services for Scotland (the "Scottish Ambulance Contract" or "SAS Contract").

Together, the Home Office Contracts, the Firelink Project Agreement, the Ambulance Contracts, and the Scottish Ambulance Contract are the "Blue Light Contracts."

28 Non-emergency services using the Airwave Network service continue to be known as Sharers. Further details on the contractual arrangements for these organisations can be found below at paragraphs 132 to 136 [Sharer Organisations Contracts].

29 This appendix will consider the terms of the contracts as they were originally entered into between the Home Office, and other relevant authorities, and ASL (collectively for the purpose of this appendix the "Original Contracts"), some background on the Sharer contracts and then turn to the key agreements revising the Original Contracts ("Contract Changes").

Original Contracts

The PFI Agreement

30 The PFI Agreement sets out the agreed rights and obligations imposed on the parties, while the schedules go into detail on matters such as the services contracted for, the charging structure of those services, benchmarking and termination.

31 No services are directly provided under the PFI Agreement. Rather, the agreement governs the terms that are set out in the customer service contracts ("Services Contracts" or, in this appendix, the "Police Services Contracts"). The Police Service Contracts are the individual contracts between ASL, and relevant police forces, concerning access to the Airwave Network and charges for such access.[100] The Home Office is also a party to the Police Services Contracts, identified as the Authority. The PFI Agreement contains, in Schedule 17, a "Model Services Contract" setting out standard terms for the Services Contracts into which individual police forces enter.

32 The following sets out the key aspects of the PFI Agreement in relation to (i) duration, (ii) services provided, (iii) pricing, (iv) termination, (v) consequences of termination, (vi) penalties for breach of contract, (vii) transparency/information sharing under the contract, and (viii) variation of the contract.

[100] Per the PFI Agreement, [✂]. The Services Contracts also now include the other Blue Light Contracts.

Duration

33 [✂] of the PFI Agreement states that 'unless it is terminated before expiry in accordance with the provision of this Framework Arrangement, (it) shall continue in force until the date of expiry or termination of the last to expire or terminate of any Services Contracts'. In other words, that it is to continue until the last of the Services Contracts ends. Although the contract contains general variation provisions (see below, there are no terms relating to or contemplating the extension of its duration (in contrast to the services contracts under which services are provided to the emergency services users of the network).

34 In this connection, the OJEC notice published about the procurement of the network stipulated that the 'Service Framework Arrangements' would be for up to 15 years and that it was expected that the initial systems would be in place by 1999 with the service fully operational by 2003. The PFI Agreement itself was originally expected to be for a duration of 19 years. In its evidence to the Public Accounts Committee in 2002, the Home Office stated: 'The Airwave contract payments are spread over 15 years for each force starting at the Ready for Service date. There was a planned progressive roll out starting in 2001 and the total life of the programme, including the roll-out and decommissioning phases, will be 19 years'[101].

35 There appears to have been some disagreement between the Home Office and ASL as to the actual end date, due to the fact that it was driven by the end date of the last of the Police Services Contracts, rather than being a date on the face of the PFI Agreement (although the fact that there was an end date does not appear to have been disputed by any of the interested parties). The Home Office considered the end date to be 9 May 2020 (to coincide with the end of the Northern Constabulary police contract)[102], while ASL considered that it was December 2020.[103] In any event, this end date has been superseded through contractual change, as explained in further detail below.

Services

36 The relevant services contracted for under the PFI Agreement (and ultimately provided to users under their services contracts) are the 'Network Services.' These comprise 'Core Services' and 'Menu Services':

37 The Core Services are defined by a set of 'Service Descriptions' which comprise the Core Service. They are set out in [✂] and are the main network services ASL will provide to service users under their individual service contracts. They include voice services, emergency communications, data services, hand-portable coverage, and radio system vehicle coverage.

38 The Menu Services are defined in [✂]. These are services users can elect to purchase from ASL in addition to Core Services, such as voice messaging, hand-portable coverage, in-service support, special coverage, performance review and statistics.

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[101] "Public Private Partnerships: Airwave" – House of Commons, Committee of Public Accounts HC 783 01.02.PDF (parliament.uk).
[102] Home Office slides on ESMCP, 20 August 2015 and Home Office internal email, 24 January 2016.
[103] Airwave meeting minutes, 10 & 11 March (year unknown).

39 There is also an additional set of services which are not Network Services – 'Framework Services' – in [✂]. These are extra services to be provided by ASL to the Home Office which fall outside of those services defined in [✂] (Core Service) and (Menu Services). They include management of a viable mobile frequency assignment plan and participation in the PSRN Terminal Equipment Forum.

Pricing

40 [✂] provides for the payment of charges by the Home Office and service users. It says that 'In consideration of the provision of the Network Services in accordance with the terms of the Services Contracts, the Authority and each Customer shall pay their respective portions of the Contract Charges (as set out in each Services Contract), which shall be drawn from the Charging Structure'.

41 [✂] details the Contract Charges and Charging Structure. The Home Office and each customer will 'pay their respective portions of the Contract Charges'[104], which is derived from a charging structure set out in [✂]. A baseline figure[105] is established, which 'the calculation of the actual Core Service Charge payable in any contract year' is based on. Further details about the baseline figure include the apportionment between England and Wales, Scotland, and the British Transport Police, as well as a more granular apportionment between the various police constabularies.

- Initial Core Services charges and Menu Services charges are specified in [✂].
- These charges and indexation are subject to annual price adjustments. They are reviewed annually and are updated in line with inflation according to set formulae. Each year, the new charges are agreed from 1 February and come into force on 1 April of that year. There are provisions in place should the parties not be able to agree on the updated Core Services and Menu Services charges by 1 April of the relevant year[106]. If they cannot agree the charges, Motorola is to continue issuing invoices based on the sums applicable in the preceding year. Upon "eventual agreement" of new Core Services and Menu Services charges for the year, an adjustment will be backdated 'so as to take effect from 1 April', with Motorola being entitled to invoice the Home Office and its customers accordingly. If an eventual agreement cannot be reached, then 'the matter shall be referred for resolution in accordance with the Dispute Resolution Procedure'. [✂] is, accordingly, the starting point in understanding the service charges set out in the individual service contracts.

Benchmarking

42 [✂] provides for benchmarking mechanisms applicable to the services for the duration of the PFI Agreement. The purpose of these is for the Home Office to assess the continuing 'Value for Money' in respect of the level and quality of Core Services and Menu Services provided by ASL. This is reflected in [✂] which says: 'The benchmarking shall provide a detailed analysis that enables the AUTHORITY to assess the continuing Value for Money

[104] [✂].
[105] Annex [✂].
[106] Paragraph [✂].

exercise of the Network Services. The term 'Value for Money' shall mean, given the service quality and service levels provided by the CONTRACTOR in relation to those available in the open market, whether the Contract Charges paid for the supply of Network Services to Customers under the Services Contracts materially exceeds pricing that would be appropriate for market conditions current at the time of the benchmarking exercise. The benchmarking may also include recommendations about service delivery, service levels, service standards and "best practice" in addition to any review of Contract Charges'.

43 [✂] sets out the scope of benchmarking, the applicable process, its frequency, and the options available following the results of a benchmarking exercise. Factors to be considered when undertaking that exercise are specified to include (but are not limited to):

- the prices charged for the Airwave Network;
- the prices charged for Core Services and Menu Services (as packages);
- the basis on which the Charging Structure operates;
- the prices charged for comparable services elsewhere; and
- the scope of alternative services.

44 According to [✂], the benchmarking exercise is to take place within an initial 6-year period and subsequently at least every 5 years.

Termination

45 Under the PFI Agreement, the Home Office has the right to terminate the PFI Agreement at any time in the following circumstances:

- Change of Control –
  - [✂] upon the occurrence of a Change of Control of ASL. A 'Change of Control' is an event under which someone acquires direct or indirect control of ASL.
  - There is an obligation on ASL to notify the Home Office within two months of any change of control.[107] [✂] of the PFI Agreement additionally obliges ASL to inform the Home Office 'immediately in writing of any proposal or negotiations which have resulted, or are likely to result in:
    - control of the other party's affairs passing to another person;
    - a merger between the other party and another person.
  - This termination right must be exercised within six months of such change of control taking place. Such right is not available where the Home Office has agreed in advance to a change of control;

[107] [✂] of the PFI Agreement additionally obliges ASL to inform the Home Office 'immediately in writing in writing of any proposal or negotiations which have resulted, or are likely to result in:
[✂] control of the other party's affairs passing to another person;
[✂] a merger between the other party and another person.'

- [✂]**:** provides a right of termination if ASL is subject to an Insolvency Event.
- [✂]**:** sets out a right of termination if ASL commits a material Default of any obligation under the PFI Agreement (which includes a significant or material loss or reduction in ASL's UK Government security status under [✂]) and if (other than an obligation covered by [✂]):
  - such material Default is capable of remedy and ASL fails to remedy it; or
  - such material Default is not capable of remedy.
- [✂]**:** confirms that a right of termination also exists where any other provision of the agreement expressly entitles the Home Office Authority to do so. This includes:
  - [✂]**:** where delivered 'Service Levels' set in the relevant Services Contracts are not met consistently in respect of a significant number of the Services Contracts and this is likely to have a material adverse effect on the Network Services or to materially deprive the Home Office and the service users of the benefit of the Network Services.
  - [✂]**:** where ASL commits a material breach of Quality of Services standards entitling the Home Office to terminate the PFI Agreement in accordance with [✂].
  - [✂]**:** where new 'Pilot Services' are subjected to test periods and the Home Office does not accept those services by the end of those periods;
  - [✂]**:** where ASL or any member of its personnel (or anyone acting on its or their behalf) does any 'Prohibited Act' or commits any offence under the Prevention of Corruption Acts 1889-1916 in relation to the PFI Agreement or any other contract with the Crown; and
  - [✂]**:** if ASL is in breach of any security obligation specified in [✂] or is in breach of any secrecy or security obligation in any other contract with the Crown.
- In addition, the Home Office has the following rights connected to termination:
  - [✂]**:** the right to cancel any element of the Network Services following the conduct of the benchmarking process set out in Schedule 24 in the event that such process results in a recommendation that the benchmarked services do not represent Value for Money and if, despite good faith negotiations and including, where appropriate, use of the Dispute Resolution Procedure, the parties are unable to conclude suitable amendments to the agreement within the timescale in [✂] (or other agreed period).
  - [✂]**:** The Home Office may also, at any time, terminate the PFI Agreement by giving ASL not less than twelve months' notice.

Rights and obligations on Termination

46 [✂] provides that 'In the event of the termination or expiry of this Framework Arrangement (or part thereof) in accordance with [✂], the provisions of [✂] (Consequences of Termination) shall apply'.

47 [✂] covers aspects relating to the Transfer of responsibilities, treatment of assets and compensation as follows:

Transfer of responsibilities

48 [✂][108] specifies the arrangements which shall be made to ensure an effective handover of the responsibility for the provision of the Network Services from ASL to the Home Office, the individual Customers or to a replacement contractor or contractors (collectively termed 'Alternative Service Provider' in [✂]) in the event of the termination or expiry of the PFI Agreement or the Services Contracts in the circumstances specified in [✂].

49 [✂] provide for the preparation of a Service Transfer Plan (STP) which includes proposals for the successful transfer of the Network Services to an Alternative Service Provider and associated provisions.

50 [✂] states that within a stipulated six-month period in the early part of the Agreement's lifetime, the network/service provider must prepare a STP to be reviewed by the Home Office. The Home Office is to review the plan within 2 months of receipt and 'shall notify the contractor of any suggested revisions…'. Such proposed revisions are to be incorporated or discussed and resolved accordingly.

51 [✂] stipulates that the STP 'shall provide comprehensive proposals for the activities and associated liaison and assistance which will be required for the successful transfer of the Network Services to an Alternative Service Provider'. The paragraph provides a non-exhaustive list of issues and proposals that should be dealt with, which includes a list of, or proposals to be able to identify, 'all of the Technical Infrastructure, including both Transferable Assets and Non-Transferable Assets and proposals for a mechanism by which the Transferable Assets can be split from the Non-Transferable Assets'.

52 Transferable Assets are defined[109] as 'such parts of the Technical Infrastructure which are not embedded within the contractor's [ASL's] existing networks to provide services (including the contractor's regulated business) to other customers, and which are capable of transfer to an Alternative Service Provider, such items being identified by reference to the Service Transfer Plan'. Other assets are Non-Transferable Assets.

53 [✂] provides that the network/service provider (ASL) shall review and update the STP. A revised STP should have been provided on the 3rd anniversary of the PFI Agreement and 'thereafter at each subsequent anniversary (or more frequently as may be agreed between the parties) in the event that the Network Services or other circumstances have changed'.

54 [✂] states that the network/service provider (ASL) is expected to 'use all reasonable endeavours, to negotiate in such agreements as it enters into, the right for it to assign or novate to the [Home Office] any maintenance agreements and support agreements which relate to the Transferable Assets'.

55 [✂] provides that 'In the event of the termination or expiry of this Framework Arrangement for whatever reason, ASL shall fulfil the requirements of the Service Transfer Plan (subject to being paid its reasonable costs and expenses in relation to performing the

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[108] [✂].
[109] [✂].

Service Transfer Plan except where termination arose due to the Default of ASL where such costs and expenses shall not be payable but shall be taken into account when assessing the liability of ASL in relation to such termination)' and goes on to specify that ASL shall, in particular provide to the Home Office or an Alternative Service Provider all Home Office data, and relevant source codes and hardware and software.

56 [✂] addresses the provision of services in a transition period ('Transition Services') if the Agreement ends in certain circumstances. That is, where a 'National Termination Scheme' takes place in circumstances other than termination by the Home Office (under [✂]), termination by the network/service provider (ASL) (under [✂]) or expiry of the agreement ([✂]). The National Termination Scheme would involve the termination of the PFI Agreement and all Services Contracts under [✂]. [✂] sets out that the Transition Period shall begin on commencement of the National Termination Scheme and sets out the payment of Transitional Contract Charges, the charged to be paid by the Authority to the Contractor during each year of the Transition Period.

Compensation

57 [✂] also covers the payments due to ASL on termination. [✂] provides that [✂]:

- payments specifically set out in [✂] or elsewhere in the PFI Agreement or in any Services Contracts;
- payments due to the Contractor in the event of the exercise by the Authority of the break option;
- payments due to ASL in the event of the termination of this PFI Agreement or any Services Contract due to a Force Majeure Event; and
- claims in respect of liability owed to ASL in the event of termination by ASL due to a Contractor Termination Event or any pre-existing claims which the Contractor may have against the Authority or any Customer.

58 [✂] specified how ASL will be compensated in the event that the PFI Agreement is terminated by the Home Office in accordance with the terms of [✂] by way of break notice.

Assets

59 [✂], meanwhile, provides for both the Home Office's options for dealing with Transferrable Assets on termination or expiry of the agreement and associated payments it would need to make. These are set out in [✂].

60 The stipulated possibilities include the option for the Home Office to require ASL to transfer (whether by sale, licence etc) the Transferrable Assets to the Home Office or an Alternative Service Provider. [✂] provides that 'such option shall be exercisable by the [Home Office] as soon as possible but in any event within 3 months following the date of any early termination of this Framework Agreement, or no later than three months prior to the end of any Transition Period or expiry date of this Framework Agreement'.

61 [✂] states that 'if the [Home Office] exercises such option, the [Home Office] or an Alternative Service Provider shall, within 30 days of the exercise of the option, pay to ASL the agreed fair market value of such assets and contracts as are transferred to the

Authority or an Alternative Service Provider'. There is no reference within the PFI Agreement as to the how the fair market value is to be calculated or defined.

Penalties for breach of contract

62 [✂] deals with the steps the contracting parties must take in the event of a breach of the Agreement. Its essence is that in the event of a failure to provide services in accordance with the Agreement, ASL must remedy that failure (where possible). The costs of doing so would lie with the party at fault. The clause says:

[✂].

Process for variation of contract

63 The process for varying the PFI Agreement is governed by [✂] and [✂] and sets out the following:

- No aspect of the PFI Agreement is in principle out of scope of such a request.
- [✂] sets out the process by which any change can be requested by the Home Office or recommended by ASL.
- [✂] sets out the obligations on each of the Parties in considering any change request. It states that 'Neither the Home Office nor ASL shall unreasonably withhold or delay its consideration or agreement to any change. For the avoidance of doubt, any withholding of agreement by the Home Office shall not be considered to be unreasonable where any change recommended by ASL would or might (in the opinion of the Home Office) result in ASL's provision or performance of the Services under this Framework Arrangement failing to conform to the terms of this Framework Arrangement.'
- [✂] provides for ASL to be compensated for the implementation and operation of any change: [✂].

Police Services Contracts

64 There are police services contracts in place for each of the various constabularies in England, Wales, and Scotland. These are based on the model terms in [✂] to the PFI Agreement.

65 The start dates of the Police Services Contracts vary. The earliest contract in place is understood to be from 29 June 2000, 4 months after the PFI Agreement became effective. It is understood that the duration of the Police Services Contracts was 15 years from the Ready For Service (RFS) date they contain. [✂] of the Police Services Contract provides that the customer and the Home Office may, by giving the appropriate notice (in accordance with [✂]) to the Contractor, extend the original term of the Services Contract beyond the expiry date and in accordance with [✂] of the same Services Contract.

66 The Core Services to be provided to the relevant police force and any Menu Services that may be selected by it are derived from the PFI Agreement. The terms of the Police Service Contracts are broadly similar to the terms of that agreement. As a result, if the PFI

Agreement is terminated (in accordance with the terms set out therein), the Police Services Contracts will automatically be terminated without notice to the parties.

67 [✂] of the Police Services Contract states that charges in relation to Core Services are payable by the Home Office, while Menu Services charges are payable by the relevant police force customer. This position is reinforced in [✂], which sets out obligations between the Home Office and the police force regarding payment.

68 [✂] contains more details of the structure of the Core Services and Menu Service Charges. It refers back to [✂] in the PFI Agreement (see above).

Termination and Consequences of Termination

69 [✂] deal with termination of the Police Services Contract. The former deals with circumstances in which termination may occur and the latter its consequences.

70 [✂] states that the police contracts 'shall terminate without notice to either party in the event that the [PFI] Framework Arrangement is terminated pursuant to the terms thereof'. If termination of the PFI Agreement 'occurs (i) pursuant to [✂] of [it] …., such termination shall be deemed under this Services Contract to be a termination due to [✂]'. Where termination is due to any other provision in the PFI Agreement, it will not be termination due to the default of ASL and it accordingly will not be held liable under the Police Service Contracts in relation to such termination.

71 [✂] entitle the relevant police force to terminate the Police Services Contract at any time if there is an 'Aggravated Breach'[110] or 'material Default"[111] by ASL of the obligations set out in it and there is a failure to remedy such a breach (or it is not possible to do so). [✂] states that the police force 'agrees that it will not exercise its rights under [✂] frivolously or in relation to minor, cosmetic or inconsequential Defaults' and in the first instance will consult with ASL and engage the applicable Dispute Resolution procedure.

72 [✂] put the parties on notice that the relevant Police Services Contract 'represents part of a national service provided by [ASL] to Forces in England, Wales and Scotland under the [PFI Agreement], and that any termination (in whole or in part) of this Services Contract may have consequences for neighbouring Forces and the national nature of the service provided by [ASL]'. The relevant police force is under an obligation to notify the Home Office of any intention to terminate its Police Services Contract under [✂], obtain prior written consent from the Home Office and provide a copy of that to ASL.

73 [✂] of the Police Services Contract details the arrangements that apply to ensure an effective handover should termination or expiry of the contract as prescribed under that schedule take place. It refers to [✂][112] of the PFI Agreement, in particular that there is an obligation on ASL to prepare a Service Transfer Plan, 'setting out a plan for the successful

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[110] Defined in Metropolitan Police Services Contract, [✂].

[111] Defined as 'any breach by a party to this Services Contract of its obligations under this Services Contract (including a fundamental breach or breach of a fundamental term) or any failure by that party to perform such an obligation or any negligent or criminal act or omission of that party, its employees, agents or sub-contractors in connection with or in relation to the subject-matter of this Services Contract'

[112] See paragraph 48 above

transfer of the Network Services, at a national level, to an Alternative Services Provider'.[113] The expectations and obligations set out in this Schedule derive from [✂] of the PFI Agreement. This includes the requirement for ASL to sell Transferable Assets to the Home Office at the latter's option for 'fair market value'. As with the PFI Agreement, there is no reference within the contract as to how the fair market value is to be calculated or defined. [✂] in the Police Service Contracts states that 'if the fair market value of such assets cannot be agreed, it shall be determined through the Dispute Resolution Procedure.'

74 [✂] in the Police Services Contract further provides that ASL shall immediately repay to the Home Office or customer (as appropriate) any sums that had been paid in advance for Network Services not performed at the time of its termination or expiry.

75 [✂] provides that 'In the event of the termination or expiry of this Services Contract for whatever reason, the CONTRACTOR shall fulfil the requirements of the Force Services Transfer Plan'. It is almost identical to [✂] in the PFI Agreement.

Compensation

76 [✂] also deals with the payments due to ASL on termination in a similar way to [✂] of the PFI Agreement. [✂] states 'No payments and/or compensation shall be due to the CONTRACTOR in the event of termination of this Services Contract except:

(a) payments specifically set out in this Schedule or elsewhere in this Services Contract or as provided in [✂] of the [PFI Agreement];

(b) payments due to [ASL] in the event of the termination of this Services Contract due to a Force Majeure Event; and

(c) claims in respect of liability owed to [ASL] in the event of termination by [ASL] upon a Contractor Termination Event or any pre-existing claims which [ASL] may have against the [police force] CUSTOMER or the [Home Office]'.

Assets

77 Alongside the other provisions relating to the transfer of assets, [✂] provides that ASL shall 'use all reasonable endeavours to negotiate, in such agreements as it enters into, the right for it to assign or novate to the [relevant police force] any maintenance agreements and support agreements which relate to the Transferable Assets which are to be transferred to the [relevant police force]. Such right to assign or novate shall be exercisable upon the expiry or termination of this Services Contract and shall relate to the elements of the Transferable Assets…'. Transferable Assets has the same meaning as that defined in the PFI Agreement.

Fire & Rescue Services Contract (the "Firelink Project Agreement")

78 The Firelink Project Agreement is a contract with the Home Office under which ASL agrees to provide, and the Home Office agrees to pay for, Airwave Network services to each

[113] [✂] Police Services Contract, [✂].

'Qualifying Fire Authority'. Unlike with police forces, there are not separate services contracts with each Qualifying Fire Authority.[114]

79 The Firelink Project Agreement commenced on 29 March 2006, to continue for a period of 10 years and 9 months. The Home Office has the capability, at its sole discretion, to extend the contract for up to 36 months (a major extension), subject to such extension being a minimum of 12 months, with at least 24 months' notice[115]. In addition, under [✂], the Home Office has the capability at its sole discretion to extend the contract with minor extensions for one or more periods which do not exceed, in the aggregate, 12 months, with at least 1 months' notice.

Services

80 [✂] provides that the services provided under the Firelink Project Agreement shall be all those set out in the 'Authority Requirements and the Solution' in [✂] of the contract. Authority Requirements are defined under [✂][116] as Communication Services and Service Access Nodes. [✂] also sets the overarching aim that the services to be provided are those which achieve the Firelink project objectives. Communication services are further defined under [✂][117] to include broadcast services, point-to-point services, high priority point-to-point services, short messaging and file transfers. [✂] sets out the standards and requirements which must be met or where possible exceeded in the provision of the services.

Pricing/Charging Structure

81 [✂] sets out the Charges payable to ASL and provides that it is entitled to the Capital Charges and Service Fees calculated in accordance with a specified formula. Capital Charges include one-off payments relating to the achievement by ASL of certain Milestones and subsequent Service Fees are payable once the Milestone is achieved and until the Firelink Project Agreement expires or is terminated (or as otherwise stated) ([✂]). The relevant Milestones relate to matters such as the rollout of infrastructure on a regional basis, the provision of terminal equipment and training, and the provision of documentation and interoperability of the system.

82 Unlike the PFI Agreement and the ambulance services contracts, the Firelink Project Agreement does not contain any price benchmarking provisions.

Assets

83 Like the PFI Agreement and the Police Services Contracts, the Firelink Project Agreement defines the Assets to be provided under the contract and provides for what may happen to them when the contract expires or is terminated. Assets are defined in [✂] as 'any asset,

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[114] The Firelink Main Agreement contains a number of provisions that reflect this contractual structure. For example, that Qualifying Fire Authorities cannot enter into agreements of vary the contract on the Home Office's behalf (clause 3.3).
[115] Firelink Main Agreement, [✂].
[116] [✂].
[117] [✂].

contract or right (whether tangible or intangible) which forms part of the System' and they are divided into sub-categories of assets relevant to the Firelink Project Agreement in [✂]. For example:

[✂] [✂]:

(i) [✂];

(ii) [✂];

(iii) [✂];

(iv) [✂];

[✂] [✂]:

(a) [✂];[118]

(b) [✂];

(c) [✂];

(d) [✂];

(e) [✂];

(f) [✂]; [✂]

(g) [✂].

84 [✂] of the agreement governed the Exit Plan which is to be enacted by ASL following the Termination or Expiry of the contract. [✂] states that the ASL is responsible for delivering the Exit Plan by a date no later than 6 months from the date the contract became fully effective (the 'Effective Date'). As explained in [✂], the Exit Plan must give details of all information, actions and assistance reasonably required of ASL to facilitate the provision by a New Contractor of Equivalent Services and facilitate a successful and smooth transfer of responsibility for provision of the Services in each Region.

85 In connection with that Exit Plan, [✂] sets out the Home Office's options for dealing with Transferrable Assets and provides for the retention by ASL of Non-Transferring Assets.

86 Specifically, [✂] sets out the process to be followed for the Transfer of Transferable Assets. [✂] provides the mechanism through which the Authority can select or deselect the Transferable Assets it wishes to acquire subject to the payment of a sum as set out in [✂].

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[118] [✂].

87 Paragraph [✂] states that for the transfers the Home Office will pay ASL a sum equal to the Total Fair Market Value of the transferring assets. The Total Fair Market Value for these purposes is defined as set out below:

[✂]:

[✂];

[✂]; [✂]

[✂],

[✂].

88 The Fair Market Value of each Asset is defined in [✂] of the contract as the amount for which that asset could be exchanged in an arm's length transaction between informed and willing parties, other than in a forced or liquidation sale. Provisions [✂] set out how that value is to be ascertained. In particular, [✂] provides for the inspection and valuation of relevant Assets by an Independent Expert appointed by the parties 24 months prior to the contract's expiry date.

Variation of the Agreement

89 Any variation to the Firelink Project Agreement must be made in accordance with the Change Control Procedure in [✂]. That procedure sets out the process for either party to request any variation not already provided for under the express terms of the contract.

90 [✂] provides that the Home Office may at any time require a Mandatory Change and may request any other change by serving on ASL a Change Request. Mandatory Changes are set out in [✂], and include, for example, additional and replacement service access nodes, product descriptions and first line maintenance options. Alternatively, ASL may propose a change by serving a Change Request on the Home Office for its evaluation. Only where a change increases the scale or scope of the services ASL provides under the contract may it seek to increase the charges made to the Home Office.

Change of contracting party or control

91 The Firelink Project Agreement also contains certain change of party or control provisions. In particular, [✂] imposes obligations on ASL to notify the Home Office of changes to ASL's Directors and to obtain the Home Office's prior consent to certain transfers in ASL's share ownership. [✂].

Termination and Consequences of Termination

92 [✂] provide for termination of the Firelink Project Agreement.

93 [✂] covers non-default termination including automatic termination on expiry, termination for prolonged force majeure and voluntary termination. [✂] provides for the process of voluntary termination. In particular, that the Home Office is entitled to terminate the contract at any time on 12 months' notice to ASL.

94 [✂] identifies several events and circumstances as 'Contractor Events of Material Default' which give the Home Office the right to terminate the contract. They include but are not

limited to the occurrence of an insolvency event to ASL, change of control of ASL and a material breach of the obligations under the contract.

95 [✂] deals with further consequences of termination or expiry of the contract. In particular, [✂] provides that ASL must implement the Exit Plan required under [✂] (see above).

Compensation

96 [✂] provides for the circumstances ('Compensation Events') in which ASL is entitled to claim Compensation under the Firelink Project Agreement. A Compensation Event is defined in [✂] as occurring where there has been a breach by the Home Office of its obligations under the contract other than to the extent that the breach arises (directly or indirectly) as a result of any Default or wilful act by ASL. [✂] states that '[✂].'

Ambulance Services Contracts

97 The Ambulance Main Agreement (referred to in this appendix as the "Ambulance Contract") was entered into by the Department of Health and ASL on 19 July 2005. It covers ambulance services in England and Wales.[119] The Scottish Ambulance ARRP Agreement ("SAS Contract") is a separate customer contract to the Ambulance Contract, covering ambulance services in Scotland.[120] The SAS Contract was entered into by the Scottish Ambulance Service Board and ASL on 18 July 2006, on terms near identical to those of the Ambulance Contract. Where we refer below to the 'Authority' in the context of the contracts we mean the Department of Health and/or the Scottish Ambulance Service Board as the case may be.

Duration

98 In both the Ambulance Contract and the SAS Contract, the duration is stated as a period of 10 years, with scope for the Authority, at its sole discretion, to extend the contract in any service area for up to five years, with a one-year extension being the minimum term (see [✂]).[121] Initially at least 6 months' notice was required if the option to extend was to be exercised; however this was amended to 12 months' notice via a CCN ([✂]).

Services

99 Pursuant to [✂] of both contracts, the relevant services that are contracted for by the Authority are 'Network Services.' These comprise 'Core Services' and 'Additional Services.'

100 [✂] of each contract provides more detail about these services. The Schedule states that the 'Authority requires a digital, voice and data radio network which, by means of the Core

[119] Albeit that the 'Territory' of the Contract is England and Wales is outside the Territory (see (Main Ambulance) ARRP Agreement, [✂] (Definitions)). [✂], however, sets out sets out how services may be provided – on request by the Authority – to the Welsh Ambulance Services NHS Trust (WAST) and WAST is included in the definition of Authority Service Recipients. (Main Ambulance) ARRP Agreement, [✂] (Definitions) ([✂]).
[120] Scottish Ambulance ARRP Agreement, [✂] (Definitions) [✂]. Ambulance services in Scotland are provided by the Scottish Ambulance Service Trust.
[121] (Main Ambulance) ARRP Agreement, [✂] Scottish Ambulance ARRP Agreement, Clauses [✂].

Services and Additional Services, provides coverage for mobile devices and hand portable devices in densely populated areas for every Ambulance, Acute Receiving Unit and Coronary Care Unit in the National Ambulance Operational Area'. The two sub-categories of services ('Core Services' and 'Additional Services') are divided into Bundle 1 and Bundle 2.[122]

101 Those Bundles are in turn divided into Lots. Bundle 1 comprises 'Lot 1: The provision of a digital radio voice & data network'. Bundle 2 comprises 'Lot 2: The provision of mobile and hand portable Terminals for voice & data…Lot 3: The provision of Dispatcher Equipment; and…Lot 4: Systems integration and other relevant value added services applied to each local Ambulance Trust'.

102 [✂] in both the Ambulance and the SAS Contracts provides that ASL ' … acknowledges that it is not the exclusive supplier of the Service' and that the relevant customer may 'provide all or any part of the Services itself or obtain all or any part of the Services from a third party'.

Pricing

103 Under both contracts, the Authority pays charges for the Network Services on a monthly basis. [✂] of the Ambulance Contract provides that 'the Authority shall pay the Contractor the Charges for each Service in respect of each calendar month following the Payment Commencement Date for that Service in accordance with the provisions of [✂] (Charging and Service Deductions)'. Almost identical wording is in [✂] of the SAS Contract, save that the word 'Authority' is replaced with the 'Board'.

104 In both contracts, [✂] provides for Charging and Service Deductions in relation to Bundle 1 and Bundle 2

Benchmarking

105 In common with the PFI agreement, but in contrast to the Firelink Project Agreement, both the Ambulance Contract and the SAS Contract contain provisions in relation to benchmarking.

106 In the Ambulance Contract, the main provisions on benchmarking are in [✂] of and [✂].

107 Under [✂], following the 3rd anniversary of the start of the contract (the 'Effective Date' of 19 July 2005) the Authority is entitled to require '[✂]'. The Authority would not be able to request another such review for at least 24 months ([✂]) (other than a benchmarking review for certain components included in Bundle 2 (see [✂]).

108 Schedule [✂] sets out the details of the benchmarking process. The Authority can select an independent third party ("Benchmarker") to undertake the review, but it must not be a 'material competitor' of ASL. There is also an obligation on the Authority to declare if the third party selected to do the benchmarking has a "material competitor" of ASL as a client.

109 The Schedule also includes a description of "Good Value", which takes into account charges being less or equal to a specified threshold ([✂]) as well as service level specifications

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[122] See, for example, Ambulance Contract, [✂] (Authority's Requirements – Bundle 1), [✂].

([✂]). It is explicitly stated in this schedule that benchmark reviews 'shall not result in any increase to the Charges (either individually or in aggregate) or any decrease in the performance of any Services or Service Level Specifications' ([✂]).

110 Schedule [✂] further provides (in [✂]) that '[✂].' [✂] says that if a Benchmarking Review results in that determination and ASL does not reduce the charges within three months and, if requested, improve the Services and/or Service Level Specifications within six months, that will be a contractual default (by ASL).

111 ASL has a right to make submissions to the Benchmarker, but it cannot dispute the Benchmarker's decision unless there has been a failure by the Authority or the Benchmarker, or it 'reasonably considers' the decision to be rooted in 'bias, procedural irregularity and irrationality' (see [✂]). If there is such a dispute, it will be subject to the Dispute Resolution Procedure set out in [✂] of the Ambulance Contract.

112 The terms concerning dispute resolution in [✂] set out that the parties are expected to negotiate in good faith to resolve any Benchmarking dispute or claim that may arise. If the dispute cannot be resolved without it becoming contentious, arbitration is available to the parties. Where court proceedings have not commenced, there is a requirement on the Authority to serve on ASL a notice that the dispute be referred to arbitration.[123] In the event that court proceedings are commenced, the courts of England and Wales have exclusive jurisdiction.[124]

113 The SAS Contract also includes benchmarking provisions similar to those in the Ambulance Contract. One thing of note is that the Scottish Ambulance Service Board is reliant on the Authority under the Ambulance Contract exercising its Benchmarking rights, before the Board can exercise its own rights ([✂]).

Variation of the Ambulance Contract and the SAS Contract

114 [✂] provides that the Ambulance Contract 'may not be varied, except by agreement in writing' and 'signed by duly authorised representatives of the parties'.

115 [✂] sets out the Change Control Procedure which applies to all changes excluding those otherwise expressly provided for in the Ambulance Contract. [✂] provides that ASL may at any time submit to the Authority a written proposal for amendments to or substitution of the Technical Solution it provides under the contract (with the caveat under [✂] that the amendment shall not be a change entitling ASL to any payment or to any relief from the performance of its obligations under the contract).

116 There are equivalent provisions in the SAS Contract.

Termination and Consequences of Termination

117 The Ambulance Contract and the SAS Contract contain identical termination provisions.[125]

[123] [✂] – in both the main Ambulance Contract and the SAS Contract
[124] [✂] – in both the Ambulance Contract and the SAS Contract
[125] Save where the latter refers to the 'Board' rather than the 'Authority'.

118 [✂] is concerned with termination for default, either by ASL or the Authority. Under [✂] defaults by the former include insolvency; material breaches of confidentiality; 'any Critical Service Failure;' 'or any act or omission which results in "material damage to the reputation of the Authority".' Under [✂] they also include termination for a change of control of ASL without the Authority's prior written consent (or unless permitted under [✂]). [✂] sets out the Authority's options in respect of ASL's defaults. They include termination with immediate effect via written notice, demanding that particular breaches be rectified within a specified time, and withholding payment.

119 Defaults by the Authority are covered in [✂]. They comprise '[✂]'. If such an event occurs, under [✂] ASL is entitled to terminate the contract by giving 30 days' written notice if the total liability exceeds specified financial limits (in [✂]).

120 [✂] provides for non-default termination. In particular, [✂] provides that the contract terminates automatically on expiry of the term (or the term as extended under clause 3 of the contract).

121 [✂] is concerned with the effects that termination or expiry of the contract has on a number of matters, including continuing effects of the contract; the obligation on ASL to provide an exit plan; transfer to the Authority of assets and contracts; transitional arrangements and costs. These are set out in more detail below as far as the exit plan and asset transfer provisions are concerned.

Compensation

122 [✂] in both the Ambulance Contract and the SAS Contract provides for compensation in the event of termination. Together with [✂] the provisions seek to operate as liquidated damages clauses. They set out fixed sums the parties agree should be paid in full and final settlement on termination of the contracts.

Assets

123 [✂] of both the Ambulance Contract and the SAS Contract defines the Assets falling under the contracts as 'all assets and rights used by [ASL] or any Contractor Party to provide the Services in this Agreement'. They include ASL's ICT infrastructure, any rights in software, intellectual property rights, books and records used to provide Services, as well as 'any land, buildings, vehicles and other tangible assets which the Contractor uses to provide services'. They expressly exclude the Authority's Assets ("Sole Use Assets").[126]

124 The definition of these Assets is important in connection with the provisions of the contract dealing with the consequences of its termination or expiry. They help identify categories of Assets that may be transferred to the Authority. To that end, there is also a definition of 'Transferable Assets' in [✂]. They comprise 'those Assets that the Authority

[126] The Authority's data, the Authority's software, the 'Specially Written Software', documentation, the Authority's ICT infrastructure and 'any other data, software, assets, equipment or other property owned by the Authority, Any Authority Service Recipient, or any Authority Party which is or may be used in connection with the provision or receipt of Services'.

has the right to acquire upon Termination, Expiry, or and Service Transfer pursuant to [✂] (Exit and Service Transfers Arrangements)'.

125 [✂] and [✂] then contain detailed provisions that seek to deal with the end of the contracts (on termination or expiry) and what should happen to the Assets.

126 In particular, [✂] of both contracts requires the network/service provider (now ASL) within six months of the contract coming into effect to produce an Exit Plan based on [✂] of the contracts. That plan must provide for the orderly transition of the Services from the provider (ASL) to the Authority or any replacement supplier on termination or expiry of the contract. Under [✂], ASL must update the Exit Plan not less than once a year. If the parties do not agree the contents of the updated Exit Plan, they may refer the matter to a dispute resolution procedure.

127 Under [✂], on termination or expiry of the contract the Authority is entitled to acquire at its option any of the 'Transferable Assets.' [✂] requires ASL to transfer those requested. That transfer is at no cost to the Authority where it occurs on (i) expiry of the contract, or (ii) on termination and the Authority has already fully paid for the assets. Otherwise, a charge may be made which will be the lower of the Net Book Value of the Assets and Fair Market Value (see below), less what the Authority has already paid for them (e.g. in any charges and compensation).[127]

128 [✂] then contains further detailed provision for the operation of the Exit Plan and Asset and Services transfer arrangements:

- For Transferable Assets for which a charge may be made, 'Fair Market Value' is defined as 'the fair market value of the relevant Asset(s) calculated in accordance with…' an agreed Financial Model.
- [✂] Confirms that ASL '… is required to ensure the orderly transition of the Services … to the Authority or any Replacement Supplier in the event of any Termination or Expiry or upon a Service Transfer'.
- [✂] provides that the Exit Plan shall address the issues within the schedule 'to facilitate the transition of the Services from [ASL] to the Replacement Supplier or the Authority ensuring, to the extent possible, that there is no disruption in the supply of the Services and that there is no deterioration in the quality of the delivery of the Services during [a] Transitional Assistance Period'. This also includes how the services will be transferred, 'along with processes, documentation, data transfer, systems migration, security and the segregation of the Authority's technology components from any technology components run by [ASL] or any Contractor Party…'
- [✂] imposes obligations on ASL, including maintaining:
- Asset registers such as a 'Register of all Assets detailing their ownership status … (separately identifying Transferable Assets) …. and both their Net Book Value and

[127] An ancillary requirement in [✂] requires ASL to ensure that provision is made in all contracts of any description so that the Authority will be in a position to exercise its rights under [✂] and ASL will be in a position to comply with its obligations.

their Fair Market Value, and a Register of all Sub-Contracts and other agreements …. (separately identifying Transferable Contracts) required to operate and maintain the Project and the Services'; and

- 'a database setting out [ASL's] ICT Infrastructure'.
- [✂] details the obligations and requirements for the Transitional Assistance that must be given on expiry or termination of the contract, including:
  - the Contractor and the Authority are to each appoint an exit manager;
  - a list of duties ASL will be expected to undertake at the option of the Authority;
  - that Transitional Assistance is/must be provided in good faith and to an agreed standard; and
  - that the Authority may require continued performance of Services under the contract.
- [✂] deals with the transfer of assets and contracts and places obligations on the Authority to give ASL notice of the Transferable Assets it requires and on ASL to transfer, sell or make efforts to secure access to Assets the Authority requires. [✂] deal with the novation/assignments of sub-contracts.
- [✂] deals with payment by the Authority to ASL for Transferring Assets and other Assets the Authority may continue to use on termination or expiry, as well as for assistance during any transitional period.

Assignment/ Change of Control

129 Again, both the Ambulance Contract and the SAS Contract impose restrictions on assignment by, and change of control of, ASL ([✂]). The restrictions in each contract are identical.

130 [✂] provides that ASL may not without the Authority's prior written consent, assign, sub-license or sub-contract, transfer, or otherwise dispose of any of its rights or obligations connected with the contract ([✂]). The Authority may make assignments, disposals or novations or require that ASL does so ([✂]). If the Authority exercising its rights leads to ASL ceasing to be the provider of Services ASL is to be compensated. [✂] also allows for the Authority to appoint third party agents, representatives or sub-contractors (other than a Material Competitor)[128] to manage the Agreement for it or to fulfil its obligations.

131 [✂] stipulates that a change of control of shares in ASL will not be permitted without the Authority's prior written approval, where such a Change in Control would do material damage to the reputation of the Authority or a recipient of services, or where the 'person

[128] Defined in [✂] as '(a) any person who provides mobile voice and data communications services to members of the public in competition to a subsidiary of the Parent Company; (b) any provider of secure mobile voice and data communications services to civilian and military public safety users located in Great Britain or (c) any person who in the immediately preceding twelve month period has offered to provide, or been engaged in an invitation to provide secure mobile voice and data communications services to civilian and military public safety users located in Great Britain.'

acquiring control has a material interest in the production of tobacco products and/or alcoholic beverages.’

Sharer Organisations Contract

132 A number of organisations other than the Blue Light Customers that have access to the Airwave Network. They are the Sharers. It is understood that organisations identified as Sharers, include government departments such as the Ministry of Defence and HM Revenue & Customs, where the contracts are of high value, as well as local authorities and energy suppliers, where the contracts are of lower value.

133 The Sharers generally are subject to pre-requisite obligations before entering into a standard-form customer contract giving them access to the Airwave Network. They must:[129]

- obtain approval by Ofcom as a Sharer organisation and be added to the list of permitted Airwave Network users published by or on behalf of Ofcom;
- obtain a relevant sub-licence from the Home Office; and
- put interoperability agreements in place with all local public safety agencies.

134 Subject to the pre-requisite obligations being satisfied in full, the standard-form Sharer’s contract has a minimum duration of 2.5 years, significantly shorter than the Blue Light Contracts.

135 Sharers are not afforded the same level of access to the Airwave Network as the Blue Light Customers. They are required to acknowledge that the services provided by ASL may change and ‘[✂]’. Further, the Sharer is required to acknowledge that ‘[✂]’[130]. The support provided to Sharers by ASL is limited to ‘working hours’ - between 9am and 5pm Monday to Friday. Support outside of these times may incur further charges in addition to what the Sharer is required to pay for services.[131]

136 It is understood that the services available for Sharers varies, subject to the subscription package it selects. Some organisations may require coverage in a specific area and therefore would opt for an ‘Airwave Direct Campus’ subscription package. Another subscription packages include ‘Airwave Direct Core’, which ‘provides nationwide access to the core network and radio terminal features and functionality, focusing on what is essential for operational communications’[132]. The third package is ‘Airwave Direct Complete’ which is the most comprehensive subscription package, including the ‘most comprehensive selection of Airwave features and functionality’.

137 The Charging Structure for Sharers is similar to that set out in the PFI Agreement. [✂] deals with pricing. There is an indexation formula in place which is to be used when determining charges on an annual basis. [✂] provides that ‘[✂]’. [✂] is more specific on pricing, setting out connection fees for equipment/terminals, annual subscription

[129] AWD Managed Services Agreement, [✂].
[130] AWD Managed Services Agreement, [✂].
[131] AWD Managed Services Agreement, [✂].
[132] Airwave Direct Pricing, [✂].

packages, as well as discounts that may be applicable. Discounts on annual subscription fees would be subject to the number of terminals purchased from Airwave. Further discounts were available on annual subscription fees, depending on the length of the contract term.

2015/2016 Agreements

138 At the time of Motorola's acquisition of Airwave Solutions and the Airwave Network, Motorola and the Home Office entered into negotiations as to the future of the Airwave Network and ESN. The negotiations resulted in a number of agreements, including: a Deed of Undertaking, Heads of Terms ("HoTs"), a Deed of Recovery, a Benchmark Settlement agreement with respect to the PFI Agreement/Police Services Contracts, a Benchmarking Settlement agreement with respect to the Ambulance and Scottish Ambulance Contracts and an Umbrella Change Control Note ("UCCN1"), which implements the HoTs. The following sections describe terms of those agreements and their effects on the PFI Agreement and the Blue Lights Contracts.

Deed of Undertaking[133]

139 This agreement was entered into by Motorola and the Home Office on 7 December 2015. It relates to Motorola's purchase of ASL and contains its undertaking not to complete the purchase without the Home Office's approval.

140 The recitals provide the background to the agreement, noting that:

- Motorola was awarded the Lot 2 contract at the time
- It had entered into a binding agreement to acquire ASL
- Motorola was willing to irrevocably and unconditionally undertake to the Home Office that it would seek the written approval of the Home Office prior to the completion of the ASL Transaction.

141 [✂] establishes the undertaking set out above. Motorola undertakes to seek the Home Office's consent to the ASL Transaction and not to complete the Transaction until that consent is obtained. It specifies that the terms of any consent are to be 'satisfactory to the Authority in its absolute discretion (including, without limitation, the amount of time the Authority may take in consideration of such decision, it being understood that in the event such prior written consent is not obtained prior to 31 March 2016 the binding agreement will terminate).'

142 [✂] allows the Home Office to seek injunctive relief to stop the ASL Transaction as it notes damages may not be adequate compensation for Motorola breaching its obligation to seek the Home Office's consent. [✂] allows the Home Office to be indemnified for all loss suffered or incurred as a result of Motorola's breach of the Deed or in enforcing the Deed. [✂] clarifies that the Home Office does not need to mitigate loss under the Deed.

[133] Deed of undertaking 7 December 2015.

Heads of Terms[134]

143 This is a document that sets out an agreement to amend aspects of the PFI Agreement and, in particular, the Blue Lights Contracts as the end of the periods of those contracts and the possible shutdown of the Airwave Network approached.

144 The signatories to the Heads of Terms (“HoTs”) are Motorola, the Home Office, the Department of Health, Scottish Ambulance Board and DCLG. The HoTs are legally binding on them. The agreed amendments to the Blue Lights Contracts in the HoTs were subsequently implemented through the 23 August 2016 Umbrella Blue Light Change Control Note[135] (UCCN, often referred as UCCN1)[136]

145 The overall purpose of the HoTs is set out at [✂] of the document’s background section, namely to ratify:

- the parties’ agreement that it is in the interests of the critical national infrastructure represented by the Airwave Network to agree an orderly harmonised approach to its shut down (by reference to a “National Shut Down Date”) that is in line with the transition to ESN, as defined in the Lot 2 ESN agreement;
- Motorola’s agreement to develop and supply SiteLink as to assist with interoperability between the Airwave Network and certain services to be provided by Motorola under the Lot 2 Agreement; and
- Motorola’s agreement to give the Home Office access to [✂] radio transmission sites owned by ASL in rural areas, to facilitate the ‘extended area service programme’. The HoTs also set out a process for the Home Office to request access to additional sites if needed.
- The HoTs then take each matter in turn. They also record dispute settlements reached separately (described further below) and an agreement relating to microwave encryption.

146 As to the shutdown of the Airwave Network, the HoTs provide for the means of setting that date and record the agreement between the parties that the date could be extended. They provide for a process under which the end date could be changed by negotiation between the Home Office and ASL until such time as the Home Office issued a National Shut Down Notice (‘National Shut Down’ being when the Airwave Network would cease to be provided to users nationwide, with the notice setting the date by which National Shut Down must be achieved and beginning the process for that shutdown). The HoTs also record that, once a National Shut Down Notice was issued, the date can be further delayed by the Home Office issuing a Deferred National Shut Down Notice. The shutdown could also be delayed beyond any set date for certain groups of Network users – ‘Delayed Transition Groups’ – to whom the Airwave Services should continue to be provided even after the National Shut Down.

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[134] Motorola Heads of Terms Extensions, 2016.
[135] Blue Lights Contracts Umbrella CCN, 23 August 2016.
[136] This is referred to as UCCN1 as there is a further Blue Lights Contracts Umbrella CCN signed in December 2018, this is referred to as UCCN2.

147 Therefore, the HoTs appear to give the Home Office the option unilaterally to extend the provision of the Airwave Service by issuing the relevant notices, although it is not stated how long for. The HoTs refer to the National Shut Down Date, once set, being deferred by a number of additional months, which may suggest that only a limited extension was anticipated. There is no explicit bar on the number of deferred National Shut Down Notices that could be issued (although the drafting of the HoTs may only anticipate one).

148 The HoTs also record Motorola's and the Home Office's agreement that the pricing that would apply until the National Shut Down was the price already specified in the Blue Light Contracts subject to certain amendments agreed in the HoTs and to any further amendments resulting from any subsequent negotiations.[137] The HoTs explicitly refer to the possibility of the Blue Light Contract prices being further amended by mutually agreement through Change Control Notes.[138]

149 Further detail about the way in which the relevant contract terms were to be amended and about pricing are set out below.

Duration and extensions

150 The following summarises key terms relating to duration of the Blue Light Contracts, and consequently the PFI Agreement, as amended by the HoTs. We set out our current interpretation of how these terms can apply.

151 As noted above, the end date of the PFI Agreement was set by reference to the end date of the last-ending service contract with a user. The Blue Light Contracts (as set out above) all had different termination dates (the Firelink Project Agreement being due to end in December 2019, the Ambulance Contract in July 2016 and the SAS Contract in July 2017). There were various Police Service Contracts with different termination dates, the latest end date for which was 9 May 2020. The end of the PFI Agreement was, prior to the agreement of the HoTs, aligned to this latter date (although the precise date was disputed by ASL). The HoTs sought to bring uniformity to these end dates.

152 Specifically, pursuant to [✂] of the HoTs, the relevant contract end dates were aligned so that they would end at the same time: on the National Shut Down date.

153 [✂] of the HoTs set an initial National Shut Down Target Date of 31 December 2019. [✂] set out details of the process by which that target date may be changed and how the National Shut Down would be achieved.

154 Pursuant to [✂], the Home Office is required to issue a National Shut Down Notice to ASL, which specifies, inter alia,

- the National Shut Down Target Date (including any change from the initial National Shut Down Target Date) giving 12 months' notice of that date;
- any specific requirements of users/customers in relation to the National Shut Down; and

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[137] [✂]

[138] [✂]: 'The Parties acknowledge that the Airwave Services and associated Airwave Service Charges may be varied by [✂].'

- the identity of any ‘Delayed Transition Group(s)’ that should be excluded from the National Shut Down - and to whom the Airwave Services should continue to be provided after the National Shut Down - and certain details regarding these groups’ requirements, geography etc.

155 [✂] set out the process for deferring the National Shut Down if necessary and for identifying any Delayed Transition Group. In these circumstances, the Home Office may issue a Deferred National Shut Down Notice, specifying the new target dates for the National Shut Down and any Delayed Transition Groups.

156 [✂] specifies certain considerations the Home Office is required to take into account in specifying the Deferred National Shut Down Target Date, including (i) the operational needs of the users, (ii) the technical impact on the Airwave Network and the Airwave Services; and (iii) the impact on the Home Office’s other dependent programmes of activity under the ESN, such as ‘Lot 3’.

157 [✂] provides for the amendment of the National Shut Down by agreement between the Home Office and ASL: ‘The Home Office (as the Customers’ representative) and Airwave may agree to change the National Shut Down Target Date at any time up to the National Shut Down Notice date.’

158 In other words, an initial National Shut Down Target Date of 31 December 2019 was set in the HoTs. That could be changed initially by agreement between the Home Office and ASL and subsequently by the Home Office unilaterally issuing a National Shut Down Notice and a Deferred National Shut Down Notice.

Pricing

159 [✂] of the HoTs states that the Home Office (the Blue Light Contract customers) shall pay the ‘Airwave Service Charges’ for the Airwave Services. These are set out in Parts A and B of [✂], and the definition of Airwave Service Charges notes that they take precedence over pricing provisions in Blue Lights Contracts. However, they do not appear to alter the fundamental charging structure set out in the PFI Agreement. Rather, they essentially (subject to certain amendments described below[139]) provide for a continuation of the existing pricing.

160 [✂] states that ASL will continue to provide the Airwave Services and the Home Office will continue to pay the Airwave Service Charges until the final agreed National Shut Down Date or the date on which Airwave Services cease to be provided to Delayed Transition Groups, whichever is the later.

161 [✂] sets out:

- In respect of the Home Office contracts, the Core Services charges payable until National Shut Down Notice are as set out in the PFI Agreement.

[139] As well as existing provisions within the contracts regarding reductions in service leading to reduced charges.

- For the Fire & Rescue services, the charges remain the same as specified in the Firelink Project Agreement until the National Shutdown Date (but with some adjustments from January 2017: '[✂]').
- [✂] of the Schedule appear to relate to the Ambulance Contract and Scottish Ambulance Contract, and set out a preliminary agreement (though subject to existing provisions within the contract regarding reductions in service leading to reduced service charges) on extension rates, which would be applicable from current service expiry dates to the National Shut Down Date.

162 [✂] sets out the agreed principles for charging for Menu Services under the PFI Agreement.

163 [✂] sets out the terms for determining the Delayed Transition Group Airwave Service Charges - this was a fixed monthly charge of £[✂] million for each Delayed Transition Group subject to an aggregate monthly cap equal to the Airwave Service Charges (i.e. the charges paid under the Blue Light Contracts) as amended.

164 In other words, in relation to pricing for Airwave Services until the National Shut Down Date agreement was reached on the following:

(a) The price (Airwave Service Charges) to be paid until the actual National Shut Down Date or the Delayed Transition Group: Shut Down Date (whichever is later). The price (broadly speaking) was the price already being paid under the existing Blue Light Contracts, subject to specific changes/discounts for particular products/services which were specified in [✂] of the HoTs. ([✂] and definition of Airwave Service Charges)

(b) The price to be paid in the event that the National Shut Down Date was fixed but had to be deferred. Again, the price was the price as specified under the Blue Light Contracts subject to changes specified in [✂]. ([✂] and definition of Airwave Service Charges)

(c) The price to be paid in relation to any Delayed Transition Groups.

165 Accordingly, it currently appears to us that the Home Office and Motorola had agreed a set of terms that, subject to any further negotiation and agreement, gave the Home Office an option unilaterally to extend the provision of the Airwave Network at an agreed price.

Benchmarking and Settlement

166 The HoTs also provide for Motorola and the Home Office, and Motorola and the Department of Health and the Scottish Ambulance Board, to enter into settlement agreements in relation to the police contracts and ambulance contracts which would resolve (i) certain disputes between them and (ii) determine the basis on which any future benchmarking may occur.

167 Additionally, the Home Office agrees that any future price changes under the PFI Agreement from a benchmarking exercise shall take into account the capital investment made by Motorola to acquire ASL at the completion date. The settlement for the applicable Blue Light Contracts also included agreement that the Home Office waive its rights to carry out benchmarking exercises until 1 January 2021 in relation to Core Services/Bundle 1 service charges.

168 In summary, under these agreements (which are described in more detail below), the Home Office was initially granted certain cash sums amounting to £[✂] million between 31 December 2016 and 31 December 2019. It was agreed that for any period of service after December 2019, the Home Office would receive a payment or credit of £[✂] per month.

SiteLink

169 Sitelink relates to what is elsewhere referred to as interworking or interoperability. The HoTs record that:

- Motorola and the Home Office agree to vary the PFI Agreement so that ASL will provide Sitelink in accordance with a specified set of criteria (the 'SiteLink Offer' which is included in [✂] of the HoTs);
- ASL will provide SiteLink in accordance with the timeframe in that Offer; and
- if there is a delay which affects the transition to ESN (as Defined in the Lot 2 Agreement), that may entitle the Home Office to invoke the remedial action foreseen in the Deed of Recovery (see below).

This agreement was implemented using Contract Change Notices to amend the PFI Agreement (see further below).

Other implications for the Blue Light Contracts

170 [✂] of the HoTs clarifies, that save for the amendments brought about by that document, or any CCN pursuant to it, the terms and conditions in the Blue Light Contracts remain unaffected.[140]

Benchmarking Settlement[141]

171 This is the settlement agreement between the Home Office and Motorola, dated 17 February 2016, that is referred to in the HoTs (see above).

172 This settlement relates to 3 specific disputes:

- the Benchmarking Dispute, by reference to court proceedings started on 8 October 2015 by the Home Office against ASL, regarding the benchmarking of services provided by ASL under the PFI Agreement;
- the ESMCP Process Dispute, by reference to court proceedings started on 23 November 2015 by ASL against the Home Office, regarding the procurement process in relation to ESN; and

[140] Heads of Terms, [✂].
[141] Settlement Agreement, dated 17 February 2016.

- The Microwave Link Encryption Dispute, by reference to the Home Office's concern that ASL is in breach of its contractual obligation to provide encrypted services in accordance with the PFI Agreement.

173 Under the settlement, Motorola and the Home Office agreed that Motorola would pay the Home Office £[✂]m split into six instalments between 31 March 2016 and 31 December 2019. For services delivered under the PFI Agreement and Police Service Contracts after 31 December 2019, Motorola committed to ASL providing a payment or credit of £[✂] per month. The Home Office agreed to suspend its rights to undertake benchmarking exercises until 1 January 2021.

The Ambulance Settlement[142]

174 This is an agreement between the Secretary of State for Health, the Scottish Ambulance Service Board and Motorola dated 17 February 2016, and which again is referred to in the HoTs (see above).

175 At [✂] of this settlement agreement, it is explained that Motorola has been made aware that the Department of Health (i) intends to undertake a Benchmark Review and (ii) has alleged an event of default under the Ambulance Contract in respect of the on-going provision by ASL of mobile data terminals supplied by Thorcom.

176 As part of the settlement, Motorola agreed to ensure that ASL makes available to the Department of Health 40 Thorcom VR2000 Mobile Data Terminals. The Department of Health and Scottish Ambulance Board agreed to suspend their right to carry out a Benchmark Review until 1 January 2021 in respect of Bundle 1 services (see above in relation to such services in the Ambulance Contracts). In respect of Bundle 2 services, both parties agreed not to carry out a Benchmark Review until 1 July 2016 and that any change resulting from it would take effect on 1 January 2017.

Deed of Recovery[143]

177 The Deed of Recovery ('DoR') was entered into between Motorola and the Home Office on 17 February 2016. Its recitals note that as part of its usual risk review process prior to the award of the Lot 2 agreement, the Home Office identified a risk in MSI's common control and ownership of ASL and MSUL (the entity responsible for delivery of ESN Lot 2) such that MSI could manipulate delivery under the Lot 2 Agreement in order to financially benefit under the Blue Light Contracts. The purpose of the DoR is to 'specify the approaches to remediation and the financial remedy' that may be applicable in the event of certain types of delay.

178 The DoR sets out the amount payable by ASL (referred to as the Recovery Charge Adjustment) if Motorola is the sole cause of a delay to the ESN programme in excess of 90 days (in aggregate) that is not recovered during implementation. The document sets out a detailed process and conditions to be applied under the DoR.

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[142] Settlement Agreement, dated 17 February 2016.
[143] Deed of recovery.

179 The Recovery Charge Adjustment amount (set out in Schedule 1) was set to apply for each month of delay at a rate of [✂]% of the applicable Airwave Service Charges (as defined in the HoTs).

180 The DoR also sets out provisions as to Catastrophic Failure and Continuation of Service.

181 Under [✂], Catastrophic Failure is deemed to have taken place if before the Transition Completion Date (described below), (a) the Home Office serves a termination notice to MSUL 'in accordance with [✂] of the Lot 2 Agreement terminating the entire Lot 2 Agreement due to a Supplier Termination Event; and (b) at the time of such a Supplier Termination Event, the MS Supplier was not in material breach of the Lot 3 Agreement'.

182 [✂] states that MSI 'shall ensure that Airwave continues to provide the services under the Blue Light Contracts until National Shut Down (as such term is defined in the binding Heads of Terms), or if later, the cessation of any regional service provided pursuant to the terms of the Binding Heads of Terms after National Shut Down'. This is an obligation on MSI irrespective of a Mobilisation Delay, Transition Delay or Catastrophic Failure occurring, as set out in [✂] of the DoR.

183 The DoR remains effective until MSI's delivery of certain aspects of the Lot 2 Agreement. Specifically, until the 'Transition Completion Date' which is defined in the Lot 2 Agreement as 'the date of Achievement of the last Milestone to be achieved of [✂]'.

Blue Light Contracts Umbrella CCN (UCCN1)

184 UCCN1 is the document by which amendments agreed in the HoTs were made to the Blue Light Contracts. It consists of various Change Control Notes for those contracts.

185 The parties to UCCN1 are ASL, the Home Office, the Department of Health and the Scottish Ambulance Service Board. UCCN1 mainly implements what was agreed in the HoTs as to pricing and National Shut Down, but they also deal with other matters (such as the change of the beneficial owner of ASL following its acquisition by Motorola and changes to the Charging Structure in the PFI Agreement relating to termination payments – see [✂] of UCCN1).

186 As a consequence of the changes made to the duration provisions of the Blue Light Contracts, there are also changes to the termination provisions that are given effect by UCCN1. Notably, it appears that the Home Office loses its right unilaterally to terminate those contracts (all the Blue Lights Service Users have to agree). The Home Office also agrees that, if termination of the contracts occurs for convenience (such as by way of Break Notice) after the transition to ESN has begun, it will pay more to ASL than previously agreed (the full charges due for services rather than compensation for termination).

Sitelink agreements

187 As noted above, SiteLink relates to the interworking or interoperability provisions required in the transition from the Airwave Network to ESN. The PFI Agreement did not provide for such transitional interoperability. The SiteLink provisions were therefore inserted into the

PFI Agreement via Contract Change Notices.[144] Those new provisions effectively expanded the definition of Core Services in that agreement so as to include the interoperability technology. The Contract Change Notices also introduced provisions for payment and penalties for delay in respect of the interoperability technology.

2017 Agreement

2017 Agreement – Extension of Airwave Services beyond 2019[145]

188 As described above, the HoTs enabled the Home Office and ASL, prior to the issue of any National Shut Down Notice, to agree to extend the provision of the Airwave Network and Services. The agreement made between the Home Office and Motorola on 16 February 2017 relates to this.

189 The purpose of the agreement was to specify the charges that would be payable for the Airwave Network and Services in the event that their provision extended beyond 31 December 2019. The background to the agreement was that changes were being made to the ESN programme which contemplated such an extension. The Appendix on ESN Delivery provides further information on the events that preceded the making of this agreement.

190 The agreement states: 'it is acknowledged that this document represents a separately negotiated agreement with respect to the period following 31 December 2019 and shall not constitute precedent for any other negotiations regarding Airwave Services or charges'.

191 Under the agreement, for the period 1 January 2020 to 30 September 2020:

- Motorola agreed to credit the Home Office £[✂]m a month (over 9 months from 1 January 2020 up to a cap of £[✂]m) if there are Airwave Charges in that month AND those charges are greater than £[✂]m.
- The Home Office is not allowed to double recover in the event that Motorola is also in breach of the DoR. The Home Office can have recourse to the DoR if Motorola are in breach, but anything they may successfully claim under the DoR has to take account of any payments made under this agreement. The total recovery available to the Home Office under this agreement and the DoR is capped at [✂]% thereby in effect reducing the amount recoverable under the DoR.

Variation to the DoR

192 In February 2017, MSI and the Home Office entered into a variation deed[146] to the DoR. The variations consisted of:

- amending [✂] by deleting the time period of "in excess of ninety (90) days in aggregate" so that Motorola may be liable for delays of any duration it solely causes;

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[144] Blue Lights Contracts Umbrella CCN (UCCN1), 23 August 2016, [✂] (Wave 7000 Service); [✂] dated 1 March 2016.

[145] Letter from Airwave Solutions to the Home Office 16 February 2017.

[146] Letter from Airwave Solutions to the Home Office 16 February 2017.

- amendments to [✂] which refers to Mobilisation Delay or Transition delay and subsequent compensation due to the Home Office; and
- two key milestones, delays in respect of which may have given rise to liability on Motorola's part, no longer being considered as such.

2018 & 2019 Agreements

193 Further commercial negotiations that took place between Motorola and the Home Office in 2018 led to variations to some of the relevant contracts in relation to benchmarking, National Shut Down and the DoR. A further Blue Lights Contracts Umbrella CCN ('UCCN2') was implemented in 2019 to give effect to these.

Airwave Extension Term Sheet

194 At the conclusion of the 2018 negotiations, Motorola and the Home Office agreed the 'Airwave Extension Term Sheet.'[147] It sets out key terms that were to be incorporated into UCCN2. Such terms included:

- The National Shut Down Target Date being extended to 31 December 2022.
- The Airwave Services Charges (or equivalent) for all the Blue Light Contracts being discounted by [✂]% (save in respect of the Bundle 2 services of the Ambulance and SAS Contracts, the Menu Services Charges in the Police Service Contracts and the catalogue terms in the Firelink Project Agreement and the Ambulance and SAS Contracts).
- That other existing charges-related provisions and agreements in respect of the Blue Light Contracts shall remain unaffected (and may be subject to any existing discounts already in place).
- The Benchmark waiver in the 17 February 2016 Settlement Agreement being extended to 1 January 2023 (from 1 January 2021).
- The parties agreeing to amend the payment profile of the Blue Light Contracts to follow a quarterly payment profile, taking into account the new and existing discounts referred to above.
- The definitions of the interoperability technology being amended (to reflect the replacement of the 'Wave 7000' technology by 'Kodiak' interoperability technology).

Blue Lights Contracts Umbrella CCN2 (UCCN2)

195 On 19 December 2018, ASL entered into an agreement with the Home Office, the Department of Health, and the SAS Board (collectively 'the Authority') – UCCN2 – to further amend the Blue Light Contracts.

196 UCCN2 gives effect to the matters set out in the Extension Term Sheet. The background recitals to UCCN2 note, '… on 22 September 2018, ASL made an offer to the Authority within the Airwave Extension Term Sheet relating to an extension of the national Shutdown

[147] Airwave Extension Term Sheet – execution version, 2018.

Target Date… and a further discount to be afforded to the Authority. The Authority now wishes to accept this offer and the Parties have agreed to reflect the relevant terms of the Airwave Extension Term Sheet on terms more particularly set out in this UCCN2'.

197 UCCN2 consists of various CCNs across the Blue Light Contracts. Annexes to these (Annex 2) record that the parties agreed to discount fees paid by the Authority in respect of Core Services Charges, but not Menu Services Charges, by [✂]%. It was agreed this would apply to all applicable Blue Light Contracts (the Home Office Contracts (and the PFI Agreement), the Ambulance Contract, the SAS Contract, and the Firelink Project Agreement). The discount was agreed to begin in the period following the extension of the Agreements, from 1 January 2020 to the National Shut Down Target Date which, at the time, was set at 31 December 2022 (see [✂] of the Change Control Notes).

198 It appears that the UCCN2 and the Extension Terms sheet provisions as to this [✂]% discount apply in addition to the discount previously agreed in 2016 and 2017, i.e. the recurring monthly credit of £[✂] and one-off discount of up to £[✂] million applying in 2020 only ([✂] of the Extension Terms stipulates that 'all existing charges related provisions and agreements in respect of the Blue Light Contracts shall remain unaffected').

199 However, while we understand from Motorola's internal documents[148] that the instalment payments (of, in effect, £[✂]m each) under the benchmarking settlement agreed in 2016 were to be converted to a pricing discount, this is not referred to in either UCCN2 or the Extension Terms sheet.

Further variations to the DoR in 2018 and 2019

200 In September 2018, MSI and the Home Office varied the DoR for a second time. This second variation deed[149] took into account that MSUL and the Home Office had entered into further Heads of Terms relating to the ESN Lot 2 Agreement. A number of variations to the DoR were made, notably:

- replacement of [✂] in the original DoR, which dealt with the charging adjustment mechanisms (the 'Recovery Adjustment Charge');
- a reduction of the DoR discount from [✂]% to [✂]% for the period between the delivery of specified milestones, and from [✂]% to [✂]% after their delivery ([✂]);
- A DoR 'Freeze' in which both parties agreed not to exercise or pursue their rights for a specified period ([✂]); and
- a settlement ([✂]) in relation to a Change Authorisation Note ('CAN') affecting the ESN Lot 2 Agreement. The relevant CAN would 'implement the key principles in schedule 1 to the Heads of Terms to the Lot 2 Agreement by 31 December 2018'.

201 In 2019, there appeared to be a further variation[150] to the DoR between MSI and the Home Office ('2019 Variation Deed'). The background recitals to the 2019 Variation Deed record that this 'Deed updates the DoR Variation to reflect the result of CAN-related negotiations

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[148] Motorola internal email dated 21 May 2021.
[149] Deed of Variation to Deed of Recovery, 2018.
[150] Deed of Variation relating to the variation of the Deed of Recovery, 2019.

between the Supplier and the Authority since the DoR Variation was first executed'. In other words, the 2019 Variation Deed further amends milestones that were previously varied by [✂] in the 2018 Variation Deed.

Variation to Benchmarking Settlement

202 In 2019 the Benchmarking Settlement was varied[151] (as agreed in the Airwave Extension Term Sheet – see above) to state that the Home Office would waive its right to carry out benchmarking exercises until 1 January 2023.

[151] Benchmarking Settlement Variation 2019.

Appendix D: The role of the change of control negotiations

Introduction

1 In this appendix, which supports our analysis in sections 3 and 4 of this report in particular, we consider:

(a) the context in which, in early 2016, the Home Office and Motorola agreed a number of contractual provisions relating to the alignment and potential future extensions of the key contracts under which Airwave Solutions operates.

(b) the scope for future negotiations and extent to which such negotiations took place.

Motorola's submissions

2 Motorola has made a number of representations in relation to the outcome and consequences of the negotiations between itself and the Home Office that took place in 2016, namely that:

The terms of any extension sought by the Home Office were already agreed in 2016, following extensive negotiations and as part of a whole suite of arrangements entered into between the Home Office and Motorola (as purchaser of the Airwave network). **The key element of that deal, for these purposes, is the unilateral contractual right for the Home Office to extend the Airwave service at agreed pricing for as long as it is needed while the Home Office transitions its 300,000 users to ESN** which, in turn, requires Airwave to invest over £300 million in capital expenditure to ensure the continuity of service of the Airwave Network, without any expectation of additional returns. There is, therefore, nothing that "needs" to be agreed by the end of 2021.[152]

[2016] is the only point at which the parties had the option to walk away during the period of Motorola's ownership of Airwave. Motorola's walk-away option was not to proceed with the Airwave acquisition (although this was hardly attractive since Motorola would have had to pay a [✂] of £[✂] million). The Home Office's walk-away option was to refuse consent to the acquisition, causing the acquisition to fail (but the Airwave service would continue under Macquarie ownership). As a result, the Home Office was able to 'bid down' and lock in the terms on which Motorola (instead of Macquarie) would be required to supply Airwave, in return for the Home Office consenting to the transaction.[153]

The Home Office secured the following concessions in these negotiations:[154]

A perpetual obligation for Airwave Solutions to continue to deliver the service at Airwave Solutions' risk until the final ESN Transition Group (whether delayed or on time) has transitioned to ESN and National Shut Down occurs;

[152] Motorola's response the CMA's Final Report and Decision on a Market Investigation Reference, 15 November 2021, paragraph 4.
[153] Motorola's response to the Issues Statement, 10 January 2022, paragraph 20.
[154] Motorola's response to the Issues Statement, 10 January 2022, paragraph 22.

A unilateral option to extend the Airwave Network services for any period beyond 2019 at agreed pricing and further flexibility (all aligned to possible ESN elongated Transition scenarios) to require delivery of the Airwave Network services only to such ESN Transition Groups that are delayed in transitioning to ESN and need the service for longer than those groups that have transitioned;

An essential and bespoke 'interoperability' service under which the emergency services users would be able to communicate on an interoperable basis via the existing Airwave Tetra system and the new ESN PTT voice communication system during the transition phase from Airwave to ESN;

Settlement of ongoing litigation between the Home Office and Airwave relating to Benchmarking and Variation of Price equating to payments to the Home Office of £[✂] million over three years;

The Deed of Recovery providing financial remedies protecting the government from a delay to ESN caused solely by Motorola's ESN Lot 2 delivery and the consequential need to extend the Airwave Network services;

Common end date for all core contracts – Police, Fire, Health - removing the 'ragged edge' expiry dates, which would have been problematic as regards the Home Office's aspiration to complete ESN Transition across all the emergency services by December 2019;

Access to [✂] of Airwave Solutions' sites located in rural areas in order to enable the Home Office to execute on its ESN extended area coverage requirements;

Flexibility for Police Forces to extend their existing Menu Services provision at current pricing for a period of their choice through to National Shut Down at the latest; and

Withdrawal of Airwave Solutions' procurement challenge that it had brought against the Home Office following its exclusion from the ESMCP 'Lot 3' competition. This avoided the prospect that the Home Office could be forced to re-procure that element of the ESMCP, which likely would have, caused significant delay to its proposed timetable.

The Home Office did not seek to secure any form of price reduction at this point, having secured the overall deal it wanted.

The only 'negotiations' that have been taking place since 2016 are unilateral demands by the Home Office for ex gratia discounts.[155] The 2018 negotiations started with the Home Office approaching Motorola in April 2018 and the Home Office was in the driving seat throughout these negotiations, with the Home Office setting its requirements and deciding which of the options offered by Airwave Solutions it would eventually pursue. Airwave Solutions provided a range of options rather simply pointing to the existing terms and (for

[155] Motorola's response the CMA's Final Report and Decision on a Market Investigation Reference, 15 November 2021, paragraph 4.

example) threatening to stop providing the service altogether if the Home Office did not accept those terms."[156]

Focus of this appendix

3 As well as sections 3 and 4 of this report, this Appendix should be read alongside:

(a) Appendix C, which sets out the various contracts between Airwave Solutions and its customers, how they have evolved over time and our interpretation of certain clauses.

(b) Appendix E, which sets out key facts relating to a dispute between the Home Office and Airwave Solutions relating to benchmarking, the process through which the dispute was resolved and the outcome of this process.

4 In this Appendix, we seek to consider relevant matters by focusing on three key questions:

(a) The commercial context within which the Heads of Terms' (HoTs) provisions relating to extensions and their pricing were negotiated and interpreted at the time and subsequently.

(b) The economic realities of the negotiating parties' respective bargaining positions and in particular the outside options open to them.

(c) The outcome of the negotiation process, to the extent that it is an indicator of the exercise of market power by Motorola or buyer power by the Home Office.

Commercial context to the negotiations

Introduction

5 As set out in Appendix C, we have analysed the HoTs and based on this review; it currently appears to us that the Home Office and Motorola agreed in February 2016 a set of terms that, subject to any further negotiation and agreement, gave the Home Office an option unilaterally to extend the provision of the Airwave Network at an agreed price.

6 In this section, we examine the commercial context in which the HoTs were negotiated and the extent to which they can be said to have fixed prices in perpetuity (as argued by Motorola), given the broader market context and the views and actions of the Home Office and Motorola in subsequent months and years.

Purpose of the negotiations and process

7 The Home Office's negotiation team set its high-level objectives for the upcoming negotiation on 24 November 2015, as follows:

[✂]

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[156] Motorola's response the CMA's Final Report and Decision on a Market Investigation Reference, 15 November 2021, paragraph 136.

[✂]

[✂]

[✂]

[✂]

[✂]

[✂]

[✂]

[✂]

[✂]

[✂]

[✂]

[✂]

[✂].

[✂]

[✂].

[✂]

[✂][157]

8 An assessment of the upcoming negotiation,[158] prepared by Motorola's then [✂] and lead negotiator [✂] for its [✂] in December 2015, identified that Motorola had the following commercial objectives for the upcoming negotiations:[159]

(a) [✂]

(b) [✂]

(c) [✂]

(d) [✂].

[157] Home Office internal email, 24 November 2015.
[158] Motorola presentation slides, December 2015.
[159] Motorola told us that 'a more accurate representation of the chief objectives of the then upcoming negotiations is contained in the 7 December 2015 "Kick Off Agenda". We do not consider that it is appropriate to favour the agenda of the meeting with the Home Office over a confidential email from Motorola's lead negotiator to its [✂] as a source of evidence on Motorola's confidential commercial objectives.

9 The negotiations were split into 5 separate workstreams and were carried in a series of commercial negotiation meetings that took place from early January to 9 February 2016:[160]

(a) [✂].

(b) [✂].

(c) [✂].

(d) [✂].

(e) [✂].

10 Our review of internal documents provided by Motorola and the Home Office indicates that the focus of the Home Office was on minimising the duration of any extension through the negotiations, as illustrated by the following comments and points:

(a) [✂].[161]

(b) [✂].[162]

(c) [✂].[163] [✂].[164]

(d) [✂].[165]

11 To date, we have not seen any document supporting the idea that the Home Office sought to secure 'a perpetual obligation for Airwave Solutions to continue to deliver the service at Airwave Solutions' risk'. Instead, all discussions relating to (limited) extensions appear to have focused on the revenues and costs that would result from the extent to which all contracts would be aligned and to what date and the price to be paid for any regional extensions beyond that date that turned out to be necessary.

12 That the Home Office was focused on the short-term, i.e. largely the period up to 2020, is consistent with its concern that [✂]:

(a) [✂].[166]

(b) [✂].[167]

13 Following the commercial negotiations, a number of agreements were entered into between Motorola and the Home Office on 17 February 2016 (other key contract holders having delegated to the Home Office responsibility for negotiating with Motorola), including HoTs, a Deed of Recovery (DoR) and a dispute settlement agreement covering various disputes between Airwave Solutions Limited and the Home Office. A detailed

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[160] Motorola internal email, 2 October 2016.
[161] Home Office internal email, 27 January 2016.
[162] Email from the Home Office to Motorola, 14 January 2016.
[163] Email from the Home Office to Motorola, 9 February 2016.
[164] Home Office internal email, 5 February 2016: [✂].
[165] [✂].
[166] Home Office internal email, 14 January 2016.
[167] Home Office internal email, 28 May 2015.

description of these agreements is in Appendix C and the Airwave Contracts Working Paper we provided to Motorola and the Home Office.[168]

14 The HoTs broadly covered the following:

(a) The end date for all the Airwave Blue Light Contracts and shut down of Airwave was aligned to the expected start date of ESN (at that time 31 December 2019) and provision was made for how this date could be amended and delayed. (see Appendix C and the Airwave Contracts Working Paper for more details).

(b) Motorola and the Home Office agreed the pricing that could apply until that shut down date as the price specified in the Blue Light Contracts subject to certain amendments agreed in the HoTs, and reflecting any further amendments from any subsequent negotiations.

(c) It was agreed that Motorola and the Home Office would enter into settlement agreements in respect of the police and ambulance Blue Light Contracts which determined certain benchmarking disputes by granting the Home Office certain cash sums over a period of time and in return waived the benchmarking rights under each of these contracts.

(d) An agreement was reached which required Motorola to build an interworking solution between the Airwave Network and ESN (referred to as SiteLink during the negotiations and Wave 7000 subsequently) for any period of transition at an agreed sum.[169]

Interpretative statements made by the negotiating parties

Explanation of the mechanisms for extending the contracts during the negotiations

15 The treatment of delays and extensions to the Airwave Network service in the 2016 contractual documents was agreed late in the negotiations, in a meeting held on 9 February 2016.

16 The evidence we have seen, reproduced below, indicates that both the Home Office and Motorola recorded what mechanisms for extending the Airwave Network contracts had been agreed via the DoR and HoTs, as follows:

(a) [✂].

(b) [✂].[170]

17 The mechanics of the DoR were described as follows:[171]

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[168] This working paper was not published as explained in: Overview of unpublished working papers, 13 May 2022,

[169] Although the contractual agreement for delivery was with Airwave Solutions, this was commercially agreed through the HoTs (to which the commercial proposal, including pricing, is appended).

[170] [✂].

[171] Based on two similar descriptions by Motorola and the Home Office staff. Motorola internal email, 2 October 2016; Home Office internal email, 19 February 2016.

(a) The DoR could only be triggered in two ways:

(I) [✂][172], or

(II) [✂].

(b) The discounts would be as follows under each scenario:

(I) [✂].

(II) [✂].

18 Commenting on the HoTs, Motorola described that agreement as follows:[173]

[✂].

[✂].

[✂].

[✂].

19 The Home Office described the same agreement on extensions in the HoTs as follows:

[✂].

20 The above descriptions suggest that, at the time, the parties described the HoTs as providing for the possibility of limited and specific extensions of the provision of the Airwave Network service, [✂].[174] Extended delays to ESN, [✂], were provided for by [✂], and under such circumstances, it was envisaged that a significant discount to Airwave revenues would apply.

Home Office's statements when later summarising the deal

21 The Home Office's interpretation of the HoTs, as relayed in internal documents, appears to confirm that any extension envisaged in the HoTs related to [✂], with no mention being made of broader/longer extension.[175]

Motorola's statements made in the course of 2017

22 In subsequent months, Motorola executives further commented on these agreements as follows:

(a) Referring to delays in the negotiations leading up to the £[✂]m discount agreed in February 2017, [✂] made the following observation:

[✂].[176]

[172] [✂].
[173] Motorola internal email, 2 October 2016.
[174] We have reviewed emails sent by the lead negotiators of the Home Office and Motorola, including the near verbatim records of the negotiation meetings created by Motorola's lead negotiator.
[175] Home Office presentation slides May 2017 ([✂]). [✂] Home Office presentation slides: March 2017.
[176] Motorola internal email, 8 February 2017.

(b) In June 2017, [✂] summarised the position as follows, referring to the 2015 business case for the acquisition in the context of the 2019/2020 long range plan:

[✂].

Motorola's statements in March 2018

23 Motorola's view on how to interpret these provisions was summarised in March 2018 by [✂] as follows:

[✂].

[✂]:

[✂].

[✂].

[✂].

[✂].

24 Responding to a further question by [✂]:

[✂].

25 [✂] added that beyond the £[✂]m discount given for 2020, the contractual right to discounts would be [✂].[177]

Subsequent negotiations

26 As a starting point we note that [✂].

27 It seems to us that there is documentary evidence that shows that both the Home Office and Motorola had an incentive to negotiate both in 2017/18 and 2020/21. At no point was the negotiation solely at the Home Office's request and we have seen no evidence so far that Motorola was reluctant to negotiate, as it saw commercial advantages in doing so on both occasions:

(a) The first discussions of the need to negotiate a significant extension took place in late 2017, with Motorola seeking to [✂][178]. At this point, Motorola's concern was in [✂] and to [✂] as illustrated by the comment made by [✂].[179] The matter appears to have been resolved through an interim payment for ESN, rather than a broader discussion.

(b) It also appears that it was Motorola, rather than the Home Office that sought to re-ignite negotiations in February 2018 and that in a pre-negotiation discussion that

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[177] Motorola internal email, 1 March 2018.

[178] External email – Home Office, Motorola & Oaklin, 20 November 2017.

[179] Motorola internal email, 1 September 2017. Additional relevant Motorola evidence: Motorola internal email, 18 October 2017, Motorola internal email, 21 December 2017. [✂] (Home Office internal email, 8 November 2017, Home Office internal email, 23 November 2017.

took place in early March 2018, Motorola was keen to negotiate [✂] (with the Home Office staff expressing doubt as to [✂]).[180]

(c) In April 2018, the Home Office asked Motorola to model a [✂].[181] Later in the negotiations (on 6 June 2018), Motorola proposed a [✂]. In both cases, Motorola's starting point was the PFI Agreement prices, to which it applied a series of discounts. As far as we know, no explicit reference was made in correspondence with the Home Office to the outcome of the change of control negotiations as being a relevant consideration in terms of pricing; there was no suggestion that the price of extension had been set by the change of control negotiations; and there was no suggestion that the Home Office's request for a quote amounted to a 'unilateral demand for ex gratia discounts'... The inclusion of a [✂]% discount and the conversion of the benchmarking settlement into an additional discount appears to have been put forward by Motorola later on in the negotiations, as a trade-off for [✂]. These interactions do not appear to us to be consistent with Motorola's submission in paragraph 2 above that "The only "negotiations" that have been taking place since 2016 are unilateral demands by the Home Office for ex gratia discounts".

(d) In its 31 December 2019 impairment review, Motorola noted that it is '[✂]'.[182]

(e) In August 2020, in the context of a broader strategy to [✂], Motorola was preparing for extension discussions around 2 possible extension durations: [✂].[183]

(f) In 2021, the Home Office's starting point in seeking to negotiate was not the previous price. Instead it sought to move to [✂]. In June, [✂] commented in a text message to a colleague: '[✂].'[184]

(g) On 25 June 2021, Motorola made the case to the Home Office that the Airwave core charge to be paid should increase by £[✂]m to fund its proposed capex investment (including "a [✂]% margin" on costs).[185]

28 In other words, the evidence seems to indicate that both the Home Office and Motorola have regarded the price of any extension of the Airwave Network as subject to negotiation.

The bargaining positions of Motorola and the Home Office

The Home Office

Contracts

29 We start by considering the contractual sources of leverage that the Home Office had in the 2016 negotiations.

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[180] [✂] (Email from the Home Office to Motorola, 15 February 2018. [✂].
[181] Motorola internal email, 5 April 2018.
[182] Motorola / Guardian / Airwave UK Group, Local Statutory Entity Investment Valuation and Impairment Review, 31 December 2019.
[183] Motorola presentation slides.
[184] Motorola internal email, 14 June 2021.
[185] Motorola presentation slides, 25 June 2021. [✂].

30 Although in principle the Home Office is contractually able to switch away from Airwave Solutions upon contract termination by transferring the services to an alternative service provider under the PFI Agreement, as explained in section 4 of this report, it appears to us that this was not an option open to it in practice.

31 The Home Office also recognised that it only had a limited ability to terminate the Airwave Network contracts in practice.[186]

32 However, Motorola offered to the Home Office to make the completion of its acquisition of Airwave Solutions subject to Home Office consent through a separate agreement (called a Deed of Undertakings). It did so as a compromise for [✂].[187] The Deed of Undertakings was signed on 7 December 2015, thus giving the Home Office the right to block the completion of the acquisition of Airwave Solutions by Motorola (see Appendix C). We note that, given the above, it would have been open to Motorola to choose a different approach in its handling of these issues (and the settlement of disputes with the Home Office)[188] and potentially to proceed with the acquisition without seeking consent from the Home Office, although there would have been commercial risks associated with such a course of action.[189]

Options open to the Home Office

33 Although HKT Limited (Hong Kong Telecom) had bid for Airwave Solutions, the evidence we have seen indicates that by late November 2015, this alternative bid had been dismissed.[190] None of the documents provided by Motorola mentions the risk of the business being purchased by Hong Kong Telecom after that date, which indicates that by the time the negotiations started, this was not perceived as a risk by Motorola or another option by the Home Office. From the Home Office's perspective, there were two potential outcomes from the negotiations to consider:

(a) the monopoly provision of Airwave Solutions' services under Macquarie ownership, or

(b) the monopoly provision of Airwave Solutions' services under Motorola's ownership.

34 Under both scenarios, going forward, it would have no choice but to continue to rely on Airwave Solutions for the provision of a piece of critical national infrastructure until ESN was fully operational.

Attractiveness of the two options

Macquarie ownership

35 The Home Office appears to have had significant concerns about continued Macquarie ownership linked to financial and operational risks and concerns about lack of cooperation

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[186] Home Office internal email, 13 November 2015. [✂].
[187] Motorola internal email, 25 October 2015, Letter from Motorola to the Home Office, 26 October 2015.
[188] Motorola internal email, 22 July 2015, Motorola internal email, 4 November 2015.
[189] Motorola Hearing with the CMA on 10 February 2022.
[190] Motorola internal email, 27 November 2015.

in relation to the development of an interworking solution to enable the transition from the Airwave Network to ESN. This was against the backdrop of an acrimonious relationship that had spanned several years.

36 The Home Office's concerns with Airwave Solutions' financial position were linked to the high level of indebtedness (which at one stage amounted to £1.8bn[191]) of the intermediate holding company, GDCL and the ability of Airwave Solutions continuing to operate as a going concern, especially in the period after the ESN transition was set to begin:

(a) In March 2014, [✂].[192] The Home Office continued to be concerned with the Airwave supply structure and Airwave Solutions' parent group structure [✂].[193] These concerns were highlighted by news reports such as Infrastructure News's article of 29 May 2015 which stated that Macquarie owned Airwave was 'over-leveraged and its future appeared bleak',[194] with lenders believing they would have to 'write-off most of their acquisition debts to Airwave's parent'. In June 2015, the Home Office requested an update from Airwave Solutions to confirm its financial health and the level of risk it faced.[195] Further, the Home Office was concerned it would be forced to [✂] and that [✂].[196]

(b) On 7 December 2015, in its first discussion with the Home Office following the signing of the Sale and Purchase Agreement relating to the acquisition of Airwave Solutions, Motorola advised the Home Office that under continued Macquarie ownership, there was a risk that the Airwave Network equipment would start to fail as the entire system was 'end of life' and that 'Airwave Solutions would not have the funds to invest in it':

[✂].[197]

(c) There is evidence that this particular issue led to significant concern for the Home Office team.[198]

37 Macquarie had been unwilling to allow flexibility in its arrangements to accommodate the ESN transition and potential interworking required, [✂].[199]

38 When asked by the Home Office to put forward interoperability solutions, Airwave Solutions had [✂][200] [✂].[201]

39 The Home Office believed Airwave Solutions would not [✂].[202]

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[191] Home Office internal email, 20 January 2016.
[192] Home Office document: Airwave & ASL Risk Assessment.
[193] Home Office document: ESCMP Position Paper – ASL Financial Risk.
[194] Home Office internal email, 7 May 2015.
[195] Home Office internal email, 26 June 2015.
[196] Home Office internal email, 28 May 2015.
[197] Home Office document – meeting minutes, 7 December 2015.
[198] Home Office internal email, 23 December 2015.
[199] Home Office memo, 13 November 2015.
[200] Home Office internal email, 6 February.
[201] Home Office document 30 January 2016.
[202] Home Office document 30 January 2016.

40 Finally, the relationship between the Home Office and Macquarie had been difficult for a number of years, starting in 2010 when Airwave Solutions [✂].[203]

41 In 2014, when completing an Airwave Solutions risk assessment, [✂].[204] It was also highlighted, in the 2014 risk assessment, that Airwave Solutions had [✂].[205]

42 These issues continued between Airwave Solutions and the Home Office, culminating in a number of ongoing disputes and eventually two court proceedings (including Airwave Solutions' challenge of the ESN Lot 3 procurement), potentially imposing significant expenditure on both parties as they had stopped making progress in their negotiations. By 2016, the Home Office was describing their relationship with Macquarie as [✂][206] with the Home Office commenting that [✂].[207]

Motorola ownership

43 In contrast, the Home Office saw the potential acquisition of Airwave Solutions by Motorola as presenting significantly more opportunities than risks [✂].[208]

44 [✂].[209]

45 The following statement illustrates the positive view that the Home Office had of Motorola's acquisition of Airwave Solutions ahead of the negotiations: [✂][210] [✂].[211] (Home Office's lead negotiator, [✂], summing up the situation as of 21 December 2015)

46 Statements from the Home Office's lead negotiator indicate that provided it could [✂].[212] Other comments indicate that [✂].[213]

47 We also note that Motorola was well aware that the Home Office was keen to achieve a deal from the outset of the negotiations.[214]

Synthesis of the Home Office's support for the change of ownership

48 Following the negotiations, the Home Office summarised the reasons for supporting [✂]:[215]

(a) [✂]

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[203] Home Office document July 2018.
[204] Home Office document: Airwave & ASL Risk Assessment.
[205] Home Office document: Airwave & ASL Risk Assessment.
[206] Home Office document 30 January 2016.
[207] Home Office internal email, 29 January 2016.
[208] Home Office memo, 4 January 2016.
[209] Home Office document.
[210] Home Office internal email, 21 December 2015.
[211] Home Office email, 21 December 2015.
[212] Home Office internal email, 15 November 2015, Home Office memo, 7 December 2015. This point is further illustrated by this comment made on 18 January 2016 (i.e. in the middle of the negotiations) by the Home Office lead negotiator: [✂].
[213] Home Office internal email, 27 January 2016.
[214] Motorola internal email, 13 November 2015. Motorola internal email, 16 November 2016.
[215] Home Office presentation slides, 2 February 2016.

(b) [✂]

(I) [✂]

(II) [✂]

(III) [✂]

(IV) [✂]

(V) [✂]

(c) [✂]

(d) [✂]

(I) [✂]

(II) [✂]

(III) [✂]

(IV) [✂]

(V) [✂]

(e) [✂]

(f) [✂]

49 Proceeding with Motorola's ownership of Airwave Solutions was also estimated to lead to significant savings, not only to the Home Office, but across all Airwave users. Across the various disputes and potential costs to be incurred during the transition period, where the Authority would effectively be paying for two systems at the same time, the Authority expected to save £[✂] million if they provided approval to Motorola instead of continuing with ownership of Airwave Solutions by Macquarie.[216] We note however that these estimates were provided by Motorola to the Home Office.[217]

Motorola

50 Motorola's option of walking away from the negotiations would have had the following consequences:

(a) The £[✂] if the transaction did not complete by the end of March 2016, with a part payment of £[✂]m if it didn't complete by 29 February 2016 (in the context of an acquisition cost of £[✂]m).[218]

(b) The risk of operational and reputational damage identified by Motorola in its 7 December 2015 meeting with the Home Office (see paragraph 40).

[216] Home Office document 30 January 2016.
[217] Email from Motorola to the Home Office, 30 January 2016. [✂].
[218] Home Office document (briefing note), 4 January 2016.

(c) The loss of the long-term financial upsides of owning Airwave Solutions (although Motorola would only secure these upsides if it could emerge from the negotiations having only made concessions that affected its short-term profits – in other words, therefore, this was a conditional cost of walking away).

51 We note however that:

(a) Motorola's internal documents did not envisage a situation in which a deal could not be achieved – i.e. no suggestion in any document that it expected the Home Office to veto the deal altogether.[219] A number of comments also indicate that Motorola was aware that the Home Office viewed the transaction very favourably. Its main concern was about the time it would take to negotiate, which is reflected in the pressure it put on the Home Office on a number of occasions to move forward at pace.

(b) There is no indication that Motorola had any concern that if it failed to reach an agreement, Airwave Solutions would be purchased by Hong Kong Telecom or another buyer.

Outcome of the negotiations

Perceptions of the negotiating parties

Motorola

52 Motorola's business case (prepared for internal purposes and for its Board) supporting the acquisition of Airwave Solutions assumed a [✂].[220] It therefore entered the negotiations with an expectation that there would be significant delays to ESN and that the operation of the Airwave Network was highly likely to be extended beyond the National Shutdown Target Date of 31 December 2019. Against this background, we note that Motorola told the Home Office that the acquisition was financially unattractive to Motorola on a standalone basis, supported by financial projections to December 2019 showing that the acquisition would return an IRR of [✂]% to Motorola:[221]

1.1 [✂].[222]

53 Motorola's updated [✂], business case to its Board following the change of control negotiations assumed that '[✂].'[223]

54 We note that the above description in Motorola's February 2016 Board update assumed that any extension at current price would not exceed [✂], i.e. it did not assume that prices would be fixed to perpetuity, but instead envisaged that negotiations would take place, and Airwave charges would [✂], if ESN was delayed by more than [✂].

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[219] Motorola presentation slides, December 2015.
[220] Motorola document, 17 November 2015.
[221] Email from Motorola to Home Office, 1 February 2016. [✂].
[222] Email from Motorola to Home Office, 27 January 2016. [✂].
[223] Airwave Transaction, Board of Directors, February 2016.

55 Motorola calculated that the outcome of the negotiations resulted in a [✂] compared to its business case. The potential [✂]. It also highlighted [✂].

The Home Office

56 The Ministerial briefing prepared in February 2016 indicates that the Home Office saw a number of financial and strategic benefits in the deal, set out in three separate appendices:

(a) In relation to the settlement agreements, [✂].

(b) In terms of giving consent to the transaction, three areas of concern were highlighted:

(I) [✂]

(II) [✂]

(III) [✂]

(c) [✂][224]; [✂].[225]

57 The evidence therefore appears to us to show that Motorola anticipated and expected to benefit from longer, general extensions of the operation of the Airwave Network. There are indications that the Home Office did not seek them and may not have anticipated them, other than in the context of the negotiations of the Deed of Recovery (i.e. a catastrophic failure of the ESMCP project caused by Motorola). The Home Office chose to deal with Motorola because continued ownership of Airwave Solutions by Macquarie raised a significantly increasing level of risk as the date of the shutdown of the network approached, and because of the short-term upsides of Motorola's ownership.

CMA's current observations on Motorola's characterisation of the 'deal' struck

58 Motorola has made a number of submissions about the 'deal' struck with the Home Office in 2016. We make the following observations on them, reflecting our provisional views.

[224] [✂].
[225] [✂].

Table D-1: CMA's observations on Motorola's characterisation of the 'deal' struck

● Concessions that Motorola states the Home Office secured in the 2016 negotiations (see paragraph 2)0	● CMA observations
● A perpetual obligation for Airwave to continue to deliver the service at Airwave's risk until the final ESN Transition Group (whether delayed or on time) has transitioned to ESN and National Shut Down occurs.	● For the reasons set out below and in section 4 of this report, it is not clear to us that this is correctly characterised as a "concession" "secured" by the Home Office from Motorola. ● We note that, according to Motorola, its ability to discontinue the Airwave Network was already constrained [✂]. ● We also note that the alignment of the different contracts to the National Shutdown Target of 31 December 2019 increased charges by about £[✂]m according to the Home Office and the Home Office described this as[✂].[226] ● As we describe earlier in this Appendix and in and in section 4 of the report, it appears to us that, while Motorola may have factored into its thinking the financial upsides of long extensions, the Home Office's focus was on minimising the duration and cost of extensions.
● A unilateral option to extend Airwave for any period beyond 2019 at agreed pricing and further flexibility (all aligned to possible ESN elongated Transition scenarios) to require delivery of the Airwave Service only to such ESN Transition Groups that are delayed in transitioning to ESN and need the service for longer than those groups that have transitioned.	● Again, as we describe earlier and in section 4, the evidence suggests to us that the Home Office valued the increased flexibility, and in particular the ability to extend the contracts in monthly increments, with extension charges being set on a monthly basis, rather than annual basis or even through longer commitments in the case of menu services. ● We have seen no evidence so far that the Home Office envisaged at the time of the negotiations that there would be any elongated Transition scenarios nationally. The HoTs appear to seek to address extensions spanning months, rather than years, with the DoR envisaging longer extensions in the case of catastrophic failure caused by Motorola.
● An essential and bespoke 'interoperability' service under which the emergency services users would be able to communicate on an interoperable basis via the existing Airwave Tetra system and the new ESN	● This does not appear to us to be a concession by Motorola for the following reasons. ● It appears to us from the evidence that Motorola's price was set at [✂][227] – having

[226] Home Office internal email, 6 June 2016.
[227] [✂]. Motorola document, 27 January 2016. [emphasis added by the CMA].

PTT voice communication system during the transition phase from Airwave to ESN.	originally estimated [✂], [228] the final offer was for [✂]. ● This was [✂].[229] ● There appears to be evidence that [✂].[230] The equipment upgrade was estimated by the Home Office to account for [✂]% of the costs. ● Evidence from the Home Office suggests it was unconvinced that [✂].[231] ● Motorola itself acknowledged later that there was little price negotiation on this, as it was critical to the Home Office.[232]
● Settlement of ongoing litigation between the Home Office and Airwave relating to Benchmarking and Variation of Price equating to payments to the Home Office of £[✂]m over three years;	● The evidence we have seen suggests the amount referred to by Motorola in its 15 November submission to us is incorrect – it includes the Variation of Price (VOP) settlement of £[✂]m that was agreed with the Cabinet Office in 2014 – but there was no on-going dispute with Airwave Solutions in relation to this. The amount and timing of the payments under this settlement were not changed by this negotiation. ● The overall amount negotiated in January 2016 was £[✂]m, (or about £[✂]m annually).
● The Deed of Recovery providing financial remedies protecting the government from a delay to ESN caused solely by Motorola's ESN Lot 2 delivery and a separate mechanism for extending the Airwave Service in this situation;	1.2 Our emerging assessment of the evidence is that the Home Office reluctantly moved away from its more broadly drafted version that sought to address general delays by Motorola. It appears to us that, by doing so, it significantly reduced the value of the DoR with regard to the terms agreed (including as to price) when negotiating future extensions of the Airwave Service.
● Common end date for all core contracts – Police, Fire, Health - removing the "ragged edge" expiry dates, which would have been problematic as regards the Home Office's aspiration to complete ESN	● Our provisional assessment is that this was as much of benefit to Motorola as it was to the Home Office, as the 'ragged edge' would have resulted in decreased core revenue without an equivalent decrease in costs for the supplier and continuing to be subject to same SLAs from the remaining customers.

[228] Motorola document 7 January 2016.
[229] Motorola internal email, 17 February 2016.
[230] Motorola internal email, 22 October, 2015. Motorola internal email 12 December 2015; Motorola internal email, 15 January 2016.
[231] Home Office internal email, 5 February 2016, Home Office internal email, 8 February 2016, Home Office internal email, 8 February 2016.
[232] Motorola internal email, 8 June 2017.

Transition across all the emergency services by December 2019;	
● Access to [✂] of Airwave's sites located in rural areas in order to enable the Home Office to execute on its ESN extended area coverage requirements;	● Motorola told us that 'attractive sites' were worth £[✂] to £[✂] which would mean that these 80 sites would have been worth up to £[✂]m in total to Motorola. ● We note that so far we have not seen any consideration in Motorola's contemporaneous documents of the value of these sites, which suggest that it did not perceive them as being of significant value.
● Flexibility for Police Forces to extend their existing Menu Services provision at current pricing for a period of its choice through to National Shut Down at the latest	● This appears to us to be of equal benefit to Motorola, as they derive revenue and profits from this activity.
● Withdrawal of Airwave's procurement challenge that it had brought against the Home Office following its exclusion from the ESMCP "Lot 3" competition. This avoided the prospect that the Home Office could be forced to re-procure that element of the ESMCP, which likely would have, caused significant delay to its proposed timetable.	● Evidence indicates that, by the time of the start of the negotiations, Airwave Solutions had dropped its injunction to block ESN and was only seeking damages, not the re-procurement of ESN (which had been dropped following the signing of the Sales and Purchase Agreement in early December 2015).[233] ● It was also of benefit to Motorola for all disputes with Airwave Solutions' key customer to be settled before it completed the acquisition, as evidenced by its internal documents.
● The Home Office did not seek to secure any form of price reduction at this point, having secured the overall deal it wanted	● We note that the records taken by Motorola's lead negotiator and the Home Office's own internal records show that the Home Office sought a discount on extensions as part of the extension negotiations and Motorola had expressed the willingness to offer a [✂] to [✂]% discount in return for a common end date at the beginning of the negotiations.[234] ● It appears from the evidence we have seen that this discount offer was withdrawn as the Home Office sought a co-terminus date that was sooner than the one originally envisaged by Motorola.

[233] Motorola internal email, 7 December 2015 re. Telegraph article (Title: Airwave drops High Court block on new police emergency network).
[234] Motorola document, 7 January 2016.

Appendix E: Benchmarking

Introduction

1 In its response to the Issues Statement, Motorola stated:[235]

> The Issues Statement is silent on whether the Group intends to take account of the benchmarking provisions agreed between the parties, yet this may have a significant bearing on profitability [✂] when the [✂] to invoke these provisions. In addition to carefully drafted provisions on pricing, the contract with the Home Office contains an independent third-party referral process (the "Benchmarking Process"[236]) to ensure that prices are fair, which has already been used by the parties. Indeed, the Home Office preferred to suspend the Benchmarking Process in order to receive price reductions in the extension negotiations of 2016 and 2018. The Home Office was satisfied by both the price discounts and overall contractual arrangements, including additional capital investments executed in those agreements. The Benchmarking Process was used on two occasions to verify the fairness of pricing, and on both occasions the third party found no excessive pricing for the Airwave service.
>
> The Group is therefore respectfully invited to give requisite weight to the method chosen by the well-advised parties to address questions of value for money within the contract. The benchmarking provisions are fully capable of addressing value for money. Otherwise, contractual certainty is destroyed, and that cannot be an appropriate or proportionate intervention.

2 In its 15 November 2021 submission,[237] Motorola commented specifically on the benchmarking carried out by Gartner, Inc (Gartner) on behalf of the Home Office in 2014 in the following terms:

> A benchmarking study of Airwave Services undertaken by Gartner for Airwave and the Home Office dated July 2014 casts severe doubts on the idea of there being a "market rate for TETRA services". The 2014 Gartner study goes to great length to point out the methodological difficulties encountered in trying to benchmark Airwave's pricing and highlights the efforts that had to be taken – with full support from Airwave – to overcome these difficulties. In particular, Gartner notes that 'none of the peers are delivered as PFIs and thus they all have different and unknown set up costs borne by their respective Governments or agencies and consequently different costs associated with capital.' Trying to correct for these differences, Gartner attempted to construct a measure of ongoing service charges for Airwave, stripping out components that should cover implementation and capital maintenance and cost of capital, as well as calculating a single annual contract charge for peer networks. Using the first

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[235] Motorola's response to the Issues Statement, paragraph 94.
[236] There is no such term in the PFI Agreement (but we believe that this refers to the benchmarking clauses that we describe further below), although the Ambulance contract uses this terminology.
[237] Motorola's response to the CMA's final report and decision on a Market Investigation Reference, 15 November 2021, paragraph 150.

approach, Gartner found that Airwave's imputed ongoing service charges were between [✂]% and [✂]% [✂] what Gartner considered to be a value-for-money price. Looking at single annual charges, Gartner found that the total Airwave cost was between [✂]% and [✂]% [✂] than the value-for-money price.

3 The purpose of this appendix is to set out relevant facts on benchmarking that we have been able to establish based on our review of the internal documents obtained from Motorola in response to our statutory information notice of 13 December 2021 and documents obtained from the Home Office in the course of January and February 2022. This includes mainly:

(a) Key contractual provisions, including [✂] of the PFI Agreement,

(b) The benchmarking reports produced under [✂] of the PFI Agreement,

(c) Internal emails and email exchanges involving Motorola staff, and

(d) Internal emails and email exchanges involving Home Office staff.

Relevant contractual clauses

The PFI Agreement

4 The primary provision on benchmarking is set out in [✂] the PFI Framework Agreement.[238] The benchmarking mechanism is a detailed analysis that enables the Home Office to 'assess the continuing value for money exercise of the Network Services'. [✂] sets out the scope of benchmarking, its process, its frequency and the options available following the results of benchmarking.

5 The term 'Value for Money' is defined as follows [✂] of the PFI Agreement): The benchmarking shall provide a detailed analysis that enables the AUTHORITY to assess the continuing Value for Money of the Network Services. The term 'Value for Money' shall mean, given the service quality and service levels provided by the CONTRACTOR in relation to those available in the open market, whether the Contract Charges paid for the supply of Network Services to Customers under the Services Contracts materially exceeds pricing that would be appropriate for market conditions current at the time of the benchmarking exercise. The benchmarking may also include recommendations about service delivery, service levels, service standards and 'best practice' in addition to any review of Contract Charges.

6 Factors considered when undertaking the benchmarking exercise include (but are not limited to):

- The prices charged for the Airwave Network
- The prices charged for Core Services and Menu Services (as packages)
- The basis on which the Charging Structure operates

[238] The PFI Agreement.

- The prices charged for comparable services elsewhere
- The scope of alternative services.

7 According to [✂], the benchmarking exercise is supposed to take place 6 years from the Pilot Ready for Service (“RFS”) Date and subsequently no less than every 5 years.

8 Other relevant clauses include (summarised):

(a) [✂] – The Home Office has the right to cancel any element of the network services if the benchmarking process ‘results in a recommendation that the benchmarked services is not “value for money” [✂] and despite ‘good faith negotiations’ and use of the Dispute Resolution Procedure if necessary, the parties are not able to ‘conclude suitable amendments’ to the PFI Agreement.

(b) In the event that there is a dispute or claim as to the terms of the PFI Agreement, the parties are encouraged to negotiate in good faith to resolve it. If this is not possible, [✂] sets out the scope and procedure for dispute resolution. [✂] states that ‘in the event that the dispute or claim is not resolved by negotiation within 21 (twenty one) days of referral to the Director level the dispute may be referred to arbitration’. This is subject to the right of either party to refer the dispute or claim to court in England and Wales.[239]

The ‘Ambulance’ contracts

9 The main provisions as to benchmarking are set out in [✂].[240]

10 Under [✂], following the 3rd anniversary of the Effective Date (19 July 2005) the Authority is entitled to require ‘Benchmark Reviews of the Services, Charges and Service Level Specification’. The Authority would not be able to request another such review for at least 24 months [✂].

11 However, the Authority is entitled to make a written request at any time following the Effective Date requiring ‘additional Benchmark Reviews in respect of any Charges payable by the Authority in respect of any Lot that consists entirely of Commodity Components included in Bundle 2’ [✂].

12 The Authority can select an independent third party to undertake the review; however it must not be a ‘material competitor’ of Airwave Solutions. There is also an obligation on the Authority to declare if the third party selected to do the benchmarking has a ‘material competitor’ of Airwave Solutions as a client.

13 ‘If any Benchmarking Review determines that any or all of the Services, Charges and Service Level Specifications are not Good Value’ there is an expectation that:

- Airwave Solutions reduces the charges within 3 months of receipt of that Benchmarking Report; and/or

[239] [✂].

[240] Ambulance Main Agreement.

- If the Authority so requests, Airwave Solutions shall improve the Services and/or Service Level Specifications in accordance with the relevant Benchmarking Report within 6 months of receipt of that Benchmarking Report (this can be extended by mutual agreement).

- Failure to take these steps 'shall, without prejudice to any other rights or remedies of the Authority, any Authority Service Recipient or any Authority Party, constitute a Contractor Event of Default'.

14 Airwave Solutions has a right to make submissions to the benchmarker; however, it cannot dispute the decision unless there has been a failure by the Authority or the Benchmarker, or it 'reasonably considers' the decision to be rooted in 'bias, procedural irregularity and irrationality' [✂]. If there is such a dispute, it will be subject to the Dispute Resolution Procedure, set out in [✂] of the main Ambulance Contract.

15 The provisions governing the appointment of a benchmarker, and the benchmarking process are set out in [✂] of the Ambulance Contract. This Schedule also includes a description of "Good Value", which takes into account charges being less or equal to a specified threshold [✂] as well as service level specifications [✂]. It is explicitly stated in this schedule that benchmark reviews 'shall not result in any increase to the Charges (either individually or in aggregate) or any decrease in the performance of any Services or Service Level Specifications' [✂].

16 The Scottish Ambulance ARRP Agreement ("SAS Contract") is a separate customer contract to the main Ambulance Contract, where the parties are the Scottish Ambulance Service Board and [Motorola/the contractor]. However, its terms are similar to the main Ambulance Contract, including those concerning benchmarking.[241] One thing of note is that the Scottish Ambulance Service Board is reliant on the Authority (Secretary of State for Health prior to 2016, now the Home Office) exercising its rights as to Benchmarking, before the Board can exercise its rights as to Benchmarking [✂].

17 In both the main Ambulance Contract and the SAS Contract the terms concerning dispute resolution and its procedure are almost identical. The parties are expected to negotiate in good faith to resolve any dispute or claim that may arise. However, if the dispute cannot be resolved without it becoming contentious, arbitration is available to the parties. In their respective contracts, where court proceedings have not commenced, there is a requirement on the Board and the Home Office to serve on Motorola a notice that the dispute be referred to arbitration.[242] In the event that court proceedings have commenced, the courts of England and Wales shall have exclusive jurisdiction.[243]

Benchmarking exercises and outcomes

18 To our knowledge, there have been only two benchmarking exercises throughout the duration of the Framework Agreement - in 2008 and in 2013/14, and none since then.

[241] See paragraphs Appendix E:12 – Appendix E:15 above
[242] [✂] in both the main Ambulance Contract and the SAS Contract
[243] [✂] in both the Ambulance Contract and the SAS Contract

The 2008 benchmarking exercise

19 The 6 May 2008 benchmarking report[244] was commissioned by Airwave Solutions from Accenture in February 2008 under [✂] of the PFI Agreement.

20 Recognising the challenge of identifying a basis for comparison given the unique nature of the Airwave Network and contractual arrangement (PFI Agreement), Accenture drew evidence from a number of sources:

(a) data and information on the trends within the wider UK communications market over the eight years preceding the benchmarking exercise;

(b) data and information on developments in voice and data UK government markets, including PFI arranged programmes; and

(c) comparable foreign public safety networks.

21 Based on this evidence, Accenture made a number of general observations:

> In line with UK Treasury guidance on benchmarking, and the terms of the Framework Agreement, our assessment could only review the charges for the Airwave service as a whole in comparison with other contracts, not the actual costs incurred by Airwave Solutions. Without a detailed breakdown of the costs, it is impossible to normalise the charges from all comparison contracts, in order to create a like for like comparison.
>
> When comparing the network services against the wider communication market place the report does highlight a divergence in the overall trend of a reduction in the per unit pricing for other UK government voice and data solutions and the wider communications market place, whilst the Network Services have shown increased charges in accordance with the contractually defined indexation mechanism.
>
> We have analysed the key drivers that have enabled other providers to reduce their prices over time, but it is clear that a number of these drivers are not available to Airwave Solutions:
>
> - The market is closed (both in terms of number of organisations allowed to use the service, and the spectrum available) so volume growth is limited and thus the economies of scale seen in the marketplace generally, are not achievable to the same extent.
> - The security requirements make it difficult for Airwave Solutions to fully leverage the lower cost which might arise from supporting some functions offshore.
> - The high availability and coverage requirements, which require a relatively high level of staffing, where some of the price reductions seen

244 [✂]

in the general market have been as a result of a more basic service being provided.

However, there are two areas in particular where we believe further investigation and discussion may be worthwhile:

- Network services will contain an element of cost that arises from sub-contracted ground based network costs, which we believe would be at least in part subject to the general market price reductions;

- There have been many improvements in operational efficiency made by other operators in the general market which have not required offshore working, and some discussion between NPIA and Airwave regarding operational efficiency improvements achieved to date, would inform a discussion on whether it is reasonable for the labour element of the cost to increase in line with inflation and earnings each year.

When compared against other TETRA based public safety networks within the European market place the Network Services provided by the Framework Agreement are broadly in line with the capability and service performance of those contracts. However the headline cost per user calculates higher in the UK when compared with the foreign comparators we analysed. Within the report we provide an overview of the factors that could justify such differences – such as geography, demographics, network build financing and overall risk management.

22 In relation to whether Airwave Solutions offered value for money, Accenture reached three conclusions that called into question the effectiveness of the benchmarking provision included in the PFI Agreement:

(a) Without carrying out a detailed cost (rather than price) comparison, it is difficult to draw any significant conclusions about relative Value For Money.

(b) Having explored a number of different approaches to assess 'value for money' of the charges of the Framework Agreement, we can only conclude that further cost based analysis would be required in order to normalise the comparison cases to create a fair like for like comparison.

(c) The Framework Agreement does not oblige Airwave Solutions to provide such information, and we believe it would be very difficult obtaining such cost data from the European comparators.

23 Accenture also recommended that: 'for future contracts, if the benchmark is to be effective, there should be a pre-agreed model for benchmarking of specific elements (e.g. the ground network in isolation). This would allow comparators to be more easily found. If the pricing could be broken down so that the charges associated with risk, financing, recovery of asset investments could be removed in order to identify the base running charge for the service, it would also be easier to compare on a like for like footing with other contracts. At the same time, a productivity improvement factor should be incorporated to create a potential offset to inflation, and the indexation formulae should be applied at a more granular level so that, for example, deflationary trends in the technology market place such as network charges and desktop prices, are applied to those elements of the contract'.

24 Motorola has refused to provide the Home Office with additional price transparency since 2016,[245] but we note that Airwave Solutions is not contractually obliged to provide any of the costs information to which Accenture referred.

25 We also note that, notwithstanding the limitations highlighted by Accenture, the comparison it carried out against similar public safety networks in Europe pointed towards the Airwave Network being significantly more expensive than other comparators.

The 2013/14 benchmarking exercise

The report

26 In 2013, the Home Office asked Airwave Solutions to commission a benchmark of the network services it provides under the framework arrangement for police forces to validate if Airwave Solutions was meeting the Value for Money commitments set out in the original contract. The appointed benchmarker, Gartner, delivered its final report on 1 July 2014.[246]

27 First, Gartner sought to establish the meaning of value for money, as defined in [✂] of the PFI Agreement (see paragraph 5), as follows:

> "Value for Money" shall mean the charges for the benchmarked services are, having regard to the service level targets, within +10% of the mean average of the normalised peer group charges.

28 Second, Gartner sought to benchmark Airwave Solutions' services against four European peers and although, unlike Accenture, it was able to produce comparators, the financing of the Airwave Network through a PFI arrangement created challenges, which it sought to address through the development of a bespoke financial model alongside its benchmarking process, which isolated three different components to Airwave's pricing:

(a) the ongoing operational service, estimated by Gartner through the modelling exercise to be £[✂]m and for which direct comparisons with peers could be performed (see table below);

(b) costs associated with the implementation of the network: 'the outcome of this validation process was that the Airwave CapEx costs for implementation, in the opinion of Gartner, were considered reasonable and should be taken forward for the purposes of the financial model'.

(c) The PFI finance component.

29 Gartner concluded: 'The component of the annual Contract Charge for which Gartner could perform a credible price benchmark is the ongoing operational services. The result is that

[245] Email from Motorola to the Home Office, 12 February. Motorola internal email, 12 January 2018. In contrast, it would appear that under previous ownership, Airwave Solutions had appeared willing to engage with this issue (Email from Airwave Solution to the Home Office, 19 January 2015.
[246] Report by Gartner for Airwave Solutions and the Home Office, 1 July 2014.

the Airwave price for this component exceeds the Value for Money measures applied to the adjusted peer prices.' FigureE-1 below shows these results.

Figure E-1: benchmark against peer ongoing service prices[247]

[✂]

30 Gartner recommended that:

(a) The Benchmark Schedule should be revised to adopt a numerically precise definition of Value for Money.

(b) Airwave and Home Office ensure any follow-on programme has a charging structure that is in effect itemised, allowing a more straightforward and transparent benchmarking and price adjustment process to take place.

(c) the normalised ongoing service charge element, when compared to peers, is used as the basis for Home Office judgements on Value for Money.

(d) Best practice at the conclusion of a benchmark is, where necessary, to activate any escalation clause, once the good faith principles that the Authority and Contractor have adopted to-date have become exhausted.

The dispute

31 [✂] of the PFI Agreement[248] sets out the benchmarking procedure to be followed and governs the steps to be carried out after a benchmarking exercise has been completed. [✂] states that the parties shall amend the PFI Agreement in accordance with the recommendations of the benchmarking exercise. The Home Office's interpretation of the relevant PFI Agreement clauses was that it was immediately entitled to a reduction in price to reflect the findings of the Gartner analysis. The Home Office initially sought to recover these costs by withholding or reducing the fees it was to pay Airwave Solutions whilst negotiating a permanent discount agreement.[249]The PFI Agreement provides, however, that where the benchmarking exercise results in a recommendation that the Network Services do not represent value for money, then the parties shall negotiate in good faith to amend the PFI Agreement to ensure that the costs represent value for money in line with the recommendations of the benchmarking exercise.[250]

32 The PFI Agreement requires the parties conclude good faith negotiations within three months of the submission of the benchmarking report.[251] The Home Office and Airwave Solutions began negotiating to apply these recommendations as required but the discussions continued without results as Airwave Solutions did not agree with the outcomes of the Gartner report and sought changes to the recommendations from Gartner

[247] [✂].
[248] PFI Agreement, 29 February 2000.
[249] Internal Home Office email, 8 June 2015. Internal Home Office email, 16 September 2014.
[250] PFI Agreement, [✂].
[251] PFI Agreement, [✂].

directly.[252] On 16 July 2014,[253] Airwave Solutions wrote to Gartner, advising it did not accept the Final Report produced and its belief that Gartner had failed to comply with [✂] and therefore failed to comply materially with its Statement of Work.[254] The Home Office responded to this letter[255] and re-stated its position that the methodology used by Gartner had been signed off at 'multiple stages throughout the six-month Benchmarking process' and its view that 'any objection to the methodology after it had been agreed to was invalid'.[256] In preparation for the exercise, weekly meetings were held with Gartner, the Home Office and Airwave Solutions regarding the approach to be taken and the limits that would be applied to the scope of the comparison.[257] Airwave Solutions wrote to the Home Office on 2 October 2014,[258] continuing the good faith negotiations, and confirmed again its position that Gartner 'erred in seeking to provide comments on the question of whether the artificially isolated 'service charge' element of the Contract charges represented Value for Money.' Airwave Solutions considered this went beyond the requirements set out under [✂] and was not agreed to by Airwave Solutions. Instead, Gartner should have compared the Network Services and Contract charges, as a whole, against peers to determine if they represent Value for Money.

33 Where 'good faith negotiations', as required by the benchmarking provisions, fail to produce an outcome the Dispute Resolution Procedure set out at [✂] of the PFI Agreement will come into effect. By January 2015,[259] there had been no progress in the initial 'good faith' negotiations: the Home Office continued to consider that the Gartner recommendations were to be implemented without alteration whilst Airwave Solutions disputed the findings and methodology of the report and declined to effect the price reduction. The Home Office initiated the dispute resolution procedure requiring 'Authorised Commercial representatives' to begin a 30-day period of negotiations to settle the matter,[260] this was referred to as 'stage 1' of the dispute resolution process. On 27 February 2015, the Home Office notified Airwave Solutions, by way of letter,[261] and confirmed its intention to apply the recommendations of the Gartner report to the PFI Agreement. The first negotiation meeting at this stage of negotiations was held on 23 March 2015[262] and it also failed to produce any results.

34 The matter was escalated to 'stage 2' of the dispute resolution process, whereby the Head of Service and Public Safety Radio Communications Service (PSRCP) Project Director are required to engage in a further 30-day period of negotiations[263]. This stage was extended until 15 May 2015[264] to allow further discussions and attempts by both the Home Office

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[252] Internal Home Office email, 27 February 2015.
[253] Letter from Airwave Solutions to Gartner, 16 July 2014.
[254] Statement of Work for the benchmarking report carried out by Gartner, 31 December 2013. Gartner Report 'Benchmark of ASL Network Services', 31 December 2013.
[255] Letter from the Home office to Airwave Solutions, 23 July 2014.
[256] Letter from the Home office to Airwave Solutions, 23 July 2014.
[257] Internal Home Office email, 9 June 2015.
[258] Letter from Airwave Solutions to the Homes office, 2 October 2014.
[259] Email from Airwave Solutions to the Homes Office, 28 January 2015.
[260] PFI Agreement, [✂].
[261] Letter from the Home Office to Airwave Solutions, 27 February 2015.
[262] Home Office meeting minutes 23 March 2015.
[263] PFI Agreement, [✂].
[264] Home Office excel document.

and Airwave Solutions to reach a settlement before proceeding to the third and final stage of the process.

35 The third and final stage of negotiations requires the matter to be escalated to Director level for an additional 21-day period of negotiations. On 1 June 2015,[265] the parties held the first stage 3 dispute resolution meeting. At this meeting the Home Office restated its position and Airwave Solutions undertook to take the matter back to its board.[266]

36 The final recourse for any disputes that are not resolved by negotiation within 21 days of referral to the Director level, is referral, by notice to the other party, to arbitration, subject to any right to refer the dispute to the court.[267] In regard to the benchmarking dispute, the Home Office issued proceedings in the High Court to effect the changes recommended by the Gartner report. Proceedings were issued on 8 October 2015[268], 15 months after the Gartner report was submitted. The dispute resolution process as set out in the contract should have taken 81 days following the 3-month good faith negotiation period and therefore should have been concluded by 19 May 2015. The proceedings were subsequently stayed whilst negotiations relating to the approval of Motorola's acquisition of Airwave Solutions by the Home Office took place.

Table E-1: Chronology of Events

19th June 2013[269]	Home Office initiated the benchmarking exercise by letter
11th October 2013[270]	The Request for Proposal was issued beginning the procurement process for an auditor to carry out the benchmarking exercise.
18th December 2013[271]	Airwave Solutions provided approval for Gartner to be awarded the benchmarking exercise.
31st December 2013[272]	Gartner issued Statement of Work.
17th January 2014	Gartner was commissioned to conduct the benchmarking exercise and produce the Benchmarking report.
18th February 2014	Gartner issued an update on the Benchmark Approach to be followed.
2nd July 2014[273]	Gartner Benchmarking Report was submitted to both the Home Office and Airwave Solutions.
3rd July 2014	*The 3-month good faith negotiation period began.*
1st Sept 2014[274]	Gartner issued an updated Executive Summary to the Benchmarking Report in response to Airwave Solutions' concerns.
5th September 2014	First Good Faith Negotiation Meeting held.
26th September 2014[275]	Good Faith Negotiation Meeting held.
3rd October 2014	*Good Faith Negotiation period should have ended.*
17th December 2014	Good Faith Negotiation Meeting held.
27th February 2015[276]	Home Office initiated the formal dispute resolution procedure by issuing written notice to Airwave Solutions.
24th March 2015	Dispute Resolution meeting held.
30th March 2015	Stage 1 Dispute Resolution should have ended.
27th April 2015	Dispute Resolution meeting held.

[265] Letter from Airwave Solutions to the Home Office, 17 June 2015.
[266] Internal Home Office email, 14 August 2015.
[267] PFI Agreement, [✂].
[268] Sealed claim form [✂], 8 October 2015.
[269] Sealed claim form [✂], 8 October 2015.
[270] "[✂]" (document provided by the Home Office).
[271] Email from the Home office to Airwave Solutions, 13 December 2013.
[272] Gartner Report "Benchmark of ASL Network Services", 31 December 2013.
[273] Letter from Gartner to Airwave Solutions, 2 July 2014.
[274] Letter from Gartner to Airwave Solutions, 1 September 2014.
[275] Home Office meeting minutes, 26 September 2014.
[276] Letter from home Office to Airwave Solutions, 27 February 2015.

19th May 2015	*The 81-day Dispute Resolution Process should have ended following issue of initiation letter on 27th February 2015.*
1st June 2015	Dispute Resolution meeting held.
5th June 2015	*Expected End of Stage 3 of the Dispute Resolution process.*
9th September 2015	Letter of Claim served on Airwave Solutions.
8th October 2015[277]	Court Proceedings begin; Home Office Claim Form and Particulars of Claim filed with High Court.
5th November 2015[278]	Airwave Solutions served their Defence on the Home Office.
7th December 2015[279]	Home Office filed its Reply.

Other 2015 developments

37 As far as we know, Motorola first found out that Airwave Solutions and the Home Office were in dispute over the benchmarking results in March 2015 in the course of a due diligence meeting with Macquarie, as shown in the following meeting note comment:

[✂].[280]

38 [✂]:

[✂]:

1. [✂].
[✂].
[✂].

2. [✂].
[✂]

3. [✂]**:**
[✂]:
A. [✂].

B. [✂].
[✂].

4. [✂].

A. [✂].
[✂].
B. [✂]

[✂].

[✂].

.[281]

[277] Sealed claim form [✂], 8 October 2015.
[278] Sealed defence [✂] 5 November 2015.
[279] Reply to defence [✂] 7 December 2015.
[280] Motorola note of meetings, 10 and 11 March 2015.
[281] Motorola internal email, 22 July 2015.

39 [✂].[282] [✂].'[283] [✂].[284]

40 [✂][285] [✂][286].

41 [✂].[287]

42 [✂]:

(a) [✂].

(b) [✂].

43 [✂].[288]

44 In late September 2015, Motorola found out that the Department of Health was considering its right to benchmark for the first time: [✂].[289] [✂].[290]

45 As part of the court proceedings against Airwave Solutions started on 8 October 2015 (see paragraph Appendix E:36), the Home Office appears to have sought a discount of £[✂]m/annum.[291]

Benchmarking since 2016

The 2015/2016 negotiations

46 Motorola and the Home Office settled various disputes, including the one relating to benchmarking, as part of the change of control negotiations that took place in January/February 2016. In an internal email [✂],[292] [✂] set the agenda for the upcoming discussions, making it clear that getting both the Home Office and the Department of Health to waive their rights to benchmark was a key objective for Motorola of the upcoming negotiations.

47 Although Motorola had been prepared to pay up to £[✂]m to settle the various disputes, the amount agreed was £[✂]m[293] to be paid by Motorola to the Home Office in six instalments between 31 March 2016 and 31 December 2019: one of £[✂]m, one of £[✂]m and four of £[✂]m.

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[282] Motorola document.
[283] Motorola internal email, 25 July 2015.
[284] Motorola internal email 30 July 2015.
[285] Email from [✂] to Motorola, 3 August 2015.
[286] Letter from [✂], Guardian Digital Communications Limited to [✂], Home Office, 6 August 2015.
[287] Motorola presentation, 13 August 2015 and Motorola internal email, 6 August 2015.
[288] Letter from Motorola to [✂], 17 September 2015.
[289] Motorola internal email, 26 September 2015.
[290] Motorola document.
[291] Motorola internal email, 21 October 2015.
[292] Motorola internal email, 22 December 2015.
[293] Motorola presentation slides "Airwave Transaction", February 2016.

48 In return, the Home Office agreed to suspend its rights to undertake benchmarking exercises under the PFI Agreement until 1 January 2021.[294] In a separate settlement,[295] The Department of Health and Scottish Ambulance Board agreed to suspend their right to carry out a Benchmark Review until 1 January 2021 in respect to Bundle 1, although there is no evidence that this was in return for any discount. In respect to Bundle 2, both authorities agreed not to carry out a Benchmark Review until 1 July 2016 and that any change resulting from it would take effect on 1 January 2017. From our review of internal documents, it appears that no such Benchmark Reviews were carried out, and we note that no such review had previously been carried out by the health authorities if the comments made by Macquarie in early 2015 are correct. We note that Motorola did not wish to obtain a waiver of the right to benchmark bundle 2 services because [✂].[296]

49 Our calculations indicate that the benchmarking settlement accounted for circa [✂]% of Airwave Solutions' core revenue (ie excluding menu services, the ambulance bundle 2 and other revenue), in the period from 2016 to year end 2019.[297] Motorola had estimated at the time of the negotiations (and communicated to the Home Office) that the £[✂]m annual discount was equivalent to a [✂]% discount on 'police fees'.[298]

The 2018 negotiations

50 Based on the documents that we have obtained, it appears to us that the waiving of the right to benchmark was negotiated relatively late in the negotiations, with the potential deferral of the right to benchmark being introduced on 31 July 2018.[299]

51 On 1 August 2018, the Home Office rejected the offer, considering that [✂]:[300]

[✂].

[✂].

52 [✂].[301]

53 The Airwave Extension Term Sheet,[302] signed on 21 September 2018, states that [✂], thus confirming that the Home Office's right to benchmark was waived until the end of the extension. It is however silent about rights to benchmark under the two 'ambulance' contracts.

[294] Settlement Agreement (Home Office & Motorola), 17 February 2016.
[295] Settlement Agreement (Scottish Ambulance Service Board & Motorola), 17 February 2016.
[296] Motorola internal email, 10 February 2016.
[297] Motorola excel document core revenue of £[✂]m, benchmarking/VOP discount of: £[✂]m of which £[✂]m are for the VOP settlement (i.e. the indexation settlement agreed with the Cabinet Office in 2014).
[298] Email from Advalus to Motorola, 4 February 2016. It seems likely that the police fees, as referred to in this email, include both core and menu services.
[299] Internal Motorola email, 31 July 2018. Motorola presentation slides, 31 July 2018; Motorola presentation slides, 25 July 2018; Motorola presentation slides, 31 July 2018.
[300] Email from Home Office to Motorola (provided by Motorola), 1 August 2018.
[301] Motorola document.
[302] Airwave Extension Term Sheet – Execution Version.

The 2021 negotiations

54 [✂][303].

55 However, in December 2021, in response to the Home Office's letter[304] requesting the [✂]:[305]

[✂].

[✂]:

(a) [✂];

(b) [✂]; and

(c) [✂].

56 On 20 December 2021, the Home Office [✂]. Our current understanding is that the Home Office will therefore have the right to benchmark Airwave Solutions' services in accordance with [✂] of the PFI Agreement from 1 January 2023 onwards.

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[303] Motorola document.
[304] Letter from [✂], Home Office to Motorola dated 1 December 2021, referred to in the letter from [✂], Motorola to [✂], Home Office, dated 3 December 2021.
[305] Letter from [✂], Motorola to [✂] Home Office dated 3 December 2021.

Appendix F: Dual role and interworking

Introduction

1 This Appendix contains the additional analysis and evidence referred to in section 5 of this provisional decision report in respect of:

- The procurement process resulting in the award of ESN Lot 2.
- Motorola's wider financial incentives to deliver its ESN obligations effectively and efficiently, including an assessment of reputational impacts.
- Evidence relating to Motorola's business strategy in relation to acquisition of Airwave Solutions and subsequently as regards the Airwave Network and ESN, based on a review of internal documents of senior Motorola management.
- The importance of the Kodiak MCPTT application as a core component of ESN.
- Motorola's ability to delay ESN, including evidence provided by the Home Office, contained in internal Motorola documents and expert third party reports that have reviewed and examined Motorola's delivery of Lot 2.
- Motorola's role in interworking, including Motorola's 2016 incentives to deliver the existing interworking solution and Motorola's ability to delay the development of an alternative interworking solution.

ESN Lot 2 procurement

2 In this subsection, we provide a brief summary of the procurement process used for the award of ESN Lot 2.

3 The contract notice for Lot 2 was published on 18 April 2014, with a deadline of 16 May 2014. Prior to this, the ESMCP 'completed a 6-month engagement with the market, […] focussed on generating competitive tension in each Lot' and 'identified a total of 23 potential suppliers for Lot 2 with the skills and capability to provide such services' […] '16 new market entrants [also] were engaged from outside the traditional IT service providers.'[306]

4 For Lot 2, the Home Office received 17 expressions of interest but not all these resulted in bids. On 27 June 2014, both Motorola (for Lot 2) and Airwave Solutions (for Lots 2, 3 and Lot 4) were selected for the next stage of the process.[307] Airwave Solutions was later dropped from the ESMCP shortlisting process in March 2015.

5 The Home Office narrowed the competition down to five bidders and Motorola's bid was shortlisted alongside that of HP Inc. (HP) (at the ITT stage). Motorola and HP were invited

[306] Note from Home Office to Cabinet Office dated 10 March 2014.
[307] Motorola internal email of 28 June 2014 and Home Office letter of 27 June 2014 (in relation to Lot 2).

to submit a best and final offer (BAFO).[308] Motorola's winning binding offer was made before HP decided to withdraw from the process.

6 Motorola's internal documents show that:

(a) Its main competitor in relation to Lot 2 was [✂].[309]

(b) Motorola was tracking [✂]'s performance against its own:

(I) In a presentation dated 23 April 2015, Motorola (MSI) noted that 'ITT Submitted; [✂] 63%, MSI [✂]%; Generally our technical solution was as good or better than [✂]; Customer Support, Implementation & Testing scored very low; [✂] beat us on price'.[310]

(II) In a presentation dated 19 June 2015 setting out background to the bidding process, and proposal for BAFO bid, it was noted that [✂] 'ITT Bid c.£ [✂]. Max [✂]% scored' and that [✂] 'Technical score [was] lower than MSI – Will improve in BAFO'. It noted [✂] 'Estimated BAFO[311] price range [as] £[✂] - £[✂]m', but also quotes the Home Office stating: 'we cannot contract at either suppliers ITT bid price'.[312]

(c) The evidence shows that HP's presence incentivised Motorola to make a keen pricing offer. A description of pricing options indicates that Motorola considered the need to reduce its bid substantially for its BAFO (see Figure F-1). Motorola's internal approval request/business case[313] sheds more light on why Motorola was incentivised to win Lot 2. It assessed the value of the contract to Motorola on a standalone basis and stated that 'Motorola has an opportunity to win and successfully deliver Lot 2 User Services to the Home Office. […]. The annual revenues will be more than the current revenues that we receive as a subcontractor to Airwave.[314] By delivering the core ESN Motorola will also be well placed to upsell services and technology in non-core ESN areas such as Control Room solutions and in vehicle solutions. […]. It is likely that if the Customer is successful in delivering ESN then others will follow. […]. It is critical that we win, deliver and subsequently use as a template for success elsewhere.'

Figure F-1: slide on options for MSI's BAFO, 2015

[✂]

Source: Internal Motorola presentation on the Lot 2 bid (undated).

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[308] Upgrading emergency service communications (parliament.uk), page 6
[309] Motorola internal presentation.
[310] Motorola internal presentation to the Senior Leadership Team, 23 April 2015.
[311] Best and final offer (BAFO) stage was expected to run from June to August 2015, followed by the Award stage.
[312] Motorola internal presentation on the Lot 2 bid (undated but logged as 19 June 2015).
[313] Motorola internal approval request dated 19 June 2015. The same statements appear in the final agreement approval request dated 24 November 2015.
[314] Motorola's revenues derived principally from the maintenance of TETRA equipment at the time. The balance of revenue shifted significantly following the acquisition of Airwave Solutions.

7 Third party accounts of the negotiations also indicate that the procurement process was competitive:

(a) The PAC report records that 'one of the final two suppliers withdrew leaving the Department exposed to a potentially uncompetitive single-supplier situation. The Department told us that in one of these cases supplier withdrawal came so late that the winning bid, submitted by Motorola, was effectively prepared under competitive pressure.' [315]

(b) The 2017 Ricketts Report,[316] reviewing ESMCP, noted that it 'seems likely that the commercials (price) extracted at time of contract will have motivated behaviour also. [...]. Supplier responses saw [✂] withdraw and Motorola drop their price by £[✂]m. This is of course good negotiation in one sense, but many have expressed the view that for a ground-breaking technology project with a considerable degree of risk, this may not have been the best approach. 'From this moment on, the project will drown in change and push back' was the quote at the time apparently.'

Motorola's wider financial incentives

8 In this subsection, we consider Motorola's wider financial incentives[317] to assess whether these might incentivise it to prolong the operation of the Airwave Network or deliver Lot 2 effectively and efficiently. In particular, we consider the extent to which any failure to deliver Lot 2 effectively and efficiently could negatively impact Motorola's reputation and the potential future profits and revenue streams which it can earn within other markets.

9 The magnitude of any incentive Motorola may have to protect its global reputation and generate future profits in other markets will be affected by a number of factors:

(a) **The size of global opportunities for LTE (Kodiak) and LMR**. The size of global opportunities that could flow from Motorola's involvement in ESN, that is primarily in relation to future sale opportunities for its Kodiak application, against the size of future opportunities linked to the incumbent technology (ie LMR).

(b) **The strength of competition faced by Kodiak globally**. If Motorola's Kodiak MCPTT application faces strong competition, we would expect this to strengthen any reputational incentive on Motorola to deliver Lot 2 effectively and efficiently in order to gain an advantage over competitors. On the other hand, if Kodiak enjoys a strong competitive position, this may reduce the importance of any reputational incentives on Motorola to deliver Lot 2.

(c) **The relative importance of reputation as a driver of choice**. The greater the relative importance which global customers place upon reputation when selecting a supplier as compared to other factors, the greater the incentive on Motorola to deliver Lot 2 effectively and efficiently.

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[315] Upgrading emergency service communications (parliament.uk), page 6.
[316] Emergency Services Mobile Communications Programme Independent Review by Simon Ricketts – Advisor to Permanent Under-Secretary, Home Office, October 2017, page 5.
[317] For example, it may be that Motorola is not focused on short term margins but is pursuing other objectives (with wider costs and benefits) to maximise its long-run profitability.

(d) **The extent to which Motorola's performance can be observed by customers**. The easier it is for customers to assess Motorola's performance relating to Kodiak and ESN, the more likely it is that Motorola would have strong incentives to deliver Lot 2 effectively and efficiently to protect and enhance its reputation. In contrast, if Motorola's performance is opaque or difficult to disentangle from other factors that might affect outcomes relating to Kodiak and ESN, the weaker the disciplining effect reputation would have on Motorola in relation to delivering Lot 2.

(e) **The incremental impact of further ESN delays on Motorola's reputation**. The greater the impact of further ESN delays on Motorola's reputation, the more likely reputation would incentivise Motorola to deliver Lot 2 effectively and efficiently. The impact of further ESN delays on Motorola's reputation will depend on factors such as the extent to which any reputational impact due to delays has already been incurred by Motorola, as well as the extent to which Motorola is able to build its reputation with potential emergency services customers outside Great Britain.

10 Below we consider the likely magnitude of these factors. For this assessment we have primarily focused on Kodiak, the mission critical push-to-talk application which Motorola is developing. We understand from Motorola's internal documents that this is the part of Lot 2 which Motorola is most likely to be [✂].

The size of global opportunities

11 We have considered the size of the global opportunities that are related to Kodiak and which therefore could be, at least in principle, indirectly affected by Motorola's performance in Great Britain.

12 Based on Motorola's internal database of opportunities, we have found that:[318]

(a) Of the [✂] opportunities it identified between 2006 and 2034, [✂] relate to Kodiak, of which [✂] are in [✂] territories outside Great Britain.

(b) The revenues from opportunities which involve Kodiak outside Great Britain vary significantly across years, but between 2020 and 2026 are expected by Motorola to average £[✂] million a year.

13 While the average annual revenue from all global opportunities over the next six years is £[✂] million, this figure likely overstates the value of these opportunities to Motorola. This is because:

(a) These opportunities are subject to uncertainty and we would not expect Motorola to win all of them. Our analysis of Motorola's opportunities database shows that it has won [✂]% of all the Kodiak-related opportunities it has identified. It also considers that it has a good chance of winning a further [✂]%.

[318] Motorola response to Q75e of the Market Questionnaire dated 13 December 2021.

(b) These figures represent revenue, rather than profits. As set out in section 5, Motorola's forecast gross profit margin on ESN over the 2022 to 2027 period is [✂]%.[319]

14 In order to estimate an upper bound of the impact a negative change in Motorola's reputation could have in terms of lost profits over the next six years, we took:

(a) an upper estimate of [✂]% of opportunities won, by value; and

(b) an upper estimate of gross profit margin of [✂]%.

15 This leads to an upper bound of profit opportunities vulnerable to reputational impact of £[✂] million, as illustrated in Table F-1.

Table F-1: Estimate of potential profits to Motorola

	£m
Total annual revenue from global opportunities which involve Kodiak	[✂]
Total annual revenue which Motorola may expect to generate from these (assuming a win-rate of [✂]%)	[✂]
Total annual profit which Motorola may generate from these (assuming a profit margin of [✂]%)	[✂]

Source: CMA analysis.

16 We note in relation to this upper bound that a change in Motorola's reputation would be very unlikely to cause it to lose 100% of its global profits from these opportunities.

17 Lastly on this point, as noted in section 5, Motorola has provided evidence that there are significant global opportunities in relation to LMR technology. This would appear to be an important factor driving Motorola's wider incentives and potential negative impacts on its reputation in relation to LTE technology could be offset to an extent by its expertise and the opportunities in LMR technology.

The strength of competition faced by Kodiak globally

18 In principle, we would expect the scope for a reputational impact arising from Motorola's performance in Great Britain to be a significant determinant of global customers' choices of provider, if those customers have many viable providers to select from. We have therefore considered the extent to which there are viable and attractive alternatives to Kodiak.

19 Based on Motorola's internal database of opportunities, we have found that of the [✂] opportunities related to Kodiak, [✂]% have been won, with a further [✂]% identified as having a good chance of success. In contrast, 16% have been lost and a further [✂]% identified as not having a good chance of success.[320]

20 The fact that Motorola either has already won or expects to win [✂]% of opportunities which it has identified suggests that it has a strong competitive position. This is also supported by other evidence:

[319] These figures do not take into account the profit-sharing mechanism in the Lot 2 contract. See section 5.
[320] Motorola response to Q75(e) of the Market Questionnaire dated 13 December 2021.

(a) A Home Office internal strategy document from 2021 identifies several other suppliers of off-the-shelf applications, including Samsung, Ericsson, Huawei and Airbus.[321] It, however, also notes that the choice is currently quite limited, albeit improving.

(b) The Home Office told us that Kodiak has been working on mission critical communication applications for longer than any other competitor and it considers that Kodiak is ahead of the competition.[322]

The importance of reputation as a driver of choice

21 We have considered the extent to which reputation is a factor that is important to customers when selecting a supplier of MCPTT technology. The more reliance global customers place upon reputation when selecting a supplier as compared to other factors, the greater the incentive will tend to be on Motorola to deliver Lot 2 effectively and efficiently.

22 Our starting point is that we would expect this to be an industry where reputation plays an important role. The product in question represents a significant investment for customers and, given it is used by police and emergency services in critical situations, any issues with performance or quality would have significant implications for customers and society. We also recognise that customers must commit to a supplier for a long period of time, but often cannot 'observe' quality before making that commitment and therefore may rely on reputation as a proxy for quality.

23 To better understand the extent to which reputation is an important factor to customers when choosing a supplier of MCPTT technology, we have considered the importance that Motorola places on its past performance in marketing material for Kodiak. We have found that within this material, the benefits of choosing Kodiak described by Motorola broadly fall into the following categories:[323]

(a) *Functionality* – this includes highlighting how the Kodiak technology is future-proof, addresses the unique needs of the emergency services and is interoperable with TETRA; and

(b) *Reputation* – this includes the size of the Kodiak user base and its use by leading carriers as well as the experience that Motorola has more generally of delivering push-to-talk services.

24 Therefore, Motorola's marketing materials suggest that reputation is an important factor which drives customers' choice of provider.

The extent to which Motorola's performance can be observed by customers

25 We have considered the extent to which Motorola's performance is likely to be easily observed by customers. Any barriers that reduce the ability of customers to assess

[321] Home Office ESN strategy document, 4 June 2021, page 32.
[322] Home Office Hearing.
[323] Motorola response to Q75(c) of the Market Questionnaire dated 13 December 2021.

Motorola's performance in relation to Kodiak and ESN will tend to reduce the scope for reputational effects to have an impact on Motorola's incentives to effectively and efficiently deliver Lot 2 to protect its global reputation.

26 We note that ESN is a complex and multi-faceted project which involves a range of suppliers and subcontractors. As such, whilst customers may be able to assess the performance of the overall programme, they would likely find it difficult to evaluate Motorola's role in contributing to this for a number of reasons, including:

(a) Public sector technology procurements are frequently subject to delays and budget over-runs. Delays may therefore be seen as a feature of delivering large-scale, complex IT projects,[324] rather than attributable to any particular supplier.

(b) Customers would likely find it difficult to disentangle the extent to which any successes or failures of the overall project can be attributed to Motorola as opposed to the range of other factors which could affect the project, including the Home Office, other ESN suppliers (such as EE) as well as external factors outside of Motorola's control.

(c) Customers searching for information on Motorola's performance may have to rely, in part, on information provided by those involved in the project or on published reports such as the NAO reports, which are not based on an internal review of Motorola's delivery (such as the reports discussed in paragraphs 89 to **Error! Reference source not found.**).

Incremental impact of further ESN delays on Motorola's reputation

27 We have considered the likely incremental impact of further ESN delays on Motorola's global reputation. We provisionally consider that, in principle, further delays to Lot 2 may only have a limited impact on Motorola's reputation because:

(a) ESN has already been significantly delayed and, to the extent any reputational damage has resulted as a consequence, this may already have been incurred by Motorola. This means that, to the extent that further delays occur, the incremental negative reputational impact of these may be relatively limited; and

(b) Great Britain is only one territory in which Kodiak is being introduced and therefore only partially contributes to Motorola's overall reputation. Our analysis of Motorola's internal database of opportunities suggests that it had identified [✂] opportunities in 2020 and 2021. It has won a number of these and is working towards implementing them. This suggests that there are projects outside of Great Britain which are also likely to represent opportunities for Motorola to develop a reputation for delivering Kodiak.

[324] Motorola's response to the CMA's decision to make a market investigation reference, 15 November 2021, paragraph 35. Motorola submitted that 'observations by the PAC make clear that failures by the Home Office with respect to ESN are not unique. To the contrary, these failures are indicative of much broader, systematic issues at the Home Office with respect to the delivery of large-scale technology projects.'

Motorola's business strategy

28 This subsection considers Motorola's business strategy and thinking, based on a review of internal documents of Motorola's senior management.

29 The evidence and analysis are organised as follows:

(a) 2014 to 2015: Motorola's rationale for the acquisition of Airwave Solutions (see paragraphs 30 to **Error! Reference source not found.**).

(b) 2017 to 2018: ESN re-planning – various factors impacted on delivery of ESN during this period, which ultimately led to a 'reset' and new contractual arrangements in 2018/2019 (see paragraphs **Error! Reference source not found.** to 56).

(c) 2020 to 2021: Airwave renegotiation post-ESN reset (see paragraphs 58 to 66).

2014-2015: Rationale for the acquisition of Airwave Solutions

30 In May 2014, [✂], the [✂] of Motorola Solutions UK, identified the strategic need to 'become an LMR/LTE operator' in the US market and in doing so commented on Airwave and ESMCP in the UK:[325]

> The second step I see to this once we own the LMR network - is that we then bolt on an MVNO for 4G data combined with the LMR service […].
>
> Then you have an LMR tariff and the ability to offer voice and 4G data bundles. This is what Airwave should have done three years ago...and ESMCP would never have happened to them.
>
> Looking at it now....we should learn from that. To me we look like the Airwave of North America....we should not make the same mistake they did. […] Basically we use our MSI capital to buy [✂].

31 Motorola's acquisition of Airwave Solutions was mooted in 2014. Motorola told us that it was approached by Macquarie, the owner of Airwave Solutions, in July 2014.[326] Discussions between the two companies followed and Motorola started to develop valuation scenarios.

32 By November 2014, Motorola had developed options for the acquisition,[327] against the strategic backdrop set out in Figure F-2.

Figure F-2: Airwave strategic backdrop

[✂]

Source: Internal Motorola presentation, 5 November 2014.

[325] Internal Motorola email, 3 May 2014.

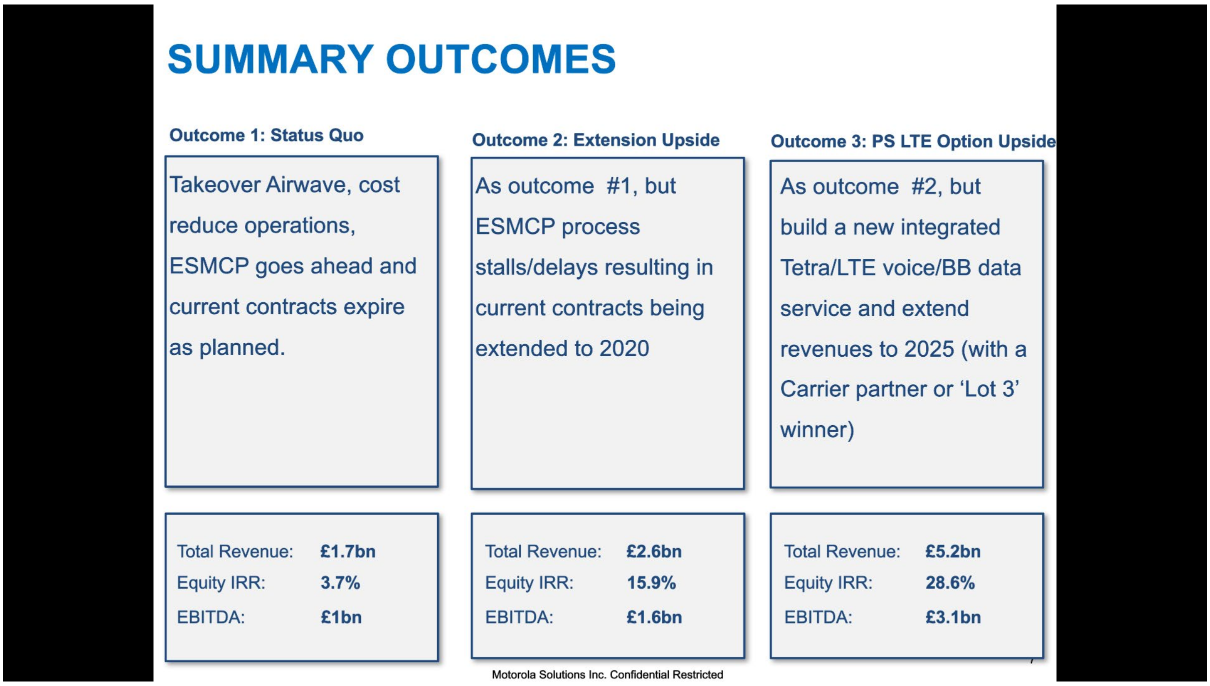
[326] In an email dated 3 August 2014, it is stated that Airwave 'are interested in expanding our strategic relationship and discussing "strategic options" with respect of Airwave', with a sale being one of the possible outcomes.

[327] Internal Motorola presentation, 5 November 2014.

33 As evident from Figure F-2, Motorola's modelling for the acquisition of Airwave Solutions included contract extensions well beyond the term of the PFI Agreement and envisaged a hybrid TETRA / LTE service, as opposed to the LTE-only solution procured by the Home Office.

34 A January 2015 briefing to the Board on the proposed transaction[328] included the strategic rationale and outcomes set out in Figure F-3.

Figure F-3: Strategic goal and outcomes for Airwave acquisition



Source: Internal Motorola presentation, 11 February 2015.

35 As is evident from Figure F-3, Motorola's strategic planning modelled projected revenues and profitability for a variety of scenarios, the most profitable of which envisaged a hybrid TETRA/LTE solution, assumed ESMCP stalling or delaying and stretched well beyond the term of the original PFI Agreement.

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[328] Internal Motorola presentation, 11 February 2015.

36 In March 2015, Airwave Solutions was dropped from the ESMCP shortlisting process and Macquarie put the company up for sale. On 1 April 2015, Motorola made an initial non-binding offer as reported to the Board.[329]

37 The acquisition plan for the Airwave transaction set out in the Board paper of April 2015[330] described the then current status as one in which 'Airwave's customer base is increasingly nervous of where the Home Office is taking their 'mission critical' voice service' and set out that its strategic rationale for the acquisition as one that 'positions MSI to lead the combination of the UK Tetra voice network with PS-LTE mission critical data network' and 'be in the [✂] position to [✂] 2020 and offer integrated broadband data and mission critical voice services with 99% landmass coverage.'

38 Motorola also anticipated benefiting from being able to leverage Airwave Solutions' assets to strengthen its position in ESN. This was one of four points set out in the 'Acquisition Plan' as listed below:

Restructure Airwave and lower the operating cost base

Repair the relationship with the UK Government and offer discounts to have contracts extended to 2020 or beyond

Leverage the assets, people, operations, contact centers, infrastructure etc of Airwave to strengthen our current position in Lot 2 of the ESMCP Procurement

Positions MSI to lead the combination of the UK Tetra voice network with the PSLTE mission critical data network[331]

39 Negotiations carried on throughout the summer and by the autumn of 2015, the transaction had been agreed.[332]

40 In this context, we note that in its 15 November 2021 submission[333] to us Motorola reproduced the strategic rationale for the transaction that it had previously presented to the CMA in the context of the 2016 merger control review,[334] namely:

For Motorola, the strategic rationale for the Transaction can be summarised as follows:

(a) The economics of the Transaction on a standalone basis justify the risk and return of operating and maintaining the Airwave network for a contracted stream of income up until the network is scheduled to be turned off in December 2019.

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[329] Internal Motorola presentation, April 2015.
[330] Internal Motorola presentation, April 2015.
[331] Internal Motorola presentation to the Board of Directors (draft), October 2015.
[332] Bloomberg, 'Motorola Agrees to Buy U.K.'s Airwave for $1.2 Billion', 3 December 2015.
[333] Motorola's response to the CMA's decision to make a market investigation reference, 15 November 2021, paragraph 122.
[334] Motorola submission to the CMA, 23 March 2016, paragraph 29.

(b) The Transaction will also enable Motorola to develop its "managed services" skills to help assist other international governments who want to migrate from TETRA technology to 4G LTE, or other, networks.

(c) In addition, Motorola was concerned that Motorola's reputation may be impacted if the previous owners of the Airwave network failed to maintain a good level of service on the aging TETRA technology infrastructure. The underlying technology (supplied by Motorola) is approximately 15 years old, and Motorola felt that it was the safest and best-placed replacement to manage down (and phase out) the Airwave network as the network users migrate across to the ESN service. Any failure of the existing Airwave network in Great Britain could impact negatively on Motorola's reputation in other TETRA markets around the world.

(d) Finally, as Motorola begins to provide the services awarded to it under the ESN Lot 2 contractual arrangements, the Transaction results in skilled employees, processes and procedures becoming available to Motorola that will enable Motorola to assist the UK government in migrating from the Airwave network to the new ESN in a safe, effective and timely manner.

41 We understand that Motorola told the Home Office and the Cabinet Office at the time of the acquisition that delivering ESN and LTE in particular was a strategic priority for Motorola: the minutes of the kick-off meeting in December 2015 noted under 'MSI's Overall Strategy and rationale for the Airwave Transaction and ESN' that:[335]

(a) It was Motorola's overall goal to make ESN a success. Motorola had been making radios for the best part of 70 years however there were now much larger companies operating in what was previously a niche market.

(b) the Public Safety LTE market was bigger and would be more valuable than the Land Mobile Radio (LMR) market;

(c) While LMR would continue to be an important business for MSI for a long time, their strategic goal was to grow services, integration and applications businesses to take advantage of this new and growing Public Safety Broadband global market;

(d) 'The current Airwave infrastructure was 15 years old and the hardware had little or no refresh in that time period. The entire system was now end of life, support levels had been declining and MSI were going to withdraw all support by [✂]. Many parts of the system were not supportable today. It was the oldest, most complex Tetra system in existence and MSI are not sure how it would behave (in terms of component failure) over the next [✂] years. If MSI were not to own Airwave they felt the system may begin to fail unpredictably and Airwave would not have the funds to invest in it. In that scenario the MSI brand would be damaged as they would be building ESN while the same users in the UK – and

[335] Home Office minutes of a meeting with Motorola held on 7 December 2015.

Globally – would believe that MSI were letting a critical LMR system collapse. The brand damage to MSI could be substantial.

42 An email sent by [✂] of Motorola to [✂] at the Home Office in January 2016 (in the context of the Heads of Term negotiations) further illustrates Motorola's messaging in exchanges with the Home Office about the rationale for acquiring Airwave Solutions. Motorola told the Home Office during the 2016 negotiations that, if ESN was delivered on time, Motorola's acquisition of Airwave Solutions appeared to make little financial sense.

> The reality is that the financial outcome for MSI is [✂]. To give you an idea, for us to get cost of capital at break even (IRR [✂]%) I would have had to ask for a co-term date out in late [✂]. If I was approaching this as a 'traditional negotiation' that is where I would have started. [✂]. I have consistently and successfully justified that [✂] for wider strategic reasons and to get this Airwave situation sorted out in order to minimize the risk of ESN failing.[336]

43 However, internal documents suggest that Motorola fully expected ESN to be delayed and in financial terms, it treated the acquisition of Airwave Solutions as an 'arbitrage play' against ESN[337] and anticipated delays to ESN were the main factor in making the acquisition a sound investment.

44 In considering its initial offer for Airwave Solutions, two scenarios were considered in the Board paper of April 2015[338]: a 'base case' in which 'contracts are extended to [✂] and users transition off to ESN' and an 'upside case' in which 'users stay on existing Tetra network and transition slowly to a hybrid Tetra and LTE service. Current contracts extended to Dec [✂]'. The document states that 'an all upfront cash offer would deliver an IRR c. [✂]% for the base case and c. [✂]% for the upside'.

45 Senior Motorola personnel also anticipated that ESN would struggle. In an internal email dated 30 June 2015, [✂] (Motorola's [✂]) set out three options: 'in the scenario that ESMCP was going full steam ahead and the Tetra service was to end in Dec 2020 - what level of Capex would the Core require at a minimum?'. He started by stating that 'All options hinge around refreshing "clusters" to release spares holding whilst creating a capability on which to showcase our capabilities as ESN struggles along and falters (in the voice domain).'

46 The three options set out were:[339]

> Option 1: Token gesture.
> We refresh the smallest cluster. [✂]. We show the world we are refreshing [✂] but we have the platform to build and showcase how we are really able to integrate the TETRA voice / ESN data + voice interworking & next generation control room future. [✂].
>
> Option 2: Refresh [✂].
> As the biggest user and those most likely to a) benefit from our future LMR/LTE

[336] Internal Motorola email, 27 January 2016.
[337] Internal Motorola email, 18 February 2021.
[338] Internal Motorola presentation, April 2015.
[339] Internal Motorola email, 30 June 2015.

strategy and b) going to be most supportive to MST solutions and most vocal as ESN [✂] this is a prime target. London is obviously the world stage too. [...].

Option 3: Refresh [✂].
If [✂] was not the choice, [✂] is the other most obvious target. I have to assume these are the most concerned ESN users based on coverage. […]

47 [✂] of Motorola also appeared in July 2015 to anticipate ESN not working/failing as part of Motorola's scenario planning:

[…] Even if we get Midas [Airwave Solutions] we need to hold to this line strongly. If we own Midas we will only upgrade the Midas Core if we are getting significant extensions by default that means ESN is not working as planned.[340]

HO do need interim extensions to meet ESN dates. We could build a settlement into these as extension discounts but [✂]. Also these will likely be ragged edge extensions as Co Term extensions will not be in frame until ESN [✂].[341]

2017-2018: ESN re-planning and hybrid networks

48 In June 2017, some 1.5 years after completion of the acquisition of Airwave Solutions, senior Motorola executives had a strategy discussion to prepare for upcoming negotiations with the Home Office.[342] The presentation to inform this discussion contained the slide (Figure F-4) below, which indicates an objective to continue to operate Airwave Network alongside ESN. Motorola's aim for ESN was for it 'to succeed in some form, as minimum as a data/backup voice network for MCV users'; whereas, what it wanted for the Airwave Network was 'Extensions for as long as possible at lowest discount' and 'Significant user groups remain on Airwave for voice eg Police'.

49 Motorola also carried out internal scenario modelling which suggested that a scenario in which ESN is 'delayed but successful' would be the most financially lucrative option for Motorola (compared to three other scenarios, including ESN cancellation).[343]

Figure F-4: Motorola strategy discussion

[✂]

Source: Internal Motorola presentation, logged/saved 27 June 2017.

50 Motorola told us that this discussion of scenarios was in the context of rumours it had heard from the user community that the Home Office was [✂].[344] However, Home Office internal documents do not suggest that it was considering [✂] at the time. Available evidence suggests that the Home Office did not begin considering strategic options [✂] until late 2017. We have seen no reference to such rumours in the internal documents that

[340] Internal Motorola email, 13 July 2015.
[341] Internal Motorola email, 22 July 2015.
[342] Internal Motorola presentation, logged/saved 27 June 2017.
[343] Internal Motorola presentation, logged/saved 27 June 2017, slide 6.
[344] Motorola Hearing, 10 February 2022.

we have reviewed and note that as at June 2017, the Home Office. Motorola and EE had recently completed a replanning exercise (referred to as CR[✂]).

51 [✂], the [✂] for UK at Motorola made clear in internal emails in August and September 2017 and that his primary interest was in the Airwave Network, not ESN:

> It is our own tax for getting into the stupid project [ie ESN] in the first place. We should have just bought Airwave and let [✂] in LOT 2[345]

> I tried several times to talk [✂] and [✂] out of bidding this thing [ie ESN]. This was all too easy to predict even 3 years ago. This was never going to work. The guy who led the bid and pushed for a low price we just made VP. I wanted us to buy Airwave and let [✂].[346]

52 While these statements may reflect [✂]'s personal views and/or may have been made in the context of wider frustrations, they do suggest internal awareness of the nature of the challenge required to deliver Lot 2 effectively and efficiently.

53 In this context, in September 2017, an internal Motorola update on the Lot 2 contract was projecting an overall negative gross margin of -US$[✂] million for the project, absent any changes that could be negotiated.[347] It noted that each month's delay would reduce gross margin by US$[✂] million, as seen in Figure F-5 below.[348] [✂] at Motorola emailed a summary of this analysis to [✂] at Motorola and colleagues, with comments on the work being done to 'repair project margins'.[349]

Figure F-5: Motorola analysis of the ESN financial position, 1 September 2017

[✂]

Source: Internal Motorola presentation, 1 September 2017.

54 In December 2017, Motorola modelled a number of scenarios in the event that ESN re-planning failed. In a presentation (dated 7 December 2017[350]), it appears that – even for the purposes of re-planning ESN timelines, Motorola preferred Scenario 3 (which involves co-existence of the Airwave Network and ESN) to Scenario 2, which would have involved delays only (see Figures F-6, F-7 and F-8). The slides also indicate that, while Motorola refers to the impact of the DoR on its incentives, the only scenarios in which '[✂]' is if ✂]. On the other hand, even if the Home Office sued for breach and termination, in two of the three scenarios, [✂].

Figure F-6: ESN Replan Scenarios (Motorola)

[✂]

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345 Internal Motorola email, 31 August 2017.
346 Internal Motorola email, 1 September 2017.
347 Internal Motorola presentation, 1 September 2017.
348 Internal Motorola presentation, 1 September 2017.
349 Internal Motorola email, 1 September 2017.
350 Internal Motorola presentation, 7 December 2017.

Figure F-7: ESN Replan Scenarios (Motorola)

[✄]

Figure F-8: ESN Replan Scenarios (Motorola)

[✄]

Source for Figures 10 to 12: Internal Motorola presentation, 7 December 2017.

55 Further, Motorola is by far the largest supplier of LMR technology for public safety in the world and analysts have often commented on the risk that LTE technology posed to the future of the company. In this respect, ESN was closely monitored and its success seen as a potential risk to Motorola's long-term future, particularly in the years to 2018. The perceived threat and analysts' views of the company shifted significantly when it became apparent in 2018 that the ESN project was being significantly delayed.[351]

56 In August 2018, Greg Brown (Chairman and CEO of Motorola) made a number of public statements relating to Airwave Solutions in which he reiterated views he had expressed in 2015[352] about the future of LMR alongside LTE[353] and the view that the Airwave Network would be around for long after 2020:[354]

57 Mr Brown said the following with regard to its negotiations with the UK Home Office over a possible extension of the working life of the Airwave TETRA network:

> We continue to make good progress. We still anticipate agreement by the end of the quarter. It's worth noting that we're now negotiating both Airwave and ESN agreements in tandem. And while term and conditions are still fluid, our view and my view is unchanged. I think Airwave will stay – be in place [for] many, many years beyond 2020. And ESN is now looking to be more like a standards-based Kodiak solution.
>
> Both those developments are good for us. And at the end of the day, the UK Home Office solution between those two [Airwave and ESN] will look more and more like FirstNet here in the [United] States […][355]

2020 to 2021: Airwave renegotiation post ESN-reset

58 This time period follows the 2018 ESN plan reset as a result of which new contractual arrangements were put in place.

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[351] See Greg Brown's comments in the Motorola Q4 2018 trading call reported by IWCE News in 'Motorola Solutions announces details of $1.45 billion Airwave deal, projections for 2019 growth'. Mr Brown described the importance of the £1.45 billion extension to Airwave from 2019 to 2022 and stated he was 'thrilled about the Airwave extension'.

[352] Mr Brown stated publicly that 'public safety is additive to LMR' in an article in Radio Resource international on 9 September 2015.

[353] Mr Brown's comments in a conference call in summer 2017, as reported in Critical Communications Today, 7 August 2018. Motorola Solutions news round-up

[354] Critical Communications Today, 7 August 2018. Motorola Solutions news round-up

[355] Note that FirstNet combines LMR for voice and LTE for data.

59 In an email dated 21 January 2020,[356] [✂] at Motorola, set out his views on how Motorola should approach the Airwave renegotiation and articulated Motorola's incentives (and bargaining power):

> Airwave Renegotiation: The timing of this is such that the Home Office will have to negotiate this BEFORE we achieve [✂]. That was supposed to be [✂] but I believe you were replanning (as always) so it may have moved to Ql [✂]. If you were to get that milestone then they [ie the Home Office] have zero leverage in the extension negotiations.
>
> I believe that they will only look for a short extension this time - say 1 year with an option on 2 years at most. They can't look for anything longer or it admits ESN is a total failure.
>
> They will only face up to a major deal to extend Airwave when it is clear that the EE network is not good enough and that the pseudo commercial devices are not suitable. It may also probably take [✂]. The whole project could even be moved to some other body [...] depending on how bad it looks. I only see that happening in late [✂].
>
> As the UK will have left the EU by Dec 2020 then the extension flexibility - for a longer deal - is not bound EU Procurement Regs and they have total flexibility on what they do. Until the UK enact their own Procurements Regs there is almost no way for anyone to mount a challenge.
>
> Landmines not to step on. a. Stay away from [✂]. b. Stay away from [✂]. c. Stay away for any testing or integration work they want done (beyond our scope in the contract) with other Lots (especially control rooms and vehicles). d. Don't start making a [✂] that is the worst of both worlds.
>
> Basically, don't take any [✂]. All the stuff (outside of our Lot 2) will almost certainly not work and we will just be dragged into areas where we get blamed for delay [...] and that is then used in the Airwave negotiation. In addition, we pour capital into these change requests (extra work) and the chances of recognising revenue on delivery are very small (as delivery depends on the other Lot contractors). It looks like upside on paper if we get into it but it is a waste of money and damages us in the long run. We just need to focus on delivering our Lot 2 as is and making sure it works.
>
> Long Term Vision. When it is clear that ESN won't work as envisaged and Airwave needs a long extension, I still think they won't want to 'shut down' ESN. I believe they will want to salvage something in the Priority data space. Our ideal position is to have [✂]. In essence, we should have a 10-year deal for MC Voice and Priority Data with a price per user per month that includes PTT voice on Airwave and XGBs of data. Whether there is one device (tetra radio hybrid with LTE) or a radio and separate LTE device - we should be wholesaling data [✂] and [✂]. We can keep that margin low [✂]. If we price it correctly it should look attractive

[356] Internal Motorola email, 21 January 2020.

and total margins should be ok (albeit [✂]). In the context of that kind of long term deal you could also offer to include a dual/mode device but I actually think the UK user wants [✂]. […]

Ultimately, as and when [✂] - either at the end of their contract in 2023/24 or before - this is where we should steer the ship**.** It would help enormously if Kodiak was capable of connecting to simultaneously to Vodafone and 02 in the UK as well. Having a national roaming SIM with us as [✂] would be the holy grail. Emergency services would then have Tetra PPT voice and the back up of all three national LTE networks for mission critical data and fall back voice.

60 In a presentation dated 25 August 2020, a number of strategic statements are made in relation to ESN. It states an overall goal 'to get to a longer-term strategic relationship covering Airwave, ESN, and other services' and, on ESN, it notes to 'steer Home Office to [✂].[357]

61 In an email dated 14 September 2020, [✂] (a Partner at Deloitte, instructed by the Home Office) sent [✂] a meeting request to discuss, amongst other things, 'Appetite to accelerate the ESN Business Case (Airwave Shutdown) - what would incentivise MSI?' Following this meeting, [✂] (Deloitte) sent [✂] (Motorola) a written record of the discussion in an email dated 16 September 2021 noting Motorola's desire to redirect the ESN strategy and that accelerating ESN delivery is not commercially attractive.

You raised a few interesting challenges:

What should we be discussing (1) ESN Programme delivery into adoption and transition, (2) Airwave Strategy - why shut it down and how narrow and broadband can co-exist for a safer solution, and (3) a more fundamental discussion about what MSI can do for ESN future as a modern public safety service in the UK such as analytics multimedia video data etc

Why is Airwave Shutdown so pivotal to the ESN Business Case when there is actually a better strategy around convergence of the two technologies? Could there be an opportunity for MSI to bring some more ideas to the table to expand on the how this could provide a better, safer and more integrated solution - enabling a longer period to stabilise the broadband solution?

[…] and you helped by outlining two potential Commercial discussion routes;

1.ESN/Airwave Convergence/ Coexistence: this would involve revisiting the service and transition strategy with the concept of keeping both networks ESN and Airwave and hence a revisit of the Business Case. The principle would be that the proven Airwave Service could continue to provide reliable voice services and the new ESN Service would focus on enhanced services such as analytics video etc. it allows a period of stabilisation for the ESN Service. Commercially MSI could

[357] Internal Motorola presentation 25 August 2020, slide 73. In identifying challenges, the document notes that, in relation to production environments, 'work underway with dedicated resources to improve historical poor build quality as a result of aggressive delivery timeline'.

> provide greater flexibility for a longer-term strategic arrangement with both technologies.
>
> 2. ESN Acceleration/Airwave Shutdown: this would involve looking for commercial incentives to accelerate the transition from Airwave to ESN and shutdown Airwave as quickly as possible in line with the ESN Business Case recently published. […] Commercially MSI would have very little to play with - the Airwave shutdown generates a [✂]% reduction in revenue. the Service Integrator role with other suppliers is not appealing and any commercial incentives would have to be so large to compensate for Airwave they would not likely fly for either party.[358]

62 This was followed by a conversation between the Home Office and Motorola, which the Home Office recorded as follows:

> You confirmed that MSI do believe that there is an alternative approach that would see Airwave running for significantly longer than we currently plan. We agreed that MSI would develop this into an outline proposition for us in the next 2-3 weeks. To be clear on where I'm coming from, I think it's unlikely we will want to follow this approach but I believe we should have the discussion and agree together one way or another - so this debate doesn't drag on. From our side we will need to understand both how this genuinely does de-risk the programme and also how we would preserve the strong positive business case, which as you know is predicated on earliest possible switch-off of Airwave.[359]

63 A Motorola document produced in October 2020 set out two scenarios for the development of ESN going forward. Against the background of the Home Office's 'primary goal to shutdown Airwave and transition users to ESN as early as possible (by 2024)', Motorola identified two alternatives: [360]

(a) 'Option A: Maintain the current Home Office approach to launch ESN and replace Airwave.'

(b) 'Option B: reframe the UK HO Partnership into a longer term converged ESN/Airwave solution.' Under this scenario, voice communication would remain on the Airwave Network infrastructure, with the LTE network being used only for multimedia.

64 The document analyses the profitability of both options and concludes Option B would be significantly more profitable overall. Under this scenario (modelled to [✂]), Motorola assumed that from [✂], it would [✂] for Airwave Network services, under the [✂] that has been in place to date (with the ESN deployment being provided '[✂]') and would continue to do so until [✂] at least. Thus, instead of a turnover of US$[✂] million, it would achieve a steady annual revenue stream of US$[✂] million. The presentation, shared with [✂] ([✂] Motorola), also indicates that this would continue until at least [✂]. The document concludes that Option B in which the Airwave Network continues for the

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[358] Email from Deloitte to Motorola, 16 September 2020.
[359] Email from the Home Office to Motorola, 29 September 2020.
[360] Internal Motorola presentation, 16 October 2020.

foreseeable future 'provides improved and more stable long-term financials and de-risks the UK public safety modernization effort'.

65 Prior to the CMA's report on market investigation reference, Motorola provided the following context:[361]

> Whilst this scenario was contemplated by Motorola, these were in part informed by high level conversations with the Home Office which indicated they were reassessing the direction of ESN and public safety communications in the UK more generally. The Home Office released an RFI in this regard on 7 December 2020 to which Motorola responded.
>
> Whilst it is Motorola's belief that a parallel running of LMR and LTE 4G technology will provide the best value for money and capability for Public Safety users, this is not a strategy that Motorola is "pursuing". Aside from deliberating this scenario internally and providing its response to the Home Office RFI, Motorola has remained focused on its strategy of delivering ESN and running the Airwave service for as long as it is required.
>
> Even if it were the strategy of record, it is not correct to say that this strategy would be significantly more profitable to Motorola. The referenced document demonstrates that a converged strategy would be **<u>less</u>** profitable to Motorola in the years through [✂] with higher returns thereafter principally because the contracts have been extended, rather than the business is more profitable. (emphasis added by Motorola)

66 We note that submission, but it is unclear to us whether Motorola maintains this hybrid strategic view or whether it has been shelved due to the deteriorating commercial relationship between itself and the Home Office. However, on 25 May 2021, around the time it was announced that ESN would be delayed to the end of 2026, Greg Brown made the following statement, <u>which suggests that the idea of combining the Airwave Network and ESN is still being contemplated:</u>[362]

> "When you think about a network to contemplate replacing an LMR network, the requirements for performance are breathtakingly stringent," Brown said.
>
> "I know that the UK Home Office aspires to have ESN do more and more. We support that. We will obviously fuel and work with them closely to enable ESN. But by the customer's own admission, I think that Airwave and ESN—much like here in the [United] States—LMR and LTE will coexist for a lot longer."
>
> This trend also has spread to Germany, where Motorola Solutions recently won a large deal involving "LTE complementing LMR" for the German Ministry of Defense.

---

[361] Motorola's response to a request from the CMA for comments on extracts from its draft decision on a market investigation reference, 8 October 2021.
[362] IWCE's Urgent Communications, 26 May 2021, '[Motorola Solutions CEO anticipates extension of Airwave contract in UK by end of year]()'.

"In all three of these theaters, we see a recognition of the criticality and duration of LMR, but [entities] also wanting higher-speed LTE 4G, and eventually 5G, for […] video and data to complement and integrate with LMR—not necessarily as a substitute, but as a complement," Brown said.

Importance of the Kodiak MCPTT application as a core component of ESN

67 In this subsection, we set out evidence demonstrating the importance of the Kodiak MCPTT application as a core component of ESN.

68 The IAP told us:

> All of the programme components (the application, the network, the devices etc) are required for live operation and services. If you looked at the things that are most important to a police or fire officer in the field, they are to be able to get onto the network quickly, to be able to signal a distress call, to be able to talk to other call groups, to be able to talk to in a major event other police forces, firearms units, et cetera. None of this is possible without all of the programme components, not least the Kodiak application, and were this not to be available, or only partly working, live service would become untenable.[363]

69 The Kodiak MCPTT application is also one of the key attributes of ESN, and is key to delivering the anticipated outcomes for the police forces of switching to ESN. This is illustrated in material provided by the Home Office to user organisations (as shown in the excerpts from Home Office statements below):

> [ESN] provides the MCPTT voice capability – the push to talk capability – and additional data, allowing much greater flexibility of use. The most wide-ranging broadband network in the UK will allow blue light colleagues to swap data more readily. For example, when configured correctly, a photograph of a missing child could be sent to all devices within a specific geographic area. That of course is not possible with Airwave.[364]

> Products will include a 'push-to-talk' capability for mobile phones, effectively turning them into emergency service radios with data capability, a package of telephone, messaging and data services, and an air to ground communications app.[365]

> Streaming high resolution video is one of the most eagerly anticipated features - being able to transmit live images of, for example, an accident scene, will allow officers and control room operators a much better assessment of the scene than was previously possible with voice description. Other new capabilities also include allowing front line officers to instantly check relevant databases for a person's details. This will be a huge benefit, reducing radio traffic and saving valuable time. The new service will also enable talkgroups to be more dynamic,

[363] Comments from the IAP following the Hearing on 24 February 2022.
[364] Hearing with the Home Office, 2 March 2022.
[365] Home Office, 21 September 2018: New strategic direction for the Emergency Services Network (ESN).

with the ability to easily add users from across the emergency services, enabling better management of major incidents.[366]

70 The Home Office and third parties told us that the effects of delays in delivering the Kodiak application to the roll out of ESN were significant; first, because of its impact on the Airwave National Shutdown date; and second, because of its impact on the ESN critical path.

71 In relation to the first point, the Home Office told us that:

> […] 31 December 2026 is merely the earliest possible Airwave Shutdown Date – due to delays in delivery under the Lot 2 Agreement, and there being no firm date for Motorola's delivery of its final software release, the Authority is not yet in a position to make firm plans for the National Shut Down of the Airwave system on 31 December 2026 or at all. As noted in the NSD Notice dated 15 December 2021, the HO is currently unable to state any specific requirements of the Authorities in relation to National Shut Down, or state the identity of any Delayed Transition Groups, as anticipated by the Airwave Contract (clause 2A.1).[367]
>
> [✂], it has been agreed between the parties that the scope of Lot 2 should [✂]. This has in part been driven by the security issues associated with the MSI platform / environments (hosting Beta) and [✂] will need substantive work to [✂] for ESN Version 1.0. As part of re-lotting, [✂] need to recreate Motorola's environments. [✂] the ESN Version 1.0 Gate 5 date from April 2023 to Q1 2025. This is likely to have a knock-on impact on to the Airwave shutdown date (i.e. delaying it by [✂] 24 months).
>
> This [✂] (for ESN Version 1.0) assumes Kodiak v13 (the previous plan assumed Kodiak v12); the change has been due to MSI being unable to resolve defects within the Kodiak v12 timeframes. [✂] have certainty of sufficient capacity in Kodiak v13 to fix all the required issues.[368]

72 In relation to the critical path, we have seen evidence (see Figure 3 below) that the Home Office cannot sign off on ESN without a functioning Kodiak MCPTT application. Without delivery of a functional Kodiak software application (with sufficient functionality to 'pass' Gate 5), the Home Office would be unable to proceed with operational trials, pilots and ultimately the commencement of transition from the Airwave Network to ESN. It is therefore an important trigger that allows other steps along the ESN critical path to progress.

73 Motorola is also responsible for providing the infrastructure and environment for testing Kodiak, but also for other suppliers of other components of ESN to use in testing their compatibility with Kodiak. The importance of the test environment appears to us to be indicated by what happened when the test environments were taken down by Motorola.

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[366] Mobile Policing Emergency Services Network.pdf (kent.gov.uk); paragraphs 15 and 16.
[367] Home Office response to Question 35 of RFI dated 2 November 2021.
[368] Additional information provided by the Home Office, 7 April 2022.

The IAP told us (and this appears to be further supported by the analysis carried out by ThoughtWorks:

> Unfortunately in August 2020, (due to poor governance), the B+ reference environment (running Kodiak 10) was taken down to make way for Kodiak v 10.2. This resulted in the unplanned cessation of all Kodiak 10 testing, (it being confirmed that there was no way of re installing Kodiak 10 on the B+ environment). The B+ environment (running Kodiak v 10.2) was made available for testing 8 weeks later.[369]

74 The IAP further told us:

> At the Projects Review Board of 14th October 2020, delays in the delivery of ESN Prime were announced. This reflected the removal of the Kodiak 10 testing environment, and parallel delays in delivering the Production Mirror environment, and release 2 of the BSS (Billing Support System).
>
> The following day - 15th October 2020 - suppliers (EE, Motorola, and Samsung) met to assess the overall impact on the delivery of ESN Prime. The summary of that meeting records that ESN Prime would not now be available until the end of October 2021 - a delay of 6 months from the previously agreed date of 30th April 2021.[370]

75 Motorola has challenged the assessment of these delay issues. When asked about them at the hearing on 6 May 2022, Motorola said that it had made an error[371] that had [✂] only [✂] (not six months, as indicated by the IAP).[372] Motorola also said the Home Office was at least partly at fault, and it submitted that the CMA:

> […] appears to be connecting two distinct events which happened at around the same time, firstly, the double environment outage, and secondly, the subsequent replanning to move from deploying Kodiak 10.0.1 to Kodiak 10.0.2 and then Kodiak 11. The CMA then suggests that one caused the other. Motorola disagrees with this.[373]

76 Reviews by ThoughtWorks (in 2021),[374] IBM (in 2021),[375] NCC (IT Health Check in 2019)**[376]** and various third-party experts, however, have pointed out significant issues in Motorola's approach to infrastructure and environment. We consider these assessments are consistent with what the IAP told us which is that:

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[369] Briefing for the CMA on the Emergency Services Mobile Communications Programme (ESMCP) by the ESMCP Independent Assurance Panel (IAP), 5 April 2022, page 17.
[370] Briefing for the CMA on the Emergency Services Mobile Communications Programme (ESMCP) by the ESMCP Independent Assurance Panel (IAP), 5 April 2022, page 17, and further information supplied by IAP, 5 April 2022, based on a chronology supplied by Deloitte.
[371] Transcript of hearing with Motorola, 6 May 2022.
[372] Transcript of hearing with Motorola, 6 May 2022.
[373] Chronology provided by Motorola.
[374] ThoughtWorks Final Report and Recommendations, April 2021.
[375] IBM ESMCP Programme Review Summary, May 2021.
[376] NCC Group ITHC Motorola, April 2019.

[…] the real issue was not so much the environment was taken down; but there was no way to restore it. Reference B+ was the only testing environment available for Kodiak 10, and the minute the environment was taken down, all testing on Kodiak 10 stopped.[377]

Figure F-9: Timelines in Home Office's Full Business Case (July 2021) targeting Airwave Shutdown (ASD) at the end of 2026

[✂]

Source: [✂]

Motorola's ability to delay ESN

77 In this subsection, we focus on Motorola's role as a key supplier of critical components or aspect of ESN. In particular, we set out:

(a) Submissions by the Home Office, including internal documents on Motorola's delivery of Lot 2; and

(b) detail internal Motorola documents showing that Motorola has faced significant challenges in delivering Lot 2.

Home Office views and evidence

78 By way of background, the Home Office told us that the delivery approach (post Wave 7000) evolved to an incremental set of products based on Kodiak, as specified below:[378]

(a) April 2019: CAN 500, based on Kodiak 10 – with a 'mobilisation complete' date (when ESN is fully working and all users are running on it, so that the decision can be taken to transition towards Airwave shutdown) of 30 November 2020.

(b) February 2020: 'Take Heat out of the Plan', based on Kodiak 11 – with a mobilisation complete date of 29 October 2021.

(c) November 2020: 11.x Plan based on Kodiak 12 – with a mobilisation complete date of 31 March 2023.

79 In relation to delivery of Kodiak 10 software, the Home Office told the CMA that:

MSI is incorrect to state that it "achieved Milestone 27 on time on 30 April 2020". Although a conditional Milestone Achievement Certificate was issued on 15 June 2020, Motorola subsequently completed the Smoke Testing required to Achieve Milestone 27 on the 29 June 2020. While a 2 month delay, in itself, is relatively

[377] Comments from the IAP following the Hearing on 24 February 2022.
[378] Home Office Teach-In slides, 1 December 2021.

bearable, it should be noted that the issues[379] encountered in the subsequent testing phases further delayed the usability of the product for so long that Kodiak 10 was eventually removed from the ESN delivery plan on February 2021, having been replaced by Kodiak 11 at Motorola's suggestion in December 2020. It is also important to note that not all the required functionalities were included in the software provided and Motorola delayed those to a future release. […][380]

80 In explaining the switch from Kodiak Release 10 to Kodiak Release 11, the Home Office explained that:

> In summer 2020, Motorola had agreed and were working to a plan to deliver Prime (based on Kodiak 10) in April 2021. In September 2020, Motorola made an unauthorised change that took out the Reference Environment (the infrastructure where the Kodiak software is tested) for 6 weeks, unexpectedly. The re-planning that resulted identified numerous other issues in the Motorola plan and resulted in a revised delivery date of October 2021 for Prime. After this plan was agreed, in December 2020, Motorola declared it undeliverable and proposed a new version of Kodiak called 11.x as a way forward.

81 In relation to Kodiak 11, the Home Office told us that Motorola failed to deliver against the new plan for ESN Beta (based on Kodiak Release 11) to be delivered in January 2022. It provided a detailed timeline[381] of the records of the monthly Programme Board minutes that document Motorola's role in the delays:

> As recorded in the **February 2021 Programme Board** slides on slide 34, the updated Milestone 30 (Production upgraded to K11.1.x to enable Production testing) was forecast for 13 July 2021 (compared to a date of 31 July 2020 as at CAN500 in May 2019, representing almost a full year's delay).
>
> In the minutes of the **April 2021 Programme Board**, the following concerns were noted on page 6:
>
> > "Concerns
> >
> > • Progress against ESN Beta plan has stalled
> >
> > • Several high-severity incidents have occurred on the Direct 1 live service, demonstrating MSI skills gap and lack of experience in testing, integration, delivery, and support.
> >
> > • The Remedial Advisor report identifies significant concerns with MSI's delivery approach and capabilities."

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[379] According to the Home Office, 'an indicator of whether a deliverable is ready for the next stage of testing is the number of unresolved defects ("Test Issues") identified in previous testing. In simple terms, there is no point advancing to the next stage of testing until the defects identified in the previous stage have been resolved, such that there is a reasonable expectation of the next stage of testing being successfully achieved.'
[380] Home Office response to questions from the CMA dated 13 October 2021.
[381] Home Office response to questions from the CMA dated 13 October 2021.

As noted in the **June Programme Board** slides, on slide 10, testing of Kodiak Release 11 was ongoing. Some security issues had been discovered during testing ("IT Health Checks in K11"):

> "ESN Beta Kodiak (K11.X) testing is ongoing, with functional and failover testing on track. Performance testing requires re starting due to incorrect tooling configuration. [✂] Issues have been identified (following [✂] in K11 & BSS) and require remediation. The programme / MSI are working to present a risk statement to the [✂]. The [✂] risk the Beta Gate 5 date Beta is therefore Red. The programme has escalated to MSI who are working to mitigate delays and update the overall Beta plan by end w/c 5 July."

On slide 38 of the **June Programme Board** slides, it is recorded that the date for Milestone 30 (Production upgraded to K11.1.x to enable Production testing) had slipped by 6 weeks from 13 July 2021 to 31 August 2021.

As recorded in the 13 **August 2021 Programme Board** minutes, the ESN Beta (Kodiak 11) plan had been further delayed due to [✂] in Kodiak 11. In particular, the "subsequent remedial actions" following the [✂] (i.e. the [✂] referred to in the June 2021 Programme Board slides) were "taking longer than planned":

> "2.3 ESN Beta & ESN V1.0 Gate 1 Planning The root cause of the delays to ESN Beta are down to delivery and server management issues. The necessary [✂] and subsequent remedial actions are taking longer than planned. If Motorola successfully implement the delivery improvement plans, these issues will be addressed. The delivery date for ESN Beta scheduled for January 2022 is now expected June 2022 […]"

In the **August 2021 Programme Board** slides, at slide 8 it is recorded:

> "Current Beta delivery challenges
>
> • [✂] identified in [✂] testing delaying Kodiak and OSS/BSS
>
> • Root cause is lack of standardisation & automation in management of servers
>
> • Performance testing not completed to schedule"

By way of further detail, on slide 10 it is further recorded that ESN Beta (Kodiak 11) has a RAG status of Red:

> "ESN Beta ESN Beta is currently Red because of the significant number of issues that arose out of the K11 and BSS [✂]. This has prevented both K11 and BSS from being built in the Production environment as per plan. [✂] remediation / mitigation plans have been progressed by MSI and the Programme's [✂] and the resultant [✂] requests are currently being

submitted to the [✂] (and [✂][382] panel) for approval to proceed with the Production build. The impact of this has caused a delay to the Beta plan and the teams are currently assessing the impact on the ESN Beta critical path (and Gate 5) […]"

As recorded in the **October 2021 Programme Board** slides, on slide 9, the delays to the ESN Beta Plan were due to "Motorola delivery issues (principally infrastructure management and [✂])"

On slide 18 of the **October 2021 Programme Board** slides, the following overview was given, citing "the need to resolve [✂]" as the reason:

> "ESN Beta is delayed due to the need to resolve outstanding [✂] issues. The programme and Motorola are working with the [✂] to agree the [✂] way to progress with deploying Kodiak v11 in to the Production environment. This is a key step on the programme and will allow user access to the latest version of the Kodiak software and will allow testing to continue. We are currently holding Beta as Red
>
> As at December 2021, the Beta Replan is still ongoing to accommodate the impact of the further delays caused by MSI, particularly those due to [✂]. [✂].

Views from Motorola's internal documents

Overall

82 In February 2017, as part of agreeing CR[✂] Motorola agreed to give a [✂]% discount in respect of [✂], on the understanding that the Deed of Recovery, which rests on delays caused by Motorola, would not [✂] stated at the time that Motorola's own internal reviews 'do not find [✂].[383]

83 A draft internal note prepared by Motorola in September 2017 stated that 'MSUK would [✂] as a result of some [✂], referring to an overall [✂].[384] In Motorola's internal view, the remainder of the [✂] had been caused 'by the requirement to adhere to the testing regime of [✂]'.

Resourcing

84 In a draft internal report dated 14 September 2017, it was noted that Motorola's staffing commitment on delivering Lot 2 for the first seven months following contract award was lower than committed to in its best and final offer.[385] This is illustrated in Table F-2 and Figure F-10.

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[382] [✂].
[383] Email from Motorola to the Home Office, 8 February 2017.
[384] Motorola internal briefing (draft), 14 September 2017.
[385] Motorola internal briefing (draft), 14 September 2017.

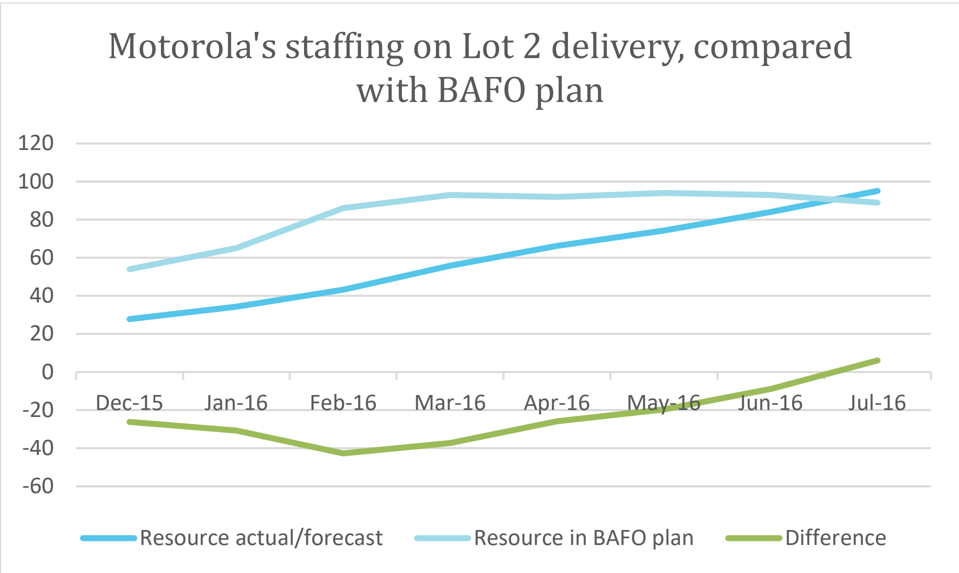
85 The misalignment of standards between EE and Motorola at the start of the ESN programme may account for two months of delay and lower resources. However, a draft internal Motorola review document notes that by [✂], the production system build schedule was [✂] behind for the 'South' region, and [✂] for the 'North' region.[386]

Table F-2: Motorola's resource allocation to delivering Lot 2, compared with the plan in its best and final offer

	Month								**Total**	**8-month average**
Resources										
	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16		
Resource actual/forecast	27.8	34.3	43.3	55.8	66.2	74.3	84.1	95.1	**480.9**	**60.1**
Resource in BAFO plan	54	65.0	86.0	93.0	92.0	94.0	93.0	89.0	**666.0**	**83.3**
Difference	-26.2	-30.7	-42.7	-37.2	-25.8	-19.7	-8.9	6.1	**-185.1**	**-23.1**

Source: Motorola internal briefing (draft), 14 September 2017; CMA analysis.

Figure F-10: Motorola's resource allocation to delivering Lot 2, compared with the plan in its best and final offer



Source: Motorola internal briefing (draft), 14 September 2017,; CMA analysis.

Build quality

86 In Motorola's 25 August 2020 Operations Review, it was noted that the project had suffered from 'historical poor build quality' as a result of the 'aggressive delivery timeline'.[387]

[386] Motorola internal presentation, November 2016.
[387] Motorola internal presentation, 25 August 2020.

OSS/BSS

87 Internal documents show that Motorola faced significant challenges in delivering OSS/BSS over a long period from 2017 to 2021.[388]

88 We note that, as far back as [✂], Motorola's internal recommendation was to 'Hand back OSS, BSS, Access (Upper Core) and Service Management' because 'managed services for OSS/BSS requires heavy reliance on external vendors and investing and building competency in areas which are not re-saleable'.[389] In this context, Motorola told the CMA in March 2022 that: 'Through the relotting process, the Home Office [✂] obligations the Home Office wants Motorola to [✂].[390]

Views of experts reviewing Lot 2 delivery

89 This subsection sets out evidence from third-party experts, and a senior Motorola executive, that have carried out reviews of the ESMCP at various points in time and, in particular, examined Motorola's delivery of Lot 2 and delays to the commencement of transition from the Airwave Network to ESN. The relevant reports covered in this section are:

(a) Actica (Remedial Advisor) Report (in 2016);

(b) Senior Motorola Executive Review (in 2017);

(c) IT Health Check Report (in 2019);

(d) ThoughtWorks (Remedial Advisor) Report (in 2021); and

(e) IBM Report (in 2021).

90 Each of these reports was commissioned by Motorola and involves experts experienced in reviewing complex IT projects.

Actica (2016)[391]

91 The Heads of Terms agreed in early 2016 required that Motorola should appoint a technical adviser in the capacity as 'Remedial Adviser.[392] The Remedial Adviser was to investigate and report on the Authority's concerns 'regarding the quality and scope of certain technical deliverables' provided by Motorola.[393]

92 In April 2016, Actica Consulting (Actica) was appointed by Motorola to act on behalf of the Home Office in an independent and objective role as Remedial Adviser. Actica submitted its report at the end of April 2016.

[388] Motorola internal emails of 2 November 2021 and 21 November 2021; email to Ericsson of 2 November 2021 requesting a 'meeting with your Product development VP to understand the root causes and corrective actions to ensure timely quality delivery'; internal Motorola email of 8 December 2021.
[389] Motorola internal update presentation, 12 March 2021.
[390] Motorola's Response to CMA's Questions on Remedies, paragraph 8.
[391] Actica, 'Initial review of ED+5 status', report for Motorola, 29 April 2016.
[392] Heads of Terms regarding extensions, 2016.
[393] Actica, 'Initial review of ED+5 status', report for Motorola, 29 April 2016.

93 The Home Office requested that Actica undertake a high-level review of MSI and Authority ED+5 (Effective Date plus 5 months) submissions because of '[…] material concerns regarding the quality and scope of certain technical deliverables provided by MSI. In addition [the Home Office] noted that the milestone date of [✂] and [✂] may be [✂]. The aim of the review was to 'advise the authority on any improvements that can be made in the overall process as well as advising on the confidence and assurance that MSI will or will not be able to meet the requirements of the programmes deliverable timelines and be able to rectify the current issues reported.'[394]

94 The report identified the lack of alignment between the Lot 2 and Lot 3 suppliers' offerings, resulting from the lack of engagement between bidders during the procurement process. Subsequent meetings between Motorola and EE showed that the alignment between how the two solutions would work was more complex than originally thought.

95 It made six recommendations, in particular on the need to:[395]

(a) agree a revised way of working between the MSI design team and the Home Office team;

(b) share information about team structures and roles and responsibilities. Both parties had commented that they did not understand the team structure of the other, possibly due to a lack of communication;[396]

(c) consider options for co-location on at least a part time basis.

96 In concluding, the report notes that*:* 'this is a complex programme with multiple suppliers involved in its delivery. We can see that there are real issues that if unchecked could threaten the timely delivery of the programme as a whole. However, we believe that with timely action now, with openness and commitment from both parties, it should be possible to regain any time lost and improve the working relationship.'[397]

Senior Motorola Executive Review (2017)

97 In 2017, shortly after the £[✂] million discount was agreed (see section 5), an internal review of the Wave 7000 software delivery, carried out by [✂] (Motorola [✂]), identified significant issues in the quality of software and testing approach.[398] He noted that 'the product team has delivered the Software on or around the agreed dates and has so far provided substantial support in its deployment. However the expected scope and quality of the deliverables has not been met'. [✂] found a number of problems with four of the six Feature Packs (FP),[399] noting that:

[394] Actica, 'Initial review of ED+5 status', report for Motorola, 29 April 2016.
[395] Actica, 'Initial review of ED+5 status', report for Motorola, 29 April 2016.
[396] Actica, 'Initial review of ED+5 status', report for Motorola, 29 April 2016.
[397] Actica, 'Initial review of ED+5 status', report for Motorola, 29 April 2016.
[398] Motorola internal document attached to an email dated 16 May 2017.
[399] Wave 7000 was to be developed in a series of 'Feature Packs' (2015 'roadmap'). Each FP would deliver additional features and functionalities: FP1 and FP2 delivered what had already been built prior to ESN with no additional features; FP3 was to be delivered based on R10 release; FP4 was to deliver most of the ESN features, FP4.5 added interworking and maintenance and FP4.6 added REGA and everything else.

(a) Software quality was [✂] in the FP3 and FP4 and [✂] in FP3. He found that FP3 '[✂] and added [✂] the program schedule' and that FP4 was 'a limited ship release with limited documentation and little SIT successful testing' which [✂].

(b) None of the FP subsequent to the second one delivered all the features required. [✂] features were postponed to subsequent FPs. The sixth FP in the series was projected, at the time of the report, to deliver [✂] the required features.

(c) Installation, upgrading and other challenges added [✂]. One of the 'other' challenges was that [✂] and [✂] had not been informed that many of the required features in FP3 had not been delivered, so Motorola spent additional staff hours to explain this.

(d) Re-planning to deliver improvements to the unsatisfactory FP4 required additional staff hours to perform an upgrade and included the effective write-off of project team work on FP4. There was a knock-on effect on the interworking project, resulting from moving to the fifth FP before FP4 was fully functional.

98 In conclusion, [✂] stated that 'we will need all hands-on deck to get 100% of the features', and that negative effects on the programme would be 'severe if we don't get a full and good quality delivery'.[400]

99 In an email exchange following this report:

(a) [✂] (Motorola [✂]) noted that in his view the primary issue was that 'the software test quality is very poor'.[401] [✂] also noted that further slippage and/or continued poor quality would require renegotiation of future milestones and the service ready date.

(b) In response to a request from [✂] (Motorola [✂]) for a meeting,[402] [✂] (Motorola [✂] and [✂]) noted that 'For FP3, the troubles were spread across teams: WAVE 7K, Unified Provisioning Mgr (UPM, Certificate Mgmt System & IMW. We now have execution challenges mainly around IMW System Test bandwidth; there is more content waiting for test vs capacity for the SIT team. FP4.5 was delivered with WAVE 7K - Tetra LMR interop. The team are verifying how much of 46 was deferred.'[403]

IT Health Check (2019)

100 In 2019, two detailed IT Health Checks (ITHC) were carried out:

(a) **ITHC Report for Motorola:**[404] The first conducted by NCC commissioned by the MSI ESN Programme focused on Kodiak as well as wider infrastructure and environment key areas specifically relevant to Kodiak.

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[400] Internal Motorola report, 16 May 2017.
[401] Internal Motorola email, 16 May 2017.
[402] Internal Motorola email, 16 May 2017.
[403] Internal Motorola email, 16 May 2017.
[404] NCC Group ITHC report for Motorola, April 2019.

(b) **ITHC Report for Home Office:**[405] The second conducted on behalf of the Home Office, where the prime focus was the Kodiak infrastructure.

101 The ITHC report for Motorola recommended that remedial actions should be undertaken to address a number of key issues:

> The assessment identified the presence of weak passwords used to protect user accounts. This considerably increases the risk that an attacker could gain access to an account through password guessing or automated password attacks.[406]
>
> A proportion of the risk to which Motorola was exposed was as a result of the use of outdated and unsupported software. It is therefore recommended that in addition to addressing the individual issues which are set out in this report the organisations patching policy and procedures should also be reviewed to ensure that these issues do not recur once the individual instances documented here have been addressed.[407]
>
> A number of the identified issues were found to be the result of the firewall not being configured as securely as possible. Support for clear text protocols and less than optimal configuration settings regarding authentication to the device were observed that contradicted security best practice.[408]
>
> A large number of the identified issues were found to be the result of hosts or systems which were not configured as securely as possible Some instances were observed in which default configurations were still in use and these configurations are rarely if ever the most secure.[409]
>
> It is recommended that the issues set out in this report should be addressed by a structured programme of remedial actions which are prioritised in accordance with the perceived risk to the organisation.[410]

102 The report broke down the issues which were identified by phase and severity of risk issues. In total, [✂] issues were identified of which [✂] were flagged as [✂] and [✂] as [✂]. Five out of the [✂] were in relation to:

(a) ‘Server Build Review’: ‘The servers under review were found to be missing several vendor supplied security patches and made use of outdated and unsupported software packages which were no longer supported by their respective vendors and are reported to contain serious vulnerabilities. This leaves the servers susceptible to attack through leverage of known security weaknesses. […] The severity of this issue is further exacerbated by the presence of common credentials that were shared across the servers under review and by other critical network infrastructure such as the F5 devices. […] Several common policy weaknesses were also identified during

[405] Home Office ITHC report, May 2019.
[406] NCC Group ITHC report for Motorola, April 2019.
[407] NCC Group ITHC report for Motorola, April 2019.
[408] NCC Group ITHC report for Motorola, April 2019.
[409] NCC Group ITHC report for Motorola, April 2019.
[410] NCC Group ITHC report for Motorola, April 2019.

this aspect of the assessment which are contrary to best practice guidelines and undermine the security posture of the environment.'[411]

(b) Internal Infrastructure Assessment': in relation to which the report noted that 'The highest severity weaknesses identified during the assessment related to the absence of several vendor supplied security patches and instances of outdated and unsupported software. This leaves the hosts vulnerable to compromise through leverage of known security weaknesses. The severity of these weaknesses is further exacerbated by the presence of insecure credentials that are shared amongst a number of servers within the environment. An attacker able to gain administrative access to a single host could recover this information and use it to launch wider attacks against the internal network.'[412]

103 In an email exchange following this report:

(a) [✂] (Motorola's [✂]) stated 'I'm afraid our concerns carry little weight as the findings cannot be contested.'[413]

(b) [✂] then goes further in the same exchange to provide a specific example: 'Here's an example, 9.0/ Direct 1 was installed in Jan/Feb, since then a Kodiak Admin Account password was [✂], that's 4/5 months where the security has been compromised even if the password was updated a week ago when the ITHC findings were highlighted, as Direct 1 was not due to be monitored, there is little confidence the solution has remained secure. Therefore there is doubt that what [✂].'

104 The ITHC Report for the Home Office was carried out by the Home Office's Security Operations team. It focused on the risk of attacks executed by a user with physical access to a host on the Direct 1.0 platform.

105 A total of 13 issues were identified, of which six were considered to be high-risk issues and four were medium-risk issues. The high- and medium- risk issues were identified in infrastructure Penetration Testing (five high-risk issues), Network Segregation Testing (one high-risk issue), Firewall Reviews (two medium-risk issues) and Knox Configurator MDM Testing (two medium-risk issues).

106 The report stated that 'the vulnerabilities are all serious as they allow any user with network access to compromise the whole Production North and South User Service networks.'[414] It found that:

'The infrastructure of the Direct 10 platform itself is [✂], consisting of numerous default passwords and easily guessed passwords for powerful accounts, shared accounts and trusts, and an architecture design for inbound network management that goes against [✂].'

'The Direct 1.0 platform can be expected to get weaker over time, as the update repository is cut off from any patching source and systems are not configured to

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[411] NCC Group ITHC report for Motorola, April 2019.
[412] NCC Group ITHC report for Motorola, April 2019.
[413] Internal Motorola email, 20 May 2019.
[414] Home Office ITHC report, May 2019.

update. Additionally, there is a tendency to manage servers using service accounts with root privileges for many BAU activities, which removes accountability and traceability for actions.'

'Over the duration of the ITHC, it was observed that the Protective Monitoring service has been ineffective at detecting malicious activities on the Direct 1.0 platform. In the event of a network compromise, it should be assumed that any actions performed by an attacker on the Direct 1.0 platform would go undetected by the Security Operations Centre.'

'In conclusion, under its current design, the physical segregation of the Direct 1.0 platform and its logical segregation from the rest of the ESN Production network and the Internet are the only real safeguards protecting it. Any external service or application to the network segment found to present vulnerabilities could facilitate a [✂] of the Direct 1.0 platform and [✂]. Unless the High risk vulnerabilities are addressed, the Direct 1.0 platform should be assumed to have [✂] controls.'[415]

ThoughtWorks (2021)

107 ThoughtWorks was invited by Motorola to carry out a remedial discovery in order to understand the underlying factors constraining the delivery of ESN (as requested by the Home Office[416] and followed on from the removal of the testing environments in September 2020 and the subsequent ESN re-planning exercise initiated in October 2020). The primary focus of ThoughtWorks' investigation was to understand the core factors resulting in the observed delays and preventing the efficient and timely delivery of ESN. The investigation by ThoughtWorks lasted six weeks and its final report was dated [✂].[417]

108 ThoughtWorks made a number of observations about Motorola's deficient handling of the test environments and infrastructure.

109 ThoughtWorks found that many of the problems it identified were due to the complexity of the program and described the challenges as a 'wicked systemic problem'. It noted that 'one of the key characteristics of a Wicked Problem is the inability for all the stakeholders to actually agree on what they believe the problem actually is, let alone how to solve it. We clearly observed these contradictory viewpoints across our interview sessions and workshops on multiple occasions, even within the same organisation.'[418]

110 ThoughtWorks noted that the problems identified across ESMCP are 'very similar to those experienced by other organisations responsible for complex software delivery programmes at scale. However, the key differentiating factors for ESMCP are related to the complex dependencies that arise as a result of infrastructure and environment management.'[419]

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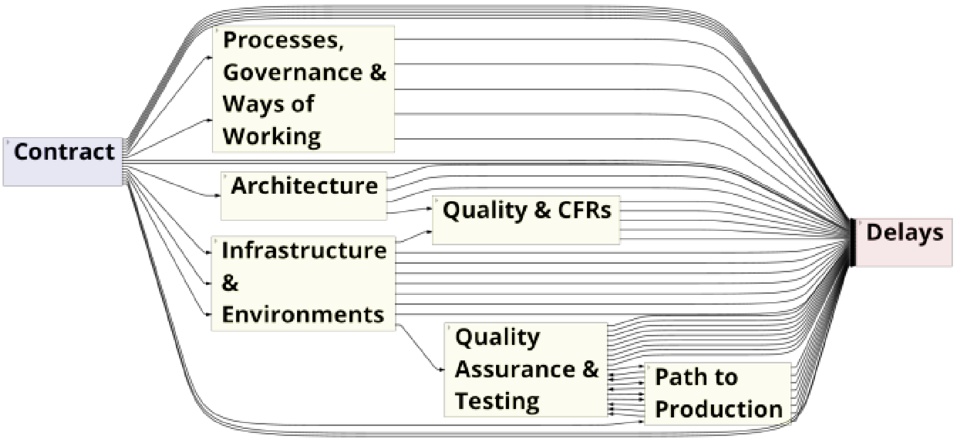
[415] Home Office ITHC report, May 2019.
[416] The Home Office wrote to Motorola on [✂], invoking its right to require the appointment of a Remedial Adviser under [✂] of the Lot 2 contract, and again on 11 November 2020, requesting the appointment of ThoughtWorks as a Remedial Adviser.
[417] ThoughtWorks Final Report and Recommendations, 2021.
[418] ThoughtWorks Final Report and Recommendations.
[419] ThoughtWorks Final Report and Recommendations.

111 ThoughtWorks did not identify a single root cause for the delays. It identified the core problems areas under seven headings,[420] as shown in Figure F-11 below, and highlighted the critical importance of people issues and the lack of a collaborative working/partnership between the Home Office and Motorola.

> The working relationships between teams have been described as "adversarial" at times and do not reflect the "partnership" approach we would have expected to see instead. Much of this has originated from the ambiguity of product requirements resulting from the contractual allocation.[421]

Figure F-11: Causes of delays to ESN (ThoughtWorks)



Source: ThoughtWorks Final Report and Recommendations, 2021.

112 On the technology side, it identified a specific issue in relation to Motorola's lack of automation, noting:

> Technical constraints in the areas of infrastructure and environment provisioning and testing can be linked to a lack of automation practises and tooling.[422]

113 In concluding, ThoughtWorks stated that:

> The scale of the programme, combined with its prior resets has resulted in a series of interrelated people, process and technology issues, and consequently, it would be impossible to confidently attribute any single root cause to any of the identified impacts.[423]

114 ThoughtWorks however noted that its findings did not apply to Kodiak and OSS/BSS because [✂] to explore these in detail, as would have been the case in a normal assessment.

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[420] Process, Governance & Ways of working; Architecture; Infrastructure & Environments; Path to production; Quality Assurance & Testing; Quality and cross functional requirements; and Contractual Dependencies & Assumptions.
[421] ThoughtWorks Final Report and Recommendations.
[422] ThoughtWorks Final Report and Recommendations.
[423] ThoughtWorks Final Report and Recommendations.

We would also like to note that our observations and recommendations have been severely restricted to the parts that we have been allowed sufficient access [✂]. Most of the technically significant details on Kodiak or OSS/BSS with regards to development practices, processes and technologies have been described as a "black box" [✂]. These areas were considered to be out-of-scope ([✂]) as they were considered core components and methodologies that were the intellectual property (IP) [✂]. They were also considered to be excluded as they were delivered as part of a managed service and as such were considered not relevant for exploration. Therefore, the ThoughtWorks team did not have the opportunity to fully explore the deeper technical issues that we would normally undertake in similar complex assessments.[424]

115 ThoughtWorks disagreed with Motorola's justification for preventing it from gaining access to Kodiak architecture or development processes, emphasising that 'This is an expected and accepted level of access privilege that we would be granted as part of these assessments and would not require code-level access to be effective.' ThoughtWorks stated that the significance of this limitation was that:

[…] we were unable to provide as detailed a set of recommendations as we normally would, due to the lack of core evidence to justify the potential "measures of success" of certain recommendations and remediatory actions.[425]

116 ThoughtWorks made a number of recommendations and, in particular, it identified the need for Motorola to provide more transparency and demonstrable software development good practice in relation to Kodiak, arguing that:

Fundamentally however, there is a core assumption that requires addressing, which is the definition of what is a "COTS" product in the context of ESMCP. We believe that the lack of mutual end-to-end architectural visibility in this area has driven many negative behaviours, which has only been compounded by the lack of truly collaborative ways of working and processes. The recommendation is to break these "vicious cycles" by fostering a truly collaborative partnership between the Home Office and MSI, demonstrating open and transparent accountability for all of the product delivery and finally by enabling automation capabilities across the product delivery infrastructure pipeline.[426]

While we fully acknowledge that Kodiak will be delivered as a managed service by MSI, we do not agree that "Kodiak is [✂]" is a sufficient argument to prevent access and product development influence by the Home Office. Fundamentally, the Home Office is funding the product development of Kodiak in its evolution from an "orange-light" to a true mission critical "blue-light" service, regardless of the "COTS" product nature of the solution. Both parties will benefit from the success of the solution and this will only happen if the Home Office is allowed greater visibility of how this is being developed and delivered. Only when this is

[424] ThoughtWorks Final Report and Recommendations.
[425] ThoughtWorks Final Report and Recommendations.
[426] ThoughtWorks Final Report and Recommendations.

allowed to happen will there be an opportunity for greater trust in the relationship.[427]

Further, the lack of demonstrable software development and delivery good practice by MSI will very likely result in ongoing problems when the platform does eventually go live.[428]

117 ThoughtWorks also noted the historical role of contractual relationships in the Home Office/Motorola relationship, noting that the original Cabinet Office commercial rationale for the ESMCP contract had 'resulted in what we believe to be the inappropriate distribution of ownership for core technology platform areas.' In its assessment:[429]

(a) The 'ESN infrastructure could at least be jointly owned by both The Home Office and MSI. Ideally, the infrastructure could be under the complete ownership of the Home Office'.

(b) 'In the case of the Operations Support System (OSS), Business Support System (BSS) we would have expected these services to be the sole responsibility of EE, as it is a clear divergence from MSI's core Kodiak competencies and has resulted in various issues which could have been avoided had this not been the case.'

118 ThoughtWorks' identified four critical success factors for delivery of ESMCP, as listed below and the need for these improvements within a period of two months, otherwise future delays would be inevitable:[430]

(a) 'The Home Office and MSI demonstrably work together collaboratively in a true partnership.'

(b) 'MSI must provide greater visibility and access to the Home Office for Kodiak development, testing and delivery.'

(c) 'MSI must provide greater visibility and observability access to the Home Office for the infrastructure and associated management processes.'

(d) 'The Home Office must take greater responsibility and accountability as the ESMCP primary system integrator.'[431]

IBM (2021)

119 Motorola told the CMA that the terms of IBM's engagement provided that IBM would provide consultancy to Motorola in three main areas: (i) infrastructure; (ii) applications; and (iii) security. This consultancy was to include providing Motorola with advice that would increase the Home Office's confidence in Motorola's delivery of ESN, as well as

[427] ThoughtWorks Final Report and Recommendations
[428] ThoughtWorks Final Report and Recommendations.
[429] ThoughtWorks Final Report and Recommendations.
[430] ThoughtWorks Final Report and Recommendations.
[431] ThoughtWorks Final Report and Recommendations.

providing an independent assessment in parallel to the 'Remedial Adviser', ie the ThoughtWorks report.[432]

120 An internal email from [✂] to [✂] and [✂] dated 18 February 2021 shows that shadowing the Remedial Advisor and leveraging both [✂] and [✂] (both at the Home Office) previous roles at IBM were reasons for bringing in IBM.

> As you know, the 2 [✂] and [✂] came up with the idea of bringing in an independent party to almost shadow the Remedial Advisor, but we also thought that we could leverage [✂] background with IBM and the fact that he holds them in such obvious esteem, doesn't hurt that [✂] is also from IBM.[433]

121 IBM reported its findings to Motorola on 3 May 2021,[434] accompanied by a Detailed Issues and Recommendations document,[435] and followed up with a Recovery Plan on 25 May 2021.[436]

122 IBM identified nine serious issues/findings and made recommendations that focused on Motorola in relation to six of the nine issues, namely that:

(a) Delivery quality was not up to the expected level.

(b) There was a lack of ownership and passive behaviour at Motorola.

(c) Governance processes were not effective.

(d) Motorola's ability to implement Recovery Plans was limited.

(e) There were inefficiencies in the delivery processes.

(f) Infrastructure immaturity was creating delivery issues.

123 In relation to 'delivery quality not being at the expected level', IBM identified multiple issues and asked Motorola, amongst other things, to:

(a) Increase technical input into triage process.

(b) Increase infrastructure automation and automation of installation verification.

(c) Increase transparency of Kodiak team'

(d) Implement detailed infrastructure and test recommendations.

(e) Supplement infrastructure teams with additional skilled resources and reduce churn and reliance on contractors.

(f) Increase management focus on quality as well as time.[437]

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432 Motorola response to Questions 4,5,28 and 29 of the CMA request for information dated 16 February 2022.
433 Internal Motorola email, 18 February 2021.
434 IBM, ESMCP Review summary, 3 May 2021.
435 IBM, ESMCP Programme Review: Detailed Issues & Recommendations, 3 May 2021.
436 IBM, ESMCP Programme Review: Recovery Plan Overview, 25 May 2021.
437 IBM, ESMCP Review summary, 3 May 2021.

124 In relation to a 'lack of ownership and passive behaviour' IBM noted that 'process rather than problem management' was an issue, recommended that Motorola should:

(a) Strengthen project and technical leadership to drive timely decision making and the right behaviours.

(b) Strengthen delivery and technical management to promote the right behaviours.

(c) Train staff on active management.

(d) Create a no blame culture to ensure that issues are visible and raised early.[438]

125 In relation to ineffective governance processes, IBM identified multiple issues. All but one of IBM's 15 recommendations were for Motorola, including asking Motorola to:

(a) Strengthen delivery and technical leadership team.

(b) Drive change in behaviour to act on MI rather than follow process.

(c) Focus on root causes rather than the symptoms.

(d) Review open issues to remove noise and focus on key issues to be resolved.

(e) Increase process execution capacity to drive closure (this must be regarded as a tactical solution until stronger resources are available to own resolution).

(f) Strike a balance between the long and short term.

(g) Enforce correct defect classifications to focus fix effort on the right defects.

(h) Encourage and empower the members to enact their roles and responsibilities.[439]

126 IBM also found that Motorola's 'ability to implement recovery plans is limited'. All but one of IBM's recommendations on this point were for Motorola and, in particular, it identified a need for Motorola to address resources issues. In particular, Motorola should:[440]

(a) Inject additional skilled resources to implement the recovery actions.

(b) Identify skill gaps (e.g. performance test) and secure skilled resources to recover the delivery.

127 In relation to 'inefficiencies in the delivery processes', IBM identified multiple issues (as shown in Figure F-12 below). Among its recommendations to address testing issues, IBM recommended that Motorola review resources and team skill levels as a short-term action:[441]

(a) Either pause and correct or secure additional resources to stabilise the execution and defect management.[442]

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[438] IBM, ESMCP Review summary, 3 May 2021.
[439] IBM, ESMCP Review summary, 3 May 2021.
[440] IBM, ESMCP Review summary, 3 May 2021.
[441] IBM, ESMCP Programme Review: Detailed Issues & Recommendations, 3 May 2021.
[442] IBM, ESMCP Programme Review: Detailed Issues & Recommendations, 3 May 2021.

(b) Review team skills and consider whether additional skilled resources are required [eg performance test].[443]

Figure F-12: Issues with the Delivery Process identified by IBM

[✂]

Source: IBM, ESMCP Programme Review summary, 3 May 2021.

128 In relation to 'infrastructure immaturity creating delivery issues', IBM identified multiple issues and asked Motorola, among other things, to:

Begin implementing an infrastructure as code automation approach.

Begin implementing automated infrastructure testing.

Automated infrastructure testing to reduce the number and impact of infrastructure misconfigurations'

Establish ownership and a plan for the overall use and maturing of systems management.

Implement regular, automated Threat Vulnerability Management scanning – the tooling is in place [✂] but is it understood that scans are currently run manually and only at deployment time.[444]

Motorola's role in interworking

Motorola's incentives in 2016

129 We have reviewed Motorola's internal documents in order to understand its incentives in 2016. A review of Motorola's internal documents shows that at the time, Motorola was incentivised to deliver an interworking solution to time for four main reasons:

(a) Motorola was incentivised at the time to offer interworking because of its proposed acquisition of Airwave Solutions. Motorola told us that its interworking solution was 'a significant concession' given to the Home Office 'as a condition of providing its consent for the transaction to go ahead'.[445] Motorola's stated strategic rationale for the acquisition of Airwave Solutions also suggested that it was more concerned about its reputation as 'it was the safest and best-placed replacement to manage down (and phase out) the Airwave Network'.[446]

(b) Motorola also recognised the strategic benefits to it, depending on how it approached this task from a technical basis, noting that:

[443] IBM, ESMCP Programme Review: Detailed Issues & Recommendations, 3 May 2021.
[444] IBM, ESMCP Programme Review: Detailed Issues & Recommendations, 3 May 2021.
[445] Motorola's Response to the CMA's Issues Statement, 10 January 2022, paragraph 22.
[446] Motorola's Response to the CMA's Issues Statement, 10 January 2022, paragraph 122.

In general, our posture is that for things that aren't in the Kodiak product, if they aren't in standards, we won't feel obligated to do it. However, in the case of interworking between Airwave and ESN, actually tighter integration is helpful to us so is likely something we should consider.[447]

(c) There was an upside of making significant profits directly from Motorola and from future sales. Motorola was keen to make the interworking project to be '*high margin business*', as explained by [✂]:[448]

My primary goal is still to make it an 'explicit' up-sell with it's now contract variation (order & revenue line). It may not be possible in the end but that is what I'm trying to achieve. In that context - while the licensing cost for the s/w functionality may be buried - I still want a 'service' like this to be high margin business for us. This 'number' will set a precedent anyway for these large complex interop solutions so I want to make sure it's a healthy business for us and not end up as 'throw in; for every Tetra refresh or LTE deal going forward.

Motorola's ability to delay the development of an alternative interworking solution

130 We have considered the extent to which Motorola's is able to delay transition from the Airwave Network to ESN through its approach to delivery of an alternative interworking solution.

131 Our analysis of the evidence indicates that the scope for delays to transition from the Airwave Network to ESN can be linked to a range of factors grouped as follows:[449]

(a) Delays flowing from the Home Office's choice to adopt either network-based approaches or non-network-based approaches to interworking.

(b) Delays flowing from the choice of standards-based interworking versus interworking based on proprietary paths.

(c) Delays linked to the extent of access and support Motorola is willing to grant to an alternative MCPTT supplier.

(d) Delays which may involve Motorola as well as other third parties.

132 The evidence we have obtained indicates that:

(a) Only non-network approaches provide a pathway to transition without significant Motorola involvement. We understand that these are sub-optimal from the point of view of functionality and may be harder for users to accept (as recognised by Motorola[450]).

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[447] Internal Motorola email, 15 May 2018.
[448] Internal Motorola email, 15 January 2016.
[449] The analysis in this section draws on the opinion/views of the CMA's independent expert, dated 19 May 2022.
[450] Motorola also recognised that there were other interworking options which would not require or involve the incumbent supplier, but these would yield poor outcomes for the emergency services, noting that 'While

(b) In any network-based approach, the requirements of the interworking solution would need to be carefully specified to include all required activities and standards of service. It is insufficient to simply require adherence to a stated standard or the handing over of a proprietary specification. All network-based approaches therefore require the assistance of Motorola in substantial engineering works to facilitate timely progress towards the start of transition.

(c) For network-based approaches, the extent of Motorola involvement and associated Airwave preparation work varies between standards-based and proprietary paths.

(d) The Airwave Network must be upgraded where necessary to support the interworking solution.

133 In the case of a proprietary approach incorporating a Wave Radio Gateway (WRG), the required upgrades should, in principle, be minimal. If the WRGs are entirely dependent on Kodiak as Motorola submits, then the upgrades are also limited, but are substituted by another party implementing WRG-equivalent functionality.

134 In the standards-based approach, the upgrades are substantial. By steering towards a standards-based path, Motorola can indirectly extend the duration of these activities, as well as extend the period for the upgrade work itself.

135 An additional stage of standards maturity is currently required, with uncertain duration:

(a) In the case of a proprietary approach, the development of standards is not relevant and Motorola cannot therefore directly cause delays by steering towards a standard-based approach. Motorola could however cause delays by rejecting or impeding the choice of proprietary path.

(b) In the standards-based approach, the use of the TETRA ISI specification would minimise delays, although it may not be suitable on its own for complete specification. On the other hand, a 3GPP/ ETSI standard would be more comprehensive but will take longer and the extent of the extra delay is unclear.

136 An alternative MCPTT supplier would be critically dependent on Motorola in order to deliver, so the Home Office would likely have to underwrite the associated risks for any supplier to be interested in participating in ESN. In addition:

(a) Motorola must provide details of the specification of its interworking interface and protocol, particularly in the case of a proprietary specification, and provide support to third party implementers of MCPTT and other interworking functionality in interpreting the specification. Motorola could in principle delay and extend this activity.

(b) Motorola must support the third parties during their development and testing of their implementation, enabling access to interfaces and test networks, responding

certain "lower tier" solutions (Radio-Radio and Control room based) could possibly have been carried out without Motorola, these solutions carry substantial disadvantages including being difficult to manage deploy and operate at the scale required, especially given the key communication principle of "floor control" that public safety users rely upon.' Motorola's Response to the CMA's Issues Statement, 10 January 2022, paragraph 71.

promptly and accurately to technical queries. Similar support would be needed during the transition period.

137 Delays could also result from indirect actions by Motorola. For example:

(a) Addressing the legal and technical aspects relating to the IP of Motorola could lead to delays.[451]

(b) The time and cost required to implement alternative interworking may be greater than those which were involved in Motorola implementing the current Airwave-ESN interworking solution and resolving the financial aspects could lead to delays.

(c) A delay to achieving the necessary minimum functionality and performance of interworking could cause a delay to the beginning of the transition period.

(d) Delivery of an interworking solution which was claimed to be 'standards compliant' but without further extensive support and engineering is unlikely to be useful for the Home Office's purposes and may lead to delays.

(e) The implementation of an interworking solution would require documentation and support in a form suitable for a third-party company, which has not been privy to the internal details of the Airwave Network or interworking solutions. The third party will need to reliably integrate its MCPTT solution, and thereby takes onboard the risk of any deficiencies in that documentation and support during at least the duration of the transition period.

(f) Taking into account the above points, poor performance of the interworking solution could reduce the satisfaction of users with ESN and extend the period of transition.

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[451] Our understanding is that opening an interface does not open access to the design or implementation of the system behind the interface, such that significant impact on its property is inevitable or even likely, except in the sense that it opens up competition for equipment to connect to the TETRA network. This can be contained contractually to only use for the purpose of ESN transition.

Appendix G: Profitability

Introduction

1 This appendix contains details of the evidence that we gathered and the analysis we carried out in order provisionally to assess the profitability of the Airwave Network.

2 The information obtained from our profitability analysis is used across two main areas:

(a) Diagnosis: as part of our assessment of market outcomes which can help us determine whether there is an adverse effect on competition (AEC) in the market for the supply of land mobile radio (LMR) network services for public safety in Great Britain; and

(b) Detriment: as part of our assessment of the degree and nature of any detrimental effect on customers so far as it has resulted from, or may be expected to result from, any AEC.

3 We consider first a practical issue relating to the timing of cashflows, then set out our detailed inputs and assumptions we used to create two profitability models to analyse profitability. In the section on profitability analysis, we set out sources of financial information, the adjustments we made to profit and loss information, and the adjustments to arrive at cashflow. Finally, we set out the profitability model calculations and results.

Approach to profitability analysis

4 In section 6 we set out our approach to profitability analysis, which is the discounted cashflow approach. We examine whether economic profits, measured as the net present value of cashflows (NPV of cashflows) are present, and also, where possible, estimate the internal rate of return (IRR) and compare this with the relevant WACC. The following paragraphs discuss one practical issue relating to the use of discounted cashflows.

5 Since this profitability analysis uses cash inflows and outflows relating to operating activities, and the assets at the beginning and end of the relevant periods, a simplifying assumption in carrying out the profitability analysis is to treat all cashflows as though they happened at a single point in the year, either in the middle or at the end of the year. We note that where cash in and out-flows are distributed fairly evenly across the year, the middle of the year assumption will not result in any material distortion to the analysis. We invited Motorola and other interested parties to make submissions as to whether this assumption is reasonable in this case, or, to the extent that cashflows are not evenly distributed, to provide more detailed/granular cashflow data. Motorola told us[452] that it considered the use of data matching the available accounting periods to be 'entirely appropriate', and that more detailed historical cash flow data was not available.

6 We provisionally consider that our assumption to treat all cashflows as though they happen at a single point in the year is reasonable. We note that our models generally assume that cashflows take place at the end of the year, which is likely to slightly under-

[452] Motorola's response to the CMA's Working Paper on Profitability, 10 January 2022, paragraph 23.

estimate overall profitability given the pattern of up-front investment in the network and revenues received regularly through the year by Airwave Solutions.

Profitability analysis

Introduction

7 As set out in section 6, we have provisionally decided to split the profitability analysis into two periods, 2001 to 2019 and 2020 to 2026. This section sets out the detailed inputs and assumptions we used to create two profitability models to analyse profitability.

8 As set out in section 6 and above, both profitability models use a series of discounted cashflows. As a cashflow figure for each year for the Airwave Network was not available, we needed to carry out our own calculations and derivations from the financial information provided. We started with financial information, principally profit and loss accounts provided by Motorola, as well as Airwave Solutions' statutory accounts, and made adjustments to arrive at economically meaningful measures of profitability for each model.

9 Our starting point for an appropriate measure of profitability was operating profit. We made various adjustments to the line items making up operating profit, which are explained in the section on adjustments.

10 We then made further adjustments to the adjusted profitability figure:

(a) First, adding back depreciation and amortisation as these are non-cash items, to arrive at a figure for funds generated by operations.

(b) Second, taking off capex and making an adjustment for working capital movements[453] in the year, to arrive at an estimate of cashflows for each year.

11 We also estimated opening and closing (residual) values of assets, decommissioning costs, and the timing of those cashflows.

12 The cashflows for each year, with assumptions such as inflation and discount factors, are the inputs to the profitability models.

13 The profitability models calculate an NPV of cashflows and, where possible, internal rate of return (IRR), and these results are shown at the end of the section for each model.[454]

[453] Note that the working capital adjustments contained in both models are sourced from the August Model and not adjusted to take account of the scope (see paragraph Appendix G:17 onwards . We noted that the figures in this case were relatively small and so any change required was unlikely to have a material impact on the results of our analysis.
[454] Calculation of an IRR requires an initial cash outflow. In circumstances where there is no initial cash outflow, calculation of an IRR is not possible.

Profitability model 2020-2026

Sources of financial information

14 This section explains the sources of the financial information included in the profitability model.

15 For 2020, we used the profit and loss account and balance sheet information contained in Airwave Solutions' statutory accounts.[455]

16 For 2021 onwards, we used the financial information contained in a detailed template profit and loss account provided by Motorola,[456] together with detailed schedules on revenues, cost of sales, staffing costs, operating expenses, capex, depreciation, and decommissioning costs. We also collected financial information in various RFIs over the course of the investigation so far, which we also used in our analysis.

Adjustments made to profit and loss information

Scope

17 We needed to make sure that the revenues and costs contained in the starting operating profit figure only related to the provision of Airwave Network services, relevant ancillary services and nothing else. Pronto and CCCRS, although contained in Airwave Solutions' accounts, did not relate to the provision of Airwave Network services and thus all of the revenues and costs needed to be excluded.[457]

18 Motorola confirmed that the profit and loss account it had provided[458] included revenues and costs relating to the two services, and provided a separate table which identified revenues and costs for these services. We removed revenues and costs relating to these services, as these did not relate to the provision of the Airwave Network.

19 We included revenues and costs relating to all other services included in Airwave Solutions' accounts for the reasons set out in section 6.

Inflation

20 Motorola had inflated its revenues and most of its costs at [✂]% for 2022 and at [✂]% for 2023-2026.[459]

21 With respect to revenues, we noted that the contractual position contained in the PFI Agreement was that revenues increased in line with [✂]. The Home Office told us that, [✂], Airwave Solutions had requested to [✂]. In response to this request, the Home

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[455] Airwave Solutions annual report and accounts, year ended 31 December 2020, found at Companies House.
[456] Motorola response to Q20 of the RFI dated 16 December 2021.
[457] Similarly, there are assets on Airwave Solutions' balance sheet relating to these two services. We have not made an adjustment to the opening and closing values of assets as our valuation relates only to the Airwave Network (see paragraph [xx] onwards).
[458] Motorola response to Q9 of the financial RFI dated 16 December 2021.
[459] The exceptions to the inflation figures quoted related to: 1. power (included in site costs) at [✂]% for 2022 and 2023, and 2. management charges and amortization which were flat on 2021 figures.

Office notified Airwave Solutions of its intention to [✂]. The effect of this is that [✂]. With respect to costs, we considered that these would increase in line with CPI (not RPI).

22 In our published working paper 'Profitability modelling and results',[460] we set out the Bank of England's CPI forecast for February 2022 together with the difference between RPI and CPI (known as the RPI-CPI inflation wedge) in order to set out the RPI forecast. The Home Office told us[461] that there was a higher short-term wedge between RPI and CPI implied by the latest actual inflation rates and OBR forecasts,[462] and that given Motorola's revenues were linked to RPI and costs would grow in line with CPI, the CMA's assumed wedge of 1% between RPI and CPI would lead to an underestimation of profitability. The Home Office suggested that, given that future inflation and the RPI-CPI wedge were uncertain, the CMA should estimate Airwave's profitability under a range of scenarios and test the sensitivity of the results.

23 We considered making adjustments to Motorola's inflated revenues and costs, and we considered estimating profitability under a range of scenarios and testing the sensitivity of the results, using the latest actual inflation rates, noting the increase in inflation rates in 2022. However, we considered that future inflation and the RPI-CPI wedge were uncertain, and using the latest actual inflation rates would make a small difference to the overall profit and cashflow figures in the context of the significant supernormal returns that our analysis already showed. We therefore provisionally decided that making such adjustments would provide no further insight.

24 In considering potential charge control design we consider this issue further.

Revenues

25 Motorola made certain assumptions for revenues (in addition to the assumptions on inflation which were discussed above):

(a) "Ambulance bundle 2 is reduced by 50% in 2023 and 100% in 2024 as new providers go-live on their delivery"

(b) "Menu services reduce by 5% from 2023 onwards as customers transition over to ESN"

(c) "Interoperability contract continues in 2023-2026"

Ambulance Bundle 2

26 We used Motorola's revenue forecasts for Ambulance Bundle 2 and made no further adjustments.

[460] Profitability modelling and results working paper, 6 May 2022.
[461] Home Office's submission and response to working papers, 24 May 2022, paragraph 45.
[462] Latest actual inflation rates: year-average CPI of 2.6% and RPI of 4.0% in 2021; latest April 2022 12-month change of CPI of 9.0% and RPI of 11.1%; OBR forecasts: CPI of 7.4% and RPI of 9.8% for 2022.

Reduction in menu services

27 For the reduction in menu services from 2023 onwards, we considered that if transition were not to start until after 2023, then this revenue line would need to be adjusted. We have kept this assumption [✂] this adjustment is likely to understate revenues in the latter part of the 2020 to 2026 period.

Interoperability

28 This is also known as interworking. We noted two different sets of figures for this: in the August Model[463] just over £[✂] million was included per year (on average), but in Airwave's more recent forecasts this has fallen to £[✂] million per year. We included the figures for interworking for the reasons set out in section 6.

Adjusted revenues

29 Table G-1 shows the adjustments we made from the turnover figure contained in Airwave Solutions' statutory accounts / forecasts.[464]

Table G-1: Summary of adjustments to turnover, 2020-2026, £m

	2020	2021	2022	2023	2024	2025	2026
Turnover – Airwave's statutory accounts / forecasts	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Remove out of scope activities:							
Pronto	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
CCCRS	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Total activities out of scope	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Turnover of Airwave Network	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]

Source: Motorola, CMA calculations

Cost of sales

Depreciation

30 First, we note that any adjustment to depreciation does not affect cashflow as it is a non-cash item. Depreciation is deducted as one of the expenses in a profit and loss account, but added back in a cashflow statement as it is a non-cash item. We note the following for completeness.

[463] Motorola provided us with financial forecasts to 2026 and 2029 which it had prepared for internal purposes in June 2021, which we used to create an IRR model. It also provided us with financial forecasts to 2026 in August 2021 in the form of an IRR model, in response to an RFI in August 2021.
[464] All figures in this appendix are nominal unless otherwise stated.

31 Motorola set out the depreciation charge in the profit and loss account.[465] The charge in 2026 included a large write-off of all remaining assets (that is, the depreciation charge in 2026 was such that the net book value (NBV) of remaining assets was zero). We followed the same approach, including the same depreciation charges 2021-2025. However, we included an adjusted[466] depreciation charge in 2026, such that the NBV of remaining assets was zero.

MSI engineer (maintenance) costs

32 The transfer charge from MSUK to Airwave Solutions in relation to 'MSI field engineers' is set out and discussed in detail in Appendix H Transfer Charges.

33 Included in maintenance cost figures from 2020 to 2026 were cost recharges relating to 'MSI field engineers'. We provisionally considered that these amounts may have included a transfer of costs from Motorola to Airwave Solutions which was not reflective of the cost of any increased activity in this area. Therefore, we deducted an annual amount of £[✂] million of maintenance costs across the years 2020-2026 to bring these charges back in line with their level in the 2016 to 2019 period.

Operating expenses

All staffing costs

34 Motorola included an additional amount of £[✂] million within staff costs in 2026 (calculated as [✂] times staff costs, inflated from 2025) to allow for paying redundancy upon termination of the network.[467]

35 We discuss redundancy costs in the section on decommissioning costs from paragraph 38.

Management charges

36 The management charges shown in the profit and loss information provided by Motorola include the parent company guarantee fee and the strategic support fee, and the transfer charge from Motorola to Airwave Solutions in relation to these two fees is set out and discussed in detail in Appendix E.

37 Motorola included approximately £[✂] million of management charge in 2019 and 2020, and a flat charge of £[✂] million from 2021. We provisionally concluded that these

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[465] Motorola includes depreciation in cost of sales (not in operating expenses which is where depreciation is typically expensed). Motorola told us that the statutory accounts were prepared on the basis that everything to do with the network directly (assets, depreciation, maintenance, site rent/power, transmission) was cost of sales ie direct cost of delivering the network. People costs had been included in administrative costs as they supported the delivery of the service from office sites, rather than being located within the physical base station network itself (albeit many people are core to delivering the managed service package). Motorola response to Q40 of the financial RFI dated 16 December 2021.

[466] The adjustment to depreciation in 2026 was necessary as we included adjusted capex figures. See paragraph Appendix G:60 below. We decided not to reprofile the depreciation charge to take account of the adjusted capex figures across the years 2021-2025 as this was a non-cash item and thus had no impact on the cashflow.

[467] Motorola response to Q20 of the financial RFI dated 16 December 2021.

amounts may have included a transfer of costs from Motorola to Airwave Solutions which was not reflective of arms-length level of charging in this area, and deducted an annual amount of £[✂] million of the management charge across the years 2020-2026. Despite removing £[✂] million per year from the management charge, it still [✂] in 2019 to £[✂] million in 2021 and almost £[✂] million from 2022, and it is not clear that our approach has fully removed the transfer, despite the fact that our review of it suggests that it is unjustified.

Decommissioning costs and redundancy costs

38 Motorola included a cash outflow of £[✂] million in the year ended 31 December 2027 in the August Model relating to decommissioning, and redundancy costs of £[✂] million within all staffing costs in the forecast profit and loss account in the year ended 31 December 2026.[468]

39 We needed to take account of the costs necessary to close down the Airwave Network once customers have switched to ESN. We considered two aspects for each of decommissioning costs and redundancy costs: the amounts to include in the model, and the timing of these costs.

Decommissioning costs

Amount to include in model

40 We asked Motorola[469] to estimate the costs required to decommission the Airwave Network. Motorola provided a review which it had performed in early 2021 for the preparation of statutory accounts for the year ended 31 December 2020 to assess the provision required for its asset retirement obligations. The total estimated cost in Motorola's written table summarising its calculations was £[✂] million. Almost all ([✂]%) of the estimated cost related to base sites and was based on an average of actual costs incurred from actual contractors for decommissioning base sites between 2017 and 2020. The remainder of the costs (relating to other site types) was estimated by the Airwave engineering team. Motorola told us that, although these estimated costs were not broken down separately, the major component would be related to the manpower needed to take out equipment and restore the sites, and other significant costs were for the equipment needed for site access (cranes etc) where required. We noted that no redundancy costs were included in the estimate.

41 The amount of £ [✂] million shown in Motorola's summary table was described as "after estimated economies of scale / before discounting." The example given was the use of existing Airwave staff instead of contractors and potential volume discounts from subcontractors. However, the supporting spreadsheet showed a total of £ [✂] million. First, we noted that two of the figures in the summary table (base sites – 3rd party tower and base sites - rooftop) making up this total had been included gross of economies of scale, whereas the other figures had been included net of economies of scale. Second, we

[468] Motorola August Model, Motorola response to Q20 of the financial RFI dated 16 December 2021.
[469] Motorola response to Q35 of the financial RFI dated 16 December 2021.

noted that the summary table did not include £ [✂] which was included in the supporting spreadsheet as a provision for costs to support exit, described as an estimate for project management activity. We provisionally decided that this figure for project management activity would most likely already have been included in the staff costs for 2026.

42 To arrive at a figure for decommissioning costs to include in our model, we made two adjustments to the figure provided in the supporting spreadsheet. First, we took account of economies of scale for the two base site line items so that they were consistent with the other items (the majority of which had been adjusted to take account of economies of scale) and then we excluded the £[✂] project management activity so as not to double count staff costs which we considered were already included in the profit and loss account for 2026. The resulting total was £[✂] million.

Timing of decommissioning cost

43 We also needed to consider when this cost should be included in the profitability model. We noted that decommissioning costs were estimated in current cash terms and that the supporting spreadsheet spread the decommissioning costs evenly over four years, 2026 to 2029; this estimate was made in Q1 2021, [✂].

44 The Home Office told us[470] that the pricing of the original contract built in the assumption that decommissioning would commence in 2019, which meant that the decommissioning costs (at least partially) had been paid for by the Home Office as part of the original PFI Agreement, and they were factored in, even though Airwave had not paid any of these costs yet (the reason that not all decommissioning costs may have been paid for is if incremental decommissioning costs arise as a result of the extension).

45 The Home Office explained[471] that the profitability of the original PFI period from 2000 to 2019 would be overstated if there were no adjustment for the cost of decommissioning obligations that accrued within this period; similarly, the extension period profitability would be underestimated if the full charge of the decommissioning costs were solely allocated to this period, even though the cash outflow would occur in 2026. The Home Office suggested that, in order to apportion the decommissioning cost between periods, the opening asset value at the beginning of the extension period (and equivalently the closing asset value at the end of the original PFI period) should be adjusted downwards to recognise the fact that the asset base came with a liability to pay decommissioning costs that the Home Office had already paid for in the original PFI period.

46 We provisionally agreed with the Home Office that the decommissioning costs (at least partially) had been paid for by the Home Office as part of the original PFI Agreement, and that they were factored in, even though Airwave Solutions had not paid any of these costs yet. We considered that an extension was not likely to change decommissioning costs other than by timing of cashflows and the effect of inflation. We considered that, to the extent that there were no incremental decommissioning costs associated with the extension, all the costs should be allocated to the PFI period. If there were incremental

[470] Home Office’s submission and response to working papers, 24 May 2022, paragraph 43.
[471] Home Office’s submission and response to working papers, 24 May 2022, paragraph 44.

decommissioning costs associated with the extension period, these should be allocated to the extension period.

47 We inflated the figures 2026-2029 to real terms for each of the years 2026-2029 using an assumed inflation rate of [✂]%, then discounted to the end of 2019 which resulted in a cost, in December 2019 terms, of £[✂] million.

Redundancy costs

Amount to include in model

48 Motorola included an additional amount of £[✂] million within staff costs in 2026 (calculated as [✂] times staff costs, inflated from 2025) to allow for paying redundancy upon termination of the network.

49 The Home Office told us that it believed this estimate was too high, as it implied a cost of approximately £[✂] per employee.[472] [473]

50 Motorola had told the Home Office[474] that the Airwave Solutions [✂].

51 We considered that, although the costs did appear high, the on-going responsibilities of Motorola under ESN would be much reduced, and there was therefore less opportunity for Motorola to redeploy Airwave Solutions staff to ESN. For this reason, we did not make an adjustment to the amount Motorola had estimated for redundancy costs in 2026 to assume for paying redundancy upon termination of the network.

Timing of redundancy costs

52 We also needed to consider when this cost should be included in the profitability model. We considered that, as with the decommissioning costs discussed above, the redundancy costs (at least partially) had been paid for by the Home Office as part of the original PFI Agreement, and that they were factored in, even though Airwave Solutions had not paid any of these costs yet, and thus the timing of the amount forecast needed to be adjusted. We considered that, to the extent that there were no incremental redundancy costs associated with the extension, all the costs should be allocated to the PFI period. If there were incremental redundancy costs associated with the extension period, these should be allocated to the extension period.

53 We discounted the full amount of £[✂] million redundancy costs to the end of 2019 which resulted in a cost, in December 2019 terms, of £[✂] million.[475]

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[472] Based on 20% contractors assumption out of 580 employees. Home Office's submission and response to working papers, 24 May 2022, paragraph 45.
[473] The Home Office also drew the CMA's attention to the increase in Airwave's headcount between 2018 and 2019, from 482 employees to 572 employees, and stated that there did not appear to be any adequate justification of this significant increase in headcount. Home Office submission and response to working papers, May 2022, page 16.
[474] Email from Home Office to CMA 12 October 2021.
[475] This figure did not need to be inflated as it was already presented in the P&L in 2026 real terms.

Decommissioning and redundancy costs – summary

54 Combining these two types of costs and discounting them back to the end of 2019 gives a total value of £[✂] million. As noted above, we provisionally consider that most, if not all of this sum would have been incurred in relation to the original PFI period, even though the payment of it is likely to take place at the end of the extension period. For simplicity, therefore, we have taken these costs into account as if they were incurred at the end of 2019 and excluded them from the extension period altogether. We note that an alternative would be to discount the value of opening assets by this amount as of the beginning of 2020 and then include these costs (adjusted for inflation and the discount rate) as of the end of 2026. However, we noted that this would give the same NPV of cash flows. We invite interested parties to make submissions on this appropriateness of this approach.

Adjusted profit and loss account

55 Table G-2 below is a summary of the adjusted profit and loss account for 2020-2026.

Table G-2: Adjusted Profit and Loss, 2020-2026, £m

	2020	2021	2022	2023	2024	2025	2026
Turnover	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Cost of sales	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Gross profit	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Operating expenses	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Operating profit	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]

Source: various Motorola, CMA calculations

56 Table G-3 shows a reconciliation between Motorola's operating profit and the CMA's calculation of operating profit.

Table G-3: Reconciliation between Motorola operating profit and CMA adjusted profit and loss, 2020-2026, £m

	2020	2021	2022	2023	2024	2025	2026
Operating profit (Motorola)	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Turnover:	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Remove out of scope activities	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Cost of sales:	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Depreciation	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Maintenance ('MSI field engineers')	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Remove out of scope activities	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Operating expenses:	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Management charges	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Remove out of scope activities	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Redundancy costs	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Operating profit (CMA)	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]

Source: various Motorola, CMA calculations

Adjustments made to arrive at cashflow

57 We made adjustments to the adjusted profit and loss to arrive at cashflow. The adjustments were adding back depreciation and amortisation (non-cash items), and removing spend on capex.

58 We also needed to add opening and closing values: our discounted cashflow approach requires an estimate of the value of the capital employed by investors at the beginning and end of the relevant period in order to estimate a cash outflow at the beginning of the relevant period and a cash inflow at the end of the relevant period, that is, 1 January 2020 and 31 December 2026.

Depreciation and amortisation

59 Depreciation (and amortisation), as they are non-cash items, must be added back to the profit and loss account. We added back the amounts included in the profit and loss account (see paragraph 30).

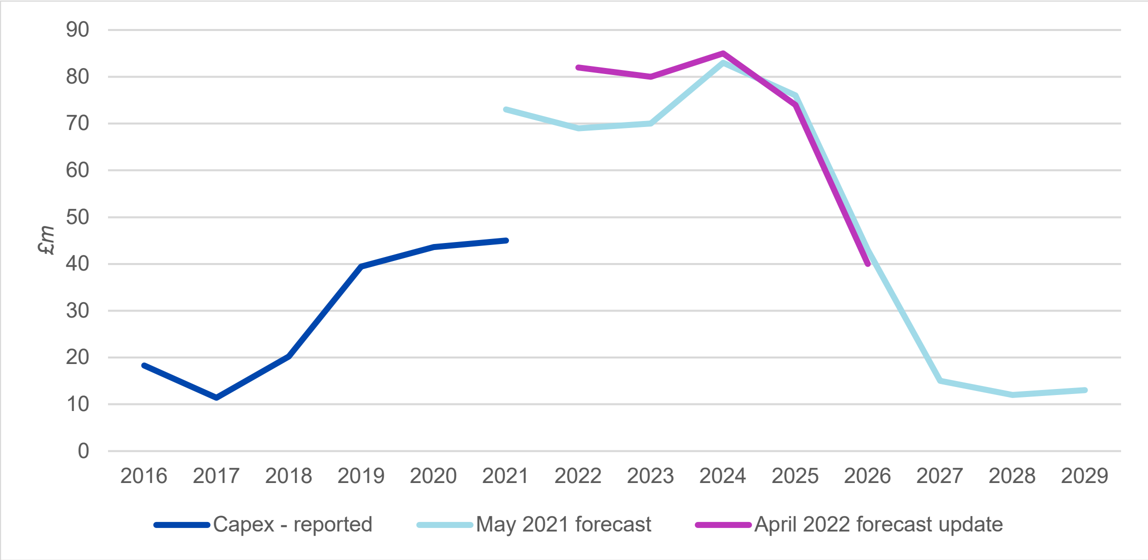
Capex

60 In our published working paper 'Profitability modelling and results',[476] we included the capital expenditure actuals / forecasts for internal purchases that Motorola provided us to reflect its latest central expectation for Airwave Solutions' network refresh programme. As these figures had been measured on two bases, namely a) net production cost (lower figure) and b) Motorola's transfer charges (higher figure) this provided us with a wide range for capital expenditure and thus a wide range of results in our profitability analysis. Following publication of our working paper, we further analysed the capex forecasts provided by Motorola.

61 Our starting point when assessing the appropriate allowances for capex to include within the profitability analysis was to consider the different Airwave Solutions' capex forecasts Motorola has provided, and how Airwave Solutions' actual levels of capex compare to those forecasts in recent years. Figure G-1 shows Airwave Solutions' reported capex levels between 2016 and 2021,[477] and two recent forecasts Motorola has identified as relevant.[478] Reported capex almost doubled from around £20 million in 2018 to almost £40 million in 2019, as investment increased in order to underpin the need for the Airwave Network to continue to be used beyond the end of 2019.[479] Annual capex has increased more slowly since then, reaching £45 million in 2021. However, Motorola has forecast a need for a further step increase in capex requirements for a number of years with capex forecast to exceed £80 million in 2024.

[476] Profitability modelling and results working paper, 6 May 2022.
[477] Motorola's response to RFI dated 16 December 2021, question 26, and Motorola's response to RFI dated 8 April 2022, question 5.
[478] Motorola's response to the RFI dated 8 April 2022, questions 5 and 14.
[479] An overview of Airwave Network upgrade plans in 2019 was provided in: Airwave (2019) Airwave customer briefing back: Network upgrades and menu services.

Figure G-1: Airwave Solutions' reported and forecast capex, 2016-29 (£million)



Source: Data from Airwave Solutions' statutory accounts, and Motorola's responses to: RFI dated 16 December 2021, question 26; and RFI dated 8 April 2022, questions 5 and 14.

62 We note that Motorola has forecast a significant increase in capex spend in a context where the current national shutdown date is 2026. In particular, both of the Motorola forecasts shown in Figure G-1 identify more than £270 million of capex as being required between 2023 and 2026, in a context where the duration of the network benefits provided by that capex may be very limited: if the network were to be shut down at the end of 2026, the average duration of that benefit would only be around two years.

63 Motorola told us that 'the assumption of a hard stop in 2026 could not provide a meaningful basis for capex planning' (given relevant lead times associated with providing network upgrades that may be required as a result of a further extension in the life of the network),[480] and noted that the most recent capex forecast it had provided us through to 2026 (shown in Figure G-1), was in practice derived from the capex forecast to 2029 that is also shown in Figure G-1.[481]

64 However, even when the possibility of the life of the Airwave Network extending beyond 2026 is taken into account, the possibility that the duration of the benefits associated with relevant capex may be limited remains an important consideration. In particular, given this context, we would expect an efficient operator in a well-functioning market to consider carefully the scope for maintaining the capabilities of the network in less costly ways. We therefore consider evidence that Motorola has submitted regarding its forecasts, and the weight we should attach to that evidence, in this context.

65 We have also considered the weight to attach to evidence submitted by Motorola considering the context and purpose of the evidence submitted. For example, we note that Motorola may face limited incentives to identify potentially more efficient capex options

[480] Motorola's response to RFI dated 26 May 2022, Question 8.
[481] Motorola's response to RFI dated 26 May 2022, Question 8.

when presenting forecasts either to the Home Office as part of its ongoing engagement on the operation of the Airwave Network, or to the CMA as part of this investigation. That is:

- Motorola's provision of capex forecasts to the Home Office could have some bearing on Home Office perceptions of the value for money associated with the ongoing provision of Airwave Network services at different charge levels. For example, the presentation of feasible lower cost options would tend to exacerbate Home Office concerns over the appropriateness of current charge levels, other things equal.
- We have also considered the weight that should be placed on Motorola's capex forecasts provided during the course of this investigation. We note that firms may have incentives to overstate, or be unduly conservative when identifying, future cost requirements during an investigation into the profitability of the Airwave Network, as that may reduce the likely outcome of the analysis.

66 As set out below, we have taken these considerations into account when forming our provisional views on the weight that should be given to different capex forecasts.

67 The following assessment of the appropriate capex profile to use in the profitability analysis begins by setting out our provisional view on how transfer charging issues should be taken into account when assessing capex forecasts (drawing on our provisional assessments in Appendix H).

68 We then focus on three main areas in which we have provisionally identified material limitations in the sufficiency of Motorola's substantiation of its capex requirements, that we have provisionally found to affect the levels of capex it is appropriate to allow for within the profitability analysis:

(a) Motorola's updated capex forecast that was provided in April 2022.

(b) Motorola's assumptions when including a risk allowance in its capex forecasts.

(c) Motorola's forecasts of capex associated with Megastream retirement and base station upgrades.

69 We provide our provisional assessment of these issues below, before setting out our provisional decision on the appropriate overall levels of capex forecasts to be included in the profitability analysis.

Transfer charging and the assessment of capex forecasts

70 As is set out in Appendix H, Motorola provided us with schedules of capital expenditure forecasts for Airwave Solutions that include both a net cost and a gross cost in relation to items labelled *MSI Equipment and Labour*, where the gross cost figures included mark-ups between [1.00 to 1.50] [✂] and [4.00 to 5.00] [✂] times the net cost.[482] We noted that the available evidence related to transfer charging does not allow us to assess robustly whether the prices charged to Airwave Solutions for Motorola capital equipment and labour can be considered to be arm's length,[483] and said that – unlike for the other transfer

[482] Appendix H, paragraph 11.
[483] Appendix H, paragraph 110.

charging areas we have considered – we are provisionally not making a specific conclusion on what we consider the level of charges (for Motorola-sourced capex inputs) should be.[484] In line with that provisional assessment, the capex forecasts we review below include the gross cost levels that Motorola has identified and thus use the mark-ups that Motorola has applied to Motorola-sourced capex inputs. However, as is noted in Appendix H, the average mark-ups charged by Motorola to Airwave Solutions on capital equipment (which average [250 to 300] [✂]%) are materially higher than the average mark-up charged on sales of such equipment across the Motorola Group as a whole in 2021 (which average [150-200] [✂]%).[485] This suggests that the approach adopted below of using Motorola's forecasts of gross costs to assess capex requirements should be viewed as a conservative one.

Motorola's April 2022 forecast of Airwave Solutions' capex requirements

71 In its June 2022 response to a request for information (in which we asked for a reconciliation of a number of different capex forecasts that had been provided),[486] Motorola identified two capex forecasts as relevant:[487]

(a) A May 2021 forecast of capex requirements to 2029, including an underlying spreadsheet which provided more granular information on how that forecast was derived (referred to below as 'the May 2021 forecast'). Motorola noted that the presentation which included this forecast was an internal draft slide deck that fed into a slide pack that was presented to the Home Office on 4 June 2021.

(b) A forecast of capex requirements to 2026 provided in April 2022 in response to a request for information (referred to below as 'the April 2022 forecast). Motorola said that this forecast was based on the May 2021 forecast but removed some [✂] of base station upgrade costs, and included updating as actual figures (for 2021) had become available.

72 These two capex forecasts are shown in Table G-4 (and were included in Figure G-1). In line with our comments in paragraphs 64 to 65 on factors relevant to the weight we should give different evidence provided by Motorola, we have taken the May 2021 forecast – which was developed for internal purposes in the ordinary course of business and ahead of the opening of this market investigation – as our starting point, and considered the extent to which it should be modified to reflect the adjustments Motorola made which underpinned

[484] Appendix H, paragraph 114.
[485] Appendix H, paragraph 110.
[486] In its response to a December 2021 RFI, Motorola confirmed that there were no capex programme forecasts to 2029. Motorola said that a document that included forecasts to 2029 had been put together in May 2021, in part to help inform discussions with the Home Office, should end-dates other than 2026 be requested (Motorola response to CMA RFI dated 16 December 2021, question 24(d)).
[486] However, Motorola said that after this initial version was put together, all capex plans were then focused on shutting down the Airwave Network in 2026, in line with the national shut down date (Motorola's response to RFI dated 16 December 2021, Question 29(d)). When asked – in an April 2022 RFI – to provide all documents that included capex scenarios beyond 2026, Motorola provided a number of forecasts to 2029 (Motorola's response to RFI dated 8 April 2022, Question 14). We also identified the use of capex forecasts to 2029 in a number of internal Motorola presentations that included some consideration of different options with respect to capex plans (For example, Internal Motorola presentation dated 18 May 2021).
[487] Motorola's response to RFI dated 26 May 2022, Question 8.

the April 2022 forecast. Motorola said that addressing the [✂] of base station upgrade costs (which resulted from the number of base stations it had assumed needed to be upgraded as part of its planned Megastream refresh) reduced its overall capex forecast (between 2022 and 2026) by £[✂] million.[488] While we consider it important to remove this [✂], we note that our more detailed assessment of Megastream-related base station costs below can also be expected to address this issue.

Table G-4: Airwave Solutions' capex forecasts

												£million
	2020	*2021*	*2022*	*2023*	*2024*	*2025*	*2026*	*2027*	*2028*	*2029*	*2021-26*	*2023-26*
May 2021 forecast	43	73	69	70	83	76	43	15	12	13	415	273
April 2022 forecast		45	82	80	85	74	40				406	279

Source: Data from Motorola response to RFI dated 8 April 2022, questions 5 and 14.

73 The other key modification to the May 2021 forecast that Motorola made in generating the April 2022 forecast was to take Motorola's assessment of actual capex in 2021 into account. As can be seen in Table G-4, Motorola's assessment of actual capex in 2021 (£45 million) was £28 million (around 38 per cent) lower than the level included in the May 2021 forecast. Motorola said that this difference resulted from supply chain shortages of spares it had encountered in 2021, and that it had reprofiled the number of base stations to be upgraded in the years 2022-26 to take account of this.[489] We understand that to mean that Motorola treated the observation of significantly lower capex than it had forecast in 2021 as justifying an increase to the capex levels that had previously (ie in the May 2021 forecast) been estimated as required in 2022-26.

74 Our provisional view is that the May 2021 forecast should not be adjusted in this way for the purposes of determining appropriate charge control allowances. While we had regard to Motorola's comments on supply chain shortages it experienced, we note that evidence of actual capex for 2021 being materially lower than the level Motorola had forecast almost halfway through 2021 could also be viewed as casting doubt on the reliability of the level of capex requirement that had been forecast and raising questions over the extent to which that forecast should be viewed as having been unreasonably high. Our provisional view is that the observation of materially lower than forecast capex in 2021 should not be treated as justifying an increase in forecasts of capex in 2023 onwards to include in the profitability analysis.

Identified drivers of capex requirements

75 Table G-4 provides a summary breakdown of the May 2021 forecast for the period 2020-29.[490] As can be seen, this forecast identified overall capex requirements of £[✂] million

[488] Motorola response to RFI dated 8 April 2022, question 5.
[489] Motorola response to RFI dated 8 April 2022, question 5.
[490] We focused our assessment on the element of this forecast which is still to come, ie 2023 onwards. We note that our analysis uses actual results for 2020 and will be updated to use actual results for 2021 and 2022 in due course.

over that 7-year period. Motorola said that the primary drivers of the Airwave Network upgrade programme can be categorised as follows:[491]

- Hardware: component wear out/hardware failure and availability of spares/repairs.
- Third-party dependencies: suppliers removing support for a product, or removing a product/service from the market place.
- Security: the ability to continue to provide security protections against the increasing global cyber security threats and maintain the contracted security accreditation of the service.
- Software: the ability to support the software to ensure that issues can be resolved/remediated and new services can be supported as driven by remediation to any of the above factors.

76 Around a [✂] of the forecast capex in Table G-5 is identified as [✂] capex, and this accounts for almost [✂] of the identified capex for the period 2027-29. We have focused our attention primarily on the following two forecast spend areas:

- Megastream-driven capex: this spend area accounts for around [✂] per cent of the capex forecast from 2023 to 2029, when Megastream-driven base station capex is taken into account).
- Capex risk: the forecast includes a £[✂] million provision for capex risk between 2023 and 2026.

77 These areas are considered in turn below before we set out our provisional view of the capex it is appropriate to include in the profitability analysis.

[491] Motorola response to RFI dated 8 April 2022, question 9.

Table G-5: Breakdown of Airwave Solutions' May 2021 capex forecast, 2020-29

												£ million
	2020	*2021*	*2022*	*2023*	*2024*	*2025*	*2026*	*2027*	*2028*	*2029*	*2020-2029*	*2023-2029*
Maintenance capex	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Remote site replacement programme*	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Megastream	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Other	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Capex risk	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Total	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]

Source: Data from Motorola's response to RFI dated 8 April 2022, question 14
** We understand this to include forecast base station upgrade capex.*

Megastream and base station upgrades

78 Motorola said that BT's planned retirement of its Megastream product (which provides communications services using legacy technology) had wide-ranging implications for the Airwave Network, and that the only assured solution to addressing it would be to deliver what Motorola has referred to as 'full IP migration' by:[492]

- Migrating transmission fully to ethernet; and,
- Replacing all remaining 'Generation 1' base stations, as they do not support Ethernet/IP.

79 Table G-6 shows a breakdown of the capex included in relation to Megastream – including Megastream-driven base station upgrades – in the May 2021 forecast between 2023 and 2029 (where there is no capex included between 2027 and 2029). The table shows that when the impact on assumed base station upgrades is taken into account, Megastream retirement accounts for around £[✂] million between 2023 and 2029 (that is, [✂] of overall 2023-29 capex included in the May 2021 forecast).

Table G-6: Megastream-driven capex included in the May 2021 forecast, 2023-29

					£million
	2023	*2024*	*2025*	*2026*	*2023-29**
Megastream-driven base station upgrades	[✂]	[✂]	[✂]	[✂]	[✂]
Megastream – Transmission replacement and transition	[✂]	[✂]	[✂]	[✂]	[✂]
Total	[✂]	[✂]	[✂]	[✂]	[✂]

Source: Data from Motorola's response to RFI dated 8 April 2022, question 14

[492] Motorola response to RFI dated 8 April 2022, question 9.

There is no capex included for these activities in 2027-29 in the May 2021 forecast.

80 However, Motorola's internal assessments of how Megastream retirement could be addressed have identified three additional potential options alongside full IP migration, at materially lower cost. Figure G-2 shows a summary slide for an internal Motorola presentation prepared in the ordinary course of business dated 11 May 2021, which sets out Motorola's analysis of these potential options and its views on associated forecast capex implications at that time.

Figure G-2: 11 May 2021 internal slide showing Motorola's summary of options to address Megastream retirement

[✂]

Source: Motorola internal presentation dated 11 May 2021.

81 We understand the three alternatives to full IP migration (which is the fourth option) shown in Figure G-2 to assume the potential for using different emulation or conversion approaches, with those approaches limiting – to some extent – the need for technology transition by allowing technology interoperability to be achieved across the network without full IP migration. The first two options assume the continued availability of [✂] emulation services in order to do this, with the second option involving less reliance on such services (and a greater degree of IP transition). The third option assumes a transition to full IP transmission, but does not assume that all remaining base stations are upgraded. Instead, it assumes that a conversion/interworking solution can be used at the remaining legacy (ie not upgraded) base stations to provide for interoperability.

82 We also note that the forecast costs associated with pursuing the final option are materially lower than those included in the May 2021 forecast, with this driven by differences in the assumed costs associated with base stations. The differences between assumed Megastream-driven base station upgrade costs in the third and fourth options shown in Figure G-2, and those included in the May 2021 forecast are shown in Table G-7.

Table G-7: Comparison of Motorola forecasts of Megastream-driven base station upgrade costs

	£million *Assumed Megastream-driven base station upgrade costs 2023-2026*
'Full IP transmission. Mixed Base Stations' - 11 May 2021 Motorola slides	[✂]
Full IP migration ('Full IP transmission. Native MTS') - 11 May 2021 Motorola slides	[✂]
Included in May 2021 forecast	[✂]

Source: Data from Internal Motorola presentation, 11 May 2021 and Motorola's response to RFI dated 8 April 2022, question 14

83 We note that Motorola included a modified version of the slide shown in Figure G-3 in a presentation to the Home Office on 'Sustaining the Airwave Service' dated 4 June 2021.[493] That slide is shown in Figure G-3. The slide (relative to the 11 May 2021 version shown in

[493] Internal Motorola presentation, 4 June 2021.

Figure G-2) has been modified, notably in that it identifies the full IP migration option as the only assured sustainable solution, and as the 'currently assumed path'.

Figure G-3: 4 June 2021 slide presented to Home Office showing Motorola's summary of options to address Megastream retirement

[✂]

Source: Internal Motorola presentation, 4 June 2021.

84 The costs associated with the full IP migration option (including the £[✂] million assumed Megastream-driven base station upgrade costs) were included in a separate slide of the 4 June 2021 presentation to the Home Office, but the overall levels of cost forecast for the other options were not specified, and – notably – the forecast costs associated with using a conversion solution for base stations (which – as shown in Table G-7 – had been forecast in the internal Motorola 11 May 2021 slides prepared in the ordinary course of business as costing £[✂] million less than the upgrade approach assumed in the May 2021 forecast), was not identified. Our provisional view is that the capex forecasts to be included in the profitability analysis should be determined based on the capex assessments shown in the internal 11 May 2021 slides, and that – given the context in which they were developed (ie for presentation to the Home Office) we should not put weight on the assessments included in the 4 June 2021 presentation to the Home Office that the full IP migration option is required, and that it would cost £[✂] million to provide for remaining base station upgrades if the use of that option was identified as appropriate.

85 With respect to the latter point, we note that both the £[✂] million estimate of the cost of Megastream-driven base station upgrades, and the £[✂] million estimate shown in Table G-7 (from the internal 11 May 2021 slide deck), are based on the assumption that 2,000 additional base stations would need to be upgraded to provide for full IP migration.[494] Given that, the £[✂] million estimate implies a cost of £[✂] per Megastream-driven base station upgrade, whereas the £[✂] million estimate implies a cost of £[✂] per upgrade. That is, Motorola appears to have assumed a cost per Megastream-driven base station upgrade that is more than double the average cost per base station assumed elsewhere in its capex plans.

86 We also note that Motorola included a forecast for the third ('Full IP transmission. Mixed Base Stations') option in an internal presentation on 18 May 2021 (ie one week later than the slide shown in G-2) that was around £[✂] million higher than that included in the 11 May 2021 internal presentation (such that using this higher cost would imply a reduction to the May 2021 forecast of around £[✂] million, rather than the £[✂] million referred to above). However, the notes page accompanying the relevant summary slide explained the use of a higher figure as follows:

[✂].[495]

87 Our provisional view is that we should not place weight on this 18 May 2021 slide pack, because the increase in the cost estimate identified for the third option appears to have

[494] See, for example, Internal Motorola presentation, 11 May 2021, slide 14 and Motorola's response to RFI dated 8 April 2022, question 14.
[495] Internal Motorola presentation, 18 May 2021 slide 19, Notes page.

been driven by presentational concerns, in a context where the slides were being developed for sharing with the Home Office.

88 Given the above points, our provisional view is that the forecast of Megastream driven costs to be included in the profitability analysis should be £[✂] million lower than that included in the May 2021 forecasts, in line with the costs of £[✂] million identified under the third option ('Full IP transmission. Mixed Base Stations') presented in the 11 May 2021 slide shown in Figure G-2. This involves allowing for £[✂] million overall for Megastream-driven capex.[496]

Capex risk provision

89 Motorola told us that its forecasts provided a high-level view that gave a rough order of magnitude of investment requirements, such that some items would be missed, overlooked or simply unknown and therefore would not be taken into account.[497] Motorola said that, given this, it was appropriate to allocate a risk budget and that the [✂] per cent provision included in its forecasts was not an unreasonable amount to allocate to projects that had yet to even be scoped.[498] Motorola said that this [✂] per cent risk provision was not applied to well understood spend areas (such as more general service continuity capex) for which it had longer term trends to inform its estimations,[499] and we note that the spreadsheet underpinning the May 2021 forecast shows the [✂] per cent risk budget as having been applied to [✂] of forecast capex from 2023-29 (around £[✂] million).[500] As was shown in Table G-5, Motorola's [✂] per cent capex risk provision has the effect of increasing forecast capex from 2023-29 by £[✂] million (with the uplift all occurring in the period to 2026).

90 There are different ways in which the risks associated with the potential level of capex requirements can be taken into account when forecasts are being generated, including the following:

(a) The development of an initial capex forecast for a given area of activity can include the use of risk-based assumptions when costs are being estimated. That is, those assumptions can effectively provide for some degree of 'aiming up'.

(b) Specific risk-based uplifts can be applied to the initial capex forecasts that have been generated for a given area of activity (referred to in (a)).

(c) A broader risk-based uplift can be applied to the level of forecast spend that has been identified across a range of areas.

91 While we consider it appropriate to take account of relevant uncertainties when forecasting capex, we note that Motorola's May 2021 forecast can be understood as having included all three of the above types of risk-based adjustments, and we have

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496 That is, the total Megastream capex shown in Table G-6 (£[✂] million) less £[✂] million.
497 Motorola response to RFI dated 8 April 2022, question 10.
498 Motorola response to RFI dated 8 April 2022, question 10.
499 Motorola response to RFI dated 8 April 2022, question 10.
500 CMA calculation based on Motorola response to RFI dated 8 April 2022, question 14, row 65.

identified a number of factors as casting material doubt on the appropriateness of using Motorola's 'capex risk' provision for inclusion in the profitability analysis. In particular:

- Motorola has used a [✂] (rather than [✂]) per cent risk provision in a number of its capex forecasts. In response to a request to provide all documents that included capex scenarios for 2022 onwards, Motorola provided five excel workbooks that included a specified percentage uplift for capex risk.[501] A [✂] per cent risk provision was applied in four of those five workbooks,[502] and the excel workbook that underpins the May 2021 forecast was the only one to include a [✂] per cent provision.[503] Motorola has not identified why it considered it appropriate to apply a [✂] rather than a [✂] per cent provision for the purpose of generating the May 2021 forecast, or why a [✂] rather than [✂] per cent provision should be viewed as appropriate for inclusion in the profitability analysis. Using a [✂] per cent risk provision would reduce the overall 2023-29 capex forecast by £[✂] million, other things equal.

- Motorola's estimate of 'Microwave Access Transmission Replacement' capex already included project-specific risk provisions totalling £[✂] million, ahead of the application of the risk provision of [✂] per cent to a capex figure which included that £[✂] million. This approach appears to raise material double-counting issues. Not applying the [✂] per cent provision in addition to the inclusion of project specific risk uplifts would reduce the overall 2023-29 capex forecast by c£[✂] million, other things equal.[504]

- Motorola's approach to developing its initial capex forecasts for given areas of activity appears to already include the use of a range of risk-based assumptions when costs are being estimated.[505] Motorola's approach to forecasting the costs of addressing Megastream retirement has included a range of risk-based assumptions which have the effect of increasing the forecast capex requirements.[506] Similarly, Motorola's forecast of base station upgrade costs (other than those driven by Megastream retirement) are presented as based on [✂].[507] That is, this cost estimate appears to already include a [✂] per cent uplift to take account of the potential for the cost per site of upgrading additional base stations being higher than that associated with the existing base stage upgrade work. These assumptions (which in line with the comment above, can be understood as effectively already providing for some degree of 'aiming up'), raise material questions over the extent to which the application of an additional [✂] per cent risk provision can be expected to give rise to double counting (and we note that [✂] per cent of the ([✂] per cent) risk provision that Motorola included in the May 2021 forecast was driven by capex associated with Megastream and base station upgrades, because of the relative scale of those projects). Not including an overall risk provision (and instead relying

[501] Motorola response to RFI dated 8 April 2022, question 14(a).
[502] Based on Motorola response to RFI dated 8 April 2022, question 14(a).
[503] Motorola response to RFI dated 8 April 2022, question 14(a).
[504] CMA calculation based on Motorola response to RFI dated 8 April 2022, question 14(a), rows 24-27 and 65.
[505] For example, Motorola response to RFI dated 8 April 2022, question 14(a).
[506] Megastream-driven impacts on Motorola's view of capex requirements are considered in paragraph 77 to 87.
[507] Internal Motorola presentation, 11 May 2021, slide 14.

on project-based cost assessments to provide an appropriate provision), would reduce the overall 2023-29 capex forecast by £[✂] million, other things equal.

- Given the scale of the capex programme that Motorola has identified as required, consideration should be given to the extent to which a forecasting approach of the kind used by Motorola – which involves summing separate cost estimates across a range of project areas – might tend to overstate likely requirements, by taking insufficient account of likely opportunities for economies of scale and scope in project delivery. Motorola has provided limited comments on how it has assessed and taken account of the potential for such efficiencies to provide for lower levels of capex requirement than might otherwise be derived from a bottom-up type of cost assessment approach. That is, Motorola's approach to estimating capex requirements may result in forecast levels of capex that are unduly high even before its capex risk uplift of [✂] per cent has been applied. We note, in this context, that some of the capex spreadsheets Motorola provided us with in response to a request for information included a separate line after the forecast level of total capex which was shown referred to as: '[✂]', before showing figures that were [✂] per cent of the total level of capex that had been identified.[508] This would appear to imply that a realistic view of capex requirements may be somewhat lower than identified levels of total capex before capex risk uplift of [✂] per cent has been applied.

92 Given these points, and in particular the other ways in which Motorola has taken account of risks associated with capex requirements, our provisional view is that Motorola's [✂] per cent risk provision should not be included in the levels of capex to be included in the profitability analysis.

Summary of our provisional view on capex allowances

93 Table G-8 provides a summary of our provisional assessment of forecast capex to be included in the profitability analysis. It shows the adjustments to the May 2021 forecast we have provisionally decided should be made, and the forecast capex that we have provisionally concluded should be included in the profitability analysis.

Table G-8: Capex to include in profitability model, 2020 to 2026, £m

£million

	2020	*2021*	*2022*	*2023*	*2024*	*2025*	*2026*	*2020-2026*
Actual / forecast capex	44	73	69	53	54	48	33	373

Source: 2020 and 2021: Airwave Solutions statutory accounts, 2022-2026: CMA analysis

Value of assets as at beginning 2020 and as at end 2026

94 As set out in section 6, an estimate of an IRR requires an estimate of the value of the capital employed by investors at the beginning and end of the relevant periods in order to

[508] For example, Motorola response to RFI dated 8 April 2022, question 14(a).

estimate a cash outflow at the beginning of the relevant period and a cash inflow at the end of the relevant period.

Opening value as at beginning 2020

95 Section 6 and Appendix I contain our detailed consideration of the appropriate application of the value to the business (VTB) principles to estimate the value of the Airwave Network's assets as at the beginning of 2020. Our provisional conclusion is that the Airwave Network's assets should be valued at their net realisable value (NRV) as opposed to their replacement cost or their value-in-use.

96 We consider that the NRV of the network's assets is the residual value of the assets at the end of the period, ie £[✂] million (as discussed in Appendix I). We included this figure as our base case. However, we also considered the scenario in which the NRV of the network's assets is the fair market value of the assets, as assessed by Deloitte in its 2016 report for Motorola (adjusted for subsequent capex and further obsolescence of the asset base between 2016 and 2019), ie £[✂] million.

97 We deducted net current liabilities of £[✂] million from our estimate of the opening asset valuation,[509] which results in a negative opening asset value (equivalent to a cash inflow) of £[✂] million in our base case. In the scenario in which the NRV of the network's assets is £[✂] million, this results in an opening asset value (equivalent to a cash outflow) of £[✂] million.

Closing value as at end 2026

98 We needed a value of the capital employed by investors as at 31 December 2026 in order to estimate a cashflow at the end of the relevant period.

99 Section 6 and Appendix I contain our detailed consideration of the appropriate application of the VTB principles to estimate the value of the Airwave Network's assets as at the end of 2026 and the evidence we considered. Our provisional conclusion is that the Airwave Network's assets should be valued at their net realisable value (NRV) as opposed to their replacement cost or their value-in-use.

100 We provisionally decided to use the residual value of £[✂] million as estimated by Motorola, and deducted net current liabilities of £[✂] million to this closing asset valuation.

101 This results in a negative closing asset value (equivalent to a cash outflow) of £[✂] million.

Profitability model calculations – assumption on discount factor

102 Finally, we needed a factor in order to discount the nominal cashflows to a present value of cashflows as at the beginning of 2020. As set out in Appendix J on the Cost of Capital, we estimated a cost of capital for the extension period of between 4.3% and 6.8%, the mid-point being 5.5%, which is what we used in the model.

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[509] Being net operating assets as at end 2019, sourced from Motorola's August Model.

Profitability model results

103 We set out the calculations to arrive at the provisional profitability model results in table G-9.

Table G-9: Summary profitability model calculations 2020-2026, £m

	opening lump sums								closing lump sums
	31/12/19	**31/12/20**	**31/12/21**	**31/12/22**	**31/12/23**	**31/12/24**	**31/12/25**	**31/12/26**	**31/12/26**
Revenues		[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	
Net margin % of revenues		[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	
Operating profit/(loss)		[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	
Add Depreciation		[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	
Add Amortization		[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	
Funds generated by operations		[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	
Capex and residual value	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Working capital adjustment	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Net cash flows	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Cumulative net cash flows	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Discount factor	1.00	1.06	1.11	1.18	1.24	1.31	1.38	1.46	1.46
Discounted cash flows	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Cumulative discounted cash flows	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	1,135.2

Source: CMA calculations based on Motorola data

104 We set out the provisional results for the base case, based on an opening asset value of £[✂] million, and a scenario in which the opening asset value is £[✂] million, in table G-10.

Table G-10: profitability model results 2020-2026, % / £m

Results	Base case	Sensitivity
NPV £m	£1,135	£969
IRR %	n/a	137%

Source: CMA calculations based on Motorola data

105 We stated in section 6 that if there were a delay to the beginning of the transition of users from the Airwave Network to ESN or the transition itself takes longer than currently expected by the Home Office, the Airwave Network switch-off date will likely be delayed beyond 31 December 2026. We provisionally calculated the average annual NPV of operating cashflows (ie not including beginning and end lump sums) over the period 2020-2026 is £159 million.[510] Therefore we provisionally estimate that any additional year of delay of transition to ESN would result in approximately £159 million of supernormal profits.

[510] Being the sum of supernormal profits 2020-2026 totalling £1.116bn.

Profitability model 2001-2019

Sources of financial information

106 Motorola's August Model contained certain adjustments to the profit and loss account of the statutory accounts for the years 2016 to 2020. Motorola told us that it had done this in order to provide a true view of Airwave Solutions' financial statements as a standalone company. These adjustments were to turnover, depreciation, cost of sales relating to transfer charges from Motorola in respect of engineers and R&D, administrative expenses relating to stock compensation, and administrative expenses in relation to an MSI guarantee and support fee.

107 We provisionally decided to use the financial information contained in the statutory accounts and did not make the adjustments processed by Motorola, for the reasons set out in Appendix H – transfer charges.

Adjustments made to profit and loss information

Scope

108 We needed to make sure that the revenues and costs contained in the starting operating profit figure only related to the provision of Airwave Network services and nothing else. Pronto and CCCRS, although contained in Airwave Solutions' accounts, did not relate to the provision of Airwave Network services and thus the revenues and costs relating to these activities should be excluded. However, we only had revenue and costs relating to the two activities above going back to 2018, and limited balance sheet information. We considered that the two activities above did not exist for a large proportion of Airwave Solutions' existence from incorporation to 2019, and that any adjustment would not have a material impact on the results of our analysis. We therefore provisionally decided not to make any adjustment to the figures in the Statutory Accounts. We note that not excluding the activities out of scope (to the extent that those activities existed and were profitable) may overstate the operating profit figure.

Acquisition charges in 2016

109 There was a charge of £[✂] million to the profit and loss account in 2016 relating to the acquisition of Airwave Solutions by Motorola. We provisionally considered that this did not relate to the operation of the Airwave Network and therefore removed it.

Adjustments made to arrive at cashflow

110 As set out in paragraphs 57-58, we made adjustments to the profit and loss account to arrive at cashflow. The adjustments were adding back depreciation and amortisation (non-cash items), and removing spend on capex. The amounts we used for those adjustments were those contained in the statutory accounts.

Opening and closing values

111 We also needed to add opening and closing values. As set out at paragraph 93 above, an estimate of an IRR requires an estimate of the value of the capital employed by investors at the beginning and end of the relevant period in order to estimate a cash outflow at the beginning of the relevant period and a cash inflow at the end of the relevant period.

Opening value as at beginning 2001

112 Airwave Solutions started operations in 2001 and thus had no value at the beginning of 2001, so we included a value of £0m.

Closing value as at end 2019

113 The residual value as at end 2019 is the same as the opening value at the beginning of 2020, which we discuss from paragraph 94 onwards and in detail in Appendix I. Our review of the available evidence suggests an NRV of Airwave's assets of £[✂] million as at the end of 2019 which we included as our base case. We also considered the scenario in which the NRV of the network's assets is £[✂] million.

114 There were three adjustments we needed to make to the closing asset valuation. First, we deducted net current liabilities of [✂] million.[511] Second, we deducted decommissioning costs of £[✂] million which are costs necessary to decommission the Airwave Network once customers have switched to ESN. Third, we deducted redundancy costs of £[✂] million. We discuss decommissioning and redundancy costs from paragraph 38.

115 This results in a negative closing asset value (equivalent to a cash outflow) of £[✂] million (and a positive closing asset value £[✂] million (equivalent to a cash inflow) in the scenario based on an NRV of £[✂] million).

Profitability model calculations – assumption on discount factor

116 Finally, we needed a discount factor in order to discount the nominal cashflows to a present value of cashflows. As set out in Appendix J, we estimated a cost of capital for the historical or 'PFI' period of between 7.9% and 9.6%, the mid-point being 8.6%, which is what we used in the model.

Profitability model results

117 We set out the calculations to arrive at the provisional profitability model results in table G-11, using the base case of an NRV of Airwave's assets of £[✂] million and thus a negative closing asset value of £[✂] million.

[511] Being net operating liabilities as at end 2019, sourced from Motorola's August Model.

Table G-11: Summary profitability model calculations 2002-2019 (cont'd on next page)

	31/3/02	31/3/03	31/3/04	31/3/05	31/1/06	31/12/06	30/6/08	30/6/09	30/6/10	30/6/11	30/6/12
Revenues	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Net margin % of revenues	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Operating profit/(loss)	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Add Depreciation	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Add Amortization	[✂]	[✂]	[✂]						[✂]	[✂]	[✂]
Funds generated by operations	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Capex and residual value	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Acquisition charges in 2016											
Decommissioning and redundancy costs											
Working capital adjustment	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Net cash flows	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Cumulative net cash flows	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Discount factor	1.09	1.18	1.28	1.39	1.49	1.61	1.82	1.98	2.15	2.34	2.54

Discounted cash flows	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Cumulative discounted cash flows	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]

Table G-11: Summary profitability model calculations 2002-2019 (cont'd)

	30/6/13	30/6/14	30/6/15	31/12/15	31/12/16	31/12/17	31/12/18	31/12/19	31/12/19
Revenues	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	
Net margin % of revenues	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	
Operating profit/(loss)	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	
Add Depreciation	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	
Add Amortization	[✂]				[✂]	[✂]	[✂]	[✂]	
Funds generated by operations	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	
Capex and residual value	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Acquisition charges in 2016					[✂]				
Decommissioning and redundancy costs									[✂]
Working capital adjustment	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Net cash flows	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Cumulative net cash flows	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Discount factor	2.76	3.00	3.26	3.40	3.69	4.01	4.35	4.73	4.73

Discounted cash flows	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Cumulative discounted cash flows	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]

Source: CMA calculations based on Motorola data

118 We set out the provisional results for the base case and a scenario in which the NRV of Airwave's assets is £[✂] million in table G-12

Table G-12: Profitability model results 2002-2019, % / £m

Results	Base case	Sensitivity
NPV £m	£117m	£152m
IRR %	10.6%	11.1%

Source: CMA calculations based on Motorola data

Benchmarking

119 In the Profitability Methodology Approach Working Paper we stated our emerging view that broader price or margin benchmarking may provide useful insight into the extent to which Airwave Solutions' prices and/or profits reflect those that one would expect to see in a well-functioning market. We also recognised that price or margin benchmarking may have some limitations, and invited Airwave Solutions and other interested parties to make submissions on whether there were specific price/profit benchmarks from other countries and/or telecoms networks that we should consider and the extent to which these are comparable with the supply of LMR network services (and ancillary services) in Great Britain.

120 Motorola told us[512] that we did not need to carry out such an exercise since there was no reason for the CMA to believe that Airwave Solutions was making excessive profits, when measured against the metric chosen by the parties to the PFI Agreement which itself was recognised as an appropriate measure of profitability.

121 We disagree with Motorola's submission that there was no reason for the CMA to believe that Airwave Solutions may be making supernormal profits[513] and that this was a reason for not needing to carry out such an exercise. However, although we consider that price or margin benchmarking may provide useful insight, we note the difficulties with identifying suitable benchmarks against which to compare Airwave's prices or margins given the highly specific nature of the business.[514] Therefore, we provisionally considered that such benchmarking is unlikely to yield robust conclusions and we did not pursue this avenue of inquiry further.

[512] Motorola's response to the CMA's Working Paper on Profitability, 10 January 2022, paragraph 41
[513] Analysis contained in paragraphs 1.69-1.85 of Market Investigation Reference Final Report
[514] [✂].

Appendix H: Transfer charges

Appropriateness of costs

1 In addition to identifying the scope of the relevant services for the purposes of our analysis,[515] we have also considered the suitability of the 'in-scope' costs. We note that, in principle, there are three aspects to this assessment:

(a) whether Airwave Solutions has, over the years, gone about providing the services it has committed to providing in an efficient manner ie one that minimises the resources used commensurate with providing the level of service required by the contracts / or otherwise committed to;

(b) whether the cost of the resources actually used has been suitably measured in that the amounts reported to us represent those resources' economic cost;[516] and

(c) whether the costs incurred are, by nature, the sort of costs that a provider would be incurring were there to be a competitive market in the provision of LMR services.

2 This appendix does not consider the first of these three aspects, that is whether Airwave Solutions is efficiently incurring these costs ie choosing the most appropriate way / supplier / subcontractors to fulfil particular tasks or provide various inputs. That would be an efficiency assessment. We note that in the absence of detailed cost information on comparable firms offering LMR services, it would be very difficult to carry out such analysis. We have, therefore, implicitly assumed that Airwave Solutions operates efficiently. In our assessment of costs, we focus on points (b) and (c) above.

3 Airwave Solutions is not a standalone firm transacting exclusively with third parties, rather it is part of the Motorola corporate group and it transacts extensively with other legal entities within that group. Airwave Solutions therefore utilises both resources external to the Motorola corporate group (Motorola) and resources that have been provided internally.[517]

4 For externally provided resources we note that Motorola, in common with the previous owners of Airwave Solutions, would have had the incentive to select suppliers in a way that minimises its overall cost base. Therefore, the costs reported for these items are likely to reflect reasonably efficient choices at the time Motorola committed to deploy those resources. The default assumption is therefore that the costs of utilising these resources would have been measured on an economic basis.

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515 See Appendix G Profitability.

516 Economic costs are the costs of resources used at the price they would be traded at in a competitive market, where entry to and exit from the market was easy. In particular they include the normal profit that would be earned if the resources were used elsewhere in the economy, that is, the opportunity cost of the capital employed. Economic costs are sometimes referred to as continuing costs: for profit and loss items they reflect the opportunity cost of the relevant resources at the point of time the purchaser commits to their purchase (which normally roughly coincides with the point at which the resources are utilised); for assets (balance sheet items) they reflect the opportunity cost of the utilisation of the asset at that point in time, the economic costs for which is influenced by the availability of newer, potentially 'better' replacement assets.

517 For this purpose costs that Airwave Solutions incurs by contracting with third parties (which would include its staff costs) are counted as external costs.

5 For internally provided resources, however, it is not clear whether resources costed in line with the transfer charging practices of a corporate group would, necessarily, reflect economic costs. In the case of Motorola, we observe that its transfer pricing policy document appears to have been devised primarily for tax planning and compliance purposes.[518] We note that Motorola may also have an additional incentive in reducing the apparent profitability of Airwave Solutions in the context of its on-going negotiations with the Home Office.

6 We have, therefore, undertaken a detailed review of Airwave Solutions' transactions with the rest of Motorola.

Introduction to our investigation into transfer charging into Airwave Solutions

7 Motorola told us that Airwave Solutions procured the following types of goods, services and labour from other Motorola legal entities:

(a) A Motorola-provided financial/performance guarantee as required by the Blue Light Contracts;

(b) Strategic support;

(c) Hardware maintenance, software support, and other technical support, including ‘secondment’ of certain Motorola Solutions UK engineers or other employees performing technical services;

(d) Supply of networking equipment manufactured, acquired, and/or assembled by other Motorola companies;

(e) Selling, General & Administration (SG&A) support services, including management, IT, marketing, legal, treasury and cash management, HR, tax, training, procurement, accounting and finance, etc. Such support services are acquired from other Motorola companies having Europe, the Middle East and Africa (EMEA) regional and global functional groups and personnel; and

(f) R&D services with respect to Pronto software applications.[519]

8 We note that the level of the first three categories of costs set out above, as reported within the profit and loss account prepared for tax purposes,[520] changed significantly between 2018 and 2020, as set out in Table . (Note: ‘management charges’ includes the parent company guarantee and the strategic support fee).

Table H-1: extracts from Airwave Solutions’ detailed ‘tax’ profit and loss accounts 2018-2020

£’m	2018	2019	2020
Management charges	[✂]	[✂]	[✂]
Maintenance	[✂]	[✂]	[✂]

[518] Motorola internal document, 6 September 2017. This document indicates that transfer pricing policy is owned by Motorola’s Corporate Tax department. (Motorola’s response to Q1 to RFI 2 dated 9 July 2021)
[519] Motorola's response to Q15 of the RFI dated 16 December 2021, paragraph 40. The running order has been changed to reflect the order in which we discuss the different types of transfer charge below.
[520] This profit and loss account is more detailed than that set out in ASL’s statutory financial statements.

Source: CMA analysis based on Motorola's response to Q9 to RFI dated 16 December 2021

9 Regarding maintenance charges, we noted, in particular, the charge for 'MSI field engineers' shown within the August Model – doubling of internal charge to profit and loss account from around £[✂] million per year in years 2016 through to 2019 to £[✂] million in 2020.[521]

10 With respect to capex, we observed that the level of capex forecast to be incurred in refreshing the Airwave Network was significant in scale and varied materially (for the same year) across various Airwave Solutions/Motorola source documents. For example, in our Decision on MIR we noted that capex forecasts had been materially lower at £[✂] million in the June Model compared to £[✂] million in its August Model.[522] We understand that these differences can be explained, in large part, by the inclusion/exclusion of mark-ups on capex.[523]

11 Motorola provided us with schedules of capital expenditure forecasts for Airwave Solutions showing a net cost as well as a gross cost in relation to items labelled *MSI Equipment and Labour* (as opposed to either *Insource Labour (OWC[524])* or *External Equipment)*.[525] The difference between the net cost and gross cost represented mark-ups between [1.00 to 1.50] [✂] and [4.00 to 5.00] [✂] times the net cost.[526]

12 We therefore have sought to investigate the following areas in more depth by requesting and then reviewing the reasoning and evidence to support the transfer charges into Airwave Solutions:

(a) Parent company guarantee (PCG) fee

(b) SG&A support services

(c) Strategic support fee

(d) 'MSI field engineers'

(e) Equipment and other capex purchases.

13 We note that we have not sought to review the charges made for R&D services with respect to Pronto software applications as we are (provisionally) excluding Pronto (and its costs and revenues) from the scope of our profitability analysis and proposed charge control.

Motorola submissions

14 In response to our working paper,[527] Motorola made the overarching point that its transfer pricing policy fully reflected arm's length pricing under the tax laws of the United Kingdom and the United States, as well as under economic principles for intercompany transfer pricing reflected by

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[521] Motorola's August IRR Model, 30 August 2021.
[522] These forecasts covered the period January 2020 to December 2026, ie seven years in total. See footnote 62 at paragraph 1.82 of CMA (2021), Final report and decision on a market investigation reference.
[523] As set out in paragraphs Appendix H:96 to Appendix H:101 below, Motorola does not charge mark-ups on its capex for the purposes of its Airwave Business Unit performance packs but does so in Airwave Solutions' statutory financial statements.
[524] Own work capitalised ie capitalisation of labour costs incurred by Airwave Solutions.
[525] Motorola's response to Q29 of RFI dated 16 December 2021, attachment.
[526] CMA analysis.
[527] This working paper was shared with Motorola (only) in May 2022 and reflected our understanding of its transfer charging practices as of 12 May 2022.

OECD guidelines and generally accepted around the world. As the arm's length principle under international tax law sought to reflect the pricing between independent parties operating in a realistic marketplace, Motorola continued, the transfer prices established for transactions between the rest of Motorola and Airwave Solutions provided the best estimate for the economic costs that we purported to establish by making wholly unjustified adjustments.[528]

Our assessment of Motorola's submission

15 Our detailed analysis of each type of transfer charge is set out below. We note that our assessment focuses on identifying the economic level of costs for the purposes of our profitability analysis and charge control and that our conclusions may differ from those of the relevant tax authorities for a number of reasons. We do not suggest that our adjustments would be appropriate or relevant for any tax authority, which would need to conduct its own assessment. However, we also observe that our concerns with the approach adopted by Motorola arise from the methodologies and assumptions applied in identifying 'arm's-length pricing', the evidence that it has adduced to support the figures that it has used and the associated reasoning. As set out in greater detail below, in several instances, our provisional finding is that Motorola's approach does not reflect arm's length pricing and we have made adjustments accordingly.

The parent company guarantee

Background

16 Motorola told us that MSI provided a substantial parent company guarantee to guarantee the performance of Airwave Solutions regarding Airwave Services.[529]

17 We understand that the purpose of this guarantee was to ensure the orderly operation of the Airwave Network for as long as it should be required including during the period of transition away from the Airwave Network to ESN.

18 A parent company guarantee had been in place with Macquarie, the previous owners of Airwave Solutions, and when Motorola sought to acquire Airwave Solutions from Macquarie the level of the guarantee formed one element of the settlement that was negotiated in early 2016 between the Home Office and Motorola, in this case so as to maintain a similar level of protection for the Home Office.[530]

19 The Home Office told us that the 2016 settlement with Motorola, which included aligning all the Airwave services contract end dates, did not alter the fact that it would take a period of time, possibly up to [✂] years, for all the approximately 300,000 users to migrate,[531] with the core network needing to be maintained until the end of transition.[532] In addition, it would not be possible to switch off the Airwave Network on a region by region basis because if there were to be a 'big incident' in one region colleagues from other regions would need to be sent in to assist.[533]

[528] Motorola's response to the Transfer Charges Working Paper, paragraph 11.
[529] Motorola's response to Q11 of the RFI dated 16 December 2021, paragraph 32.
[530] Home Office submission to the Cabinet Office, 11 February 2016.
[531] Home Office Hearing with the CMA on 2 March 2022.
[532] Home Office Hearing with the CMA on 2 March 2022.
[533] Home Office Hearing with the CMA on 2 March 2022.

20 Motorola also highlighted that the guarantee would ensure that Airwave Solutions was able to obtain the capital to invest in network asset upgrade, including where necessary by ensuring that Airwave Solutions had the ability to obtain financing elsewhere.[534]

The analysis carried out by KPMG

21 Motorola provided a document entitled 'Motorola Solutions, Inc. Transfer Pricing Planning Report' that had been produced by KPMG and dated 4 August 2020 ('the KPMG Report').[535] Motorola explained that in 2019 it had commissioned KPMG to perform a transfer pricing planning analysis covering Motorola's transfer pricing policies in relation to a number of transactions. That assessment had been completed on 4 August 2020 and had produced a number of findings that set out ranges for the various fees that would appropriately compensate Motorola Solutions, Inc. for services and support provided to Airwave Solutions and Motorola Solutions UK Limited ('MSUK').[536]

22 In this report KMPG state:

> [✂].[537]
>
> [✂].[538]
>
> In entering the Umbrella Agreement, all parties understand that MSUKACL is merely an intermediate holding company and that MSI effectively stands in the shoes of MSUKACL to ensure performance of its obligations under the MSUKACL Parent Guarantee. Therefore, under the agreements, MSI is (for practical purposes) the primary obligor for claims brought against ASL [Airwave Solutions] on its performance in the Airwave contract. Given the terms of the agreements, MSI ultimately bears the risk related to the delivery of the Airwave network. Since MSUKACL is a holding company, from an economic standpoint, MSI is considered as the Guarantor on the intercompany guarantee (the "Subject Guarantee") and ASL [Airwave Solutions], the entity that performs the work, is considered as the Creditor. (page 16)
>
> The guarantee agreement between MSI and the Home Office is considered a parent company guarantee because MSI, the parent company of ASL [Airwave Solutions], is providing assurance that ASL [Airwave Solutions] will fulfil its contractual obligations to the Home Office. (Page 17)
>
> Remuneration for the guarantee is largely driven by [✂]. In this regard, creditworthiness is a critical factor for comparability because it provides insight on the likelihood that a company will default on its obligations in a given period of time. Companies that have high credit ratings are less likely to default than companies that have low credit ratings. Based on creditworthiness, the likelihood of default could be inferred as expected default frequency ("EDF"). (Page 20)

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[534] Motorola Hearing with the CMA on 10 February 2022.
[535] The KPMG report, 4 August 2020.
[536] Motorola's response to Q1 of the RFI dated 16 February 2022, paragraphs 6 and 9.
[537] When Airwave Solutions was owned by Macquarie, Guardian Digital Communications Holdings Limited (GDCHL) was the immediate parent of Airwave Solutions.
[538] The entity created by Motorola to acquire Airwave Solutions.

In this specific context, the parent company guarantee would only be called upon if ASL [Airwave Solutions] is unable to meet its obligations and provide the services specified in its contract with the Home Office. Consequently, ASL's [Airwave Solutions] financial strength and probability of default are key considerations for the estimation of the guarantee fee. As a financial and performance Guarantor, MSI is motivated to support the Creditor during its delivery of the service to Home Office, and ultimately bears the liability associated with the guarantee arrangement to the extent MSI's financial and operational capacity allows. **Therefore, the creditworthiness and probability of default of MSI is also considered as a critical factor to determine the arm's length guarantee fee.** In light of this, KPMG began its financial and performance guarantee analysis by estimating the creditworthiness of the entities involved. KPMG then used these credit ratings to infer the entities' EDF and used the EDFs to establish an arm's length range of guarantee remuneration. [**Emphasis added by the CMA**]

23 The KPMG Report then set out how it had gone about estimating the cost that a third party would need to be remunerated to be willing to take on this guarantee. KPMG described how its RiskCalc Model estimated a credit rating of A1 (A+) and Ba2 (BB) for Airwave Solutions and MSI, respectively, over the one-year horizon. KPMG also used S&P (Standard and Poor's) analysis, giving Airwave Solutions and MSI a [credit] rating of A and B, respectively. KPMG then estimated the guarantee fees in relation to Airwave Solutions and MSI separately, taking the average of the EDFs from the RiskCalc and S&P models.[539]

24 For Airwave Solutions the EDFs of [✂]% and [✂]% from the RiskCalc and S&P models respectively, yielded an average EDF of [✂]%.[540] Similarly, MSI's EDFs of [✂]% and [✂]% from the RiskCalc and S&P models respectively, yielded an average EDF of [✂]%.[541]

25 The range of the guarantee fee established by the average EDF for each entity, KPMG concluded, was from [✂]% to [✂]% of the guarantee cap.[542]

Annex A: MSI's guarantee had, KMPG explained, a cap of £[✂] million as adjusted for inflation.[543] To estimate the potential guarantee fee, KPMG first translated the liability cap into US dollars using the 2019 average foreign exchange rate. Next, KPMG used the UK Office for National Statistics' consumer price inflation time series to adjust for inflation. KPMG then took the inflation adjusted maximum liability and multiplied it by Airwave Solutions' average EDF and MSI's average EDF to create a range of potential guarantee fees.[544]

26 KPMG's calculations are reproduced in Table H-2 below.

[539] The KPMG Report, pages 21–22.
[540] The KPMG Report, page 22.
[541] The KPMG Report, page 22.
[542] The KPMG Report, page 22.
[543] Parent Company Guarantee Umbrella Agreement, 17 February 2016, paragraph 5.1.
[544] The KPMG Report, page 22.

Table H-2: KPMG's calculation of the range for the transfer charge for the guarantee fee for 2019

	Formula	*Currency (where applicable)*	
Maximum liability	A	£	[✂]
Foreign exchange rate	B		[✂]
Maximum liability	C = A * B	US$	[✂]
Inflation index value 02/2016	D		260.0
Inflation index value 10/2019	E		288.3
Inflation adjusted maximum liability	F = C * (E / D)	US$	[✂]
Airwave Solutions' average expected default frequency for 2019	G		[✂]
Motorola's average expected default frequency for 2019	H		[✂]
Guarantee fee for 2019 (minimum)	I = F * G	US$	[✂]
			[USD 0.5 to 1.0 million]
Guarantee fee for 2019 (maximum)	J = F * H	US$	[✂]
			[USD 9.0 to 10.0 million]

Source: KPMG analysis as set out in the KPMG Report, pages 22–23.

27 The table therefore gives a range of US$ [0.5 to 1.0 million] [✂] million per year to US$ 9.0 to 10.0 million] [✂] million per year. The US$ [0.5 to 1.0 million] [✂] million per year relates to Airwave Solutions' probability of default whereas the US$ [9.0 to 10.0 million] [✂] million per year relates to Motorola's probability of default.

Assessment

Our assessment of KMPG's analysis

28 First, we note that the KPMG Report is a planning study commissioned by Motorola in order to help inform it of its options regarding transfer pricing. The KPMG Report is not a documentation report which sets out with evidence the basis for the structure and level of the transfer charges chosen by Motorola in each case. As a result, this planning report is a report without conclusions about which structure of charging and level was chosen. We would have expected to have also been provided with a document setting out the amount chosen and the basis for that choice.

29 Next, from the analysis set out in the KPMG Report, we note the lower end of the range is produced by multiplying the Airwave Solutions probability of default by the £[✂] million maximum value of the guarantee (adjusted for inflation) and that the upper end of the range is driven by the Motorola corporate group probability of default. We note two issues with this approach. First, we consider the latter to be an inappropriate basis for assessing the value of this guarantee since, if the Motorola corporate group were to default, the guarantee would be worthless. Rather, in our provisional view, the value of this guarantee should be determined by the probability of a default by Airwave Solutions multiplied either by the expected actual loss under the guarantee or the maximum possible loss.

30 Second, we have concerns about the use of the £[✂] million maximum value of the guarantee as opposed to the expected actual loss resulting from the PCG at any time. Costing the PCG on the

basis of the maximum possible loss would view this transaction as akin to a bank guarantee, which would be priced on the basis of the bank's maximum exposure. Costing this transfer on the basis of expected actual loss would view this transaction on the basis of information internal to Motorola about the spread of likely outcomes. This is the basis on which costs relating to uncertain future eventualities, here the level of the loss, should the guarantee be called in, are generally estimated for financial reporting purposes.

31 We note that a parent company, rather than a third party, guarantee differs in that the parent has, to a significant extent, the ability and incentive to influence the likelihood and mitigate any actual loss incurred by the actions it takes. Given both Airwave Solutions' and Motorola's greater knowledge of the Airwave Solutions business and ability to make changes to that business eg require replacement of staff, then in a well-managed business it is likely that an internal guarantee would bear a lower level of risk than would be reflected in the pricing offered by a third party guarantor.

32 In terms of the expected actual loss, Motorola has not provided us with any analysis / assessment of its expected actual loss in the case of default by Airwave Solutions. However, Motorola told us that the original PFI Agreement was varied as follows:

Pursuant to Clause [✂], "[✂]". Clause [✂] provides that:

"[✂], it is agreed that Airwave will continue to provide all Airwave Services and the Customers will continue to pay the Airwave Service Charges in respect of the Airwave Services provided to each Customer until the final agreed expiry date of the National Shut Down or the Delayed Transition Group: [✂], whichever is the later [✂]."[545]

33 We understand, therefore, that all core service charges must be paid up to the National Shut Down Date and that most menu service charges can be expected to be paid until that point. Indeed, in its financial modelling, Airwave Solutions forecasts revenues of around £[✂] million per year and EBITDA of around £[✂] million up until 2026 in spite of some loss of menu revenues. That is to say that Airwave's revenues are no longer forecast to decline materially prior to the National Shut Down Date, reducing both the risk of any loss and the potential scale thereof. In this context, it appears to us extreme to assume an expected actual loss of £[✂] million.

34 However, on the basis that the appropriate approach is to adopt an estimate based on the probability of a default by Airwave Solutions, whether one uses the expected actual loss or the maximum potential loss makes relatively little difference, with the latter producing an estimate of approximately £[0.3 to 0.8] [✂] million per year and the former producing a figure of between £0 and £[0.3 to 0.8] [✂] million per year. Therefore, we have not sought to refine this figure further at this stage and taken the upper end of this range. We consider this approach to be conservative.

35 In its response to our working paper Motorola told us that, in addition to providing a financial guarantee required for Airwave Solutions to execute contracts with the Home Office and public safety agencies, it was also providing a performance guarantee which committed Motorola to providing resources (or obtaining the same from third parties) to provide network services to Airwave Solutions customers in the event that Airwave Solutions failed to do so.[546]

36 We are not minded to regard the inclusion of a 'performance' commitment within the guarantee as changing our (provisional) analysis. We note that the provision of resources from Motorola or

[545] Motorola submission to CMA, 14 January 2022, page 10.
[546] Motorola response to the Transfer Charges Working Paper, 27 May 2022, paragraph 32.

procured from a third party still fundamentally represents a cost to Motorola as a business and would, therefore, be covered by the financial aspect of the PCG. We note that the remedy provided for failure of Airwave Solutions / Motorola to perform is financial redress, not one that guarantees future satisfactory operational performance to Airwave Solutions' customers.[547]

Provisional view

37 Therefore, our provisional view is that US$[0.5 to 1.0] [✂] million per year, on the basis of the KPMG numbers, is the highest amount that could reasonably be levied on Airwave Solutions for this financial support from Motorola. Given the narrow range for the level of this fee, we have therefore (provisionally) set this figure to £[0.3 to 0.8] [✂] million per year[548] for the purposes of our analysis of profitability and informing our charge control remedy proposal.

SG&A support services

Background

38 Our understanding is that these services relate to the routine provision of sales, marketing, distribution and administrative/management services to members of the Motorola corporate group and which are centrally provided by Motorola, either regionally through regional hubs or from head office.

39 Motorola told us that SG&A support services (as set out at paragraph 7(e)) were allocated / attributed to Airwave Solutions on the basis of cost incurred. Motorola described these services as shared services.[549]

40 Motorola further explained that annually the SG&A departmental cost centres of several Motorola legal entities were qualitatively reviewed by the Motorola transfer pricing team to determine the activities or functions that benefit multiple Motorola legal entities and, therefore, should be allocated across multiple legal entities consistent with transfer pricing principles and practice. For such departmental cost centres – for example, within Motorola Solutions Inc. or Motorola Solutions UK (as the EMEA regional hub) – a further analysis was done to determine the percentage of each cost centre's costs that should be retained by the legal entity and, conversely, the remaining costs that should be charged out. For costs to be charged out, recipient Motorola legal entities that benefitted from group SG&A services, and therefore which were subject to the charge-outs, were identified based on the nature and type of transferring entity's (eg Motorola Solutions, Inc. or Motorola Solutions UK Limited) departmental activities and functions.[550]

41 Regional and global costs, Motorola continued, were allocated amongst Airwave Solutions and other Motorola entities using a variety of allocation keys (such as net sales or headcount). Qualitative factors were applied to appropriately allocate to Airwave Solutions-only costs of functions or services that provide a benefit to Airwave Solutions.[551]

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[547] Parent Company Guarantee Umbrella Agreement, 17 February 2016.
[548] $576,185 Minimum Guarantee Fee as per Table H--2 converted into UK£ at 0.765127 (April 2022 exchange rate) = £441k per year.
[549] Motorola response to Q16 of the RFI dated 16 December 2022, paragraph 41.
[550] Motorola response to Q17a) of the RFI dated 16 December 2021, paragraphs 43–44.
[551] Motorola response to Q17b) of the RFI dated 16 December 2021, paragraph 46.

42 In general, service costs, Motorola told us, were charged across legal entities with a [✂]% mark-up, except that certain allocated third-party costs were charged through without mark-up.

Analysis

43 We asked Motorola to provide a more detailed breakdown of these costs transferred into Airwave Solutions, and this is set out in the two tables below.[552] We note that the first table, for management charges, also reflects the strategic support and guarantee fee, which for our purposes we are analysing separately from SG&A.

Table H-3: Analysis of management charges

£m		12 months to December		
		2018	2019	2020
[✂]	[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]	[✂]
	[✂]	[✂]	[✂]	[✂]
	[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]	[✂]
	[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]	[✂]
	[✂]	[✂]	[✂]	[✂]
	Total management charges as per Table H-1	[✂]	[✂]	[✂]

Note: AW stands for Airwave Solutions
Source: CMA analysis. Internal CMA workbook based on data provided in Motorola response to Q11 of the RFI dated 16 December 2021, attachment.

[552] 'Management charges' is a line items identified in Airwave Solutions' detailed profit and loss account for tax submission purposes. 'Group recharges' is a line item in 'Sundry other admin costs', which is the line item within Airwave Solutions' detailed profit and loss account for tax submission purposes.

Table H-4: Analysis of group recharges

£m	12 months to December		
	2018	2019	2020
[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]

Source: CMA analysis Internal CMA workbook based on data provided in Motorola response to Q11 of the RFI dated 16 December 2021, attachment.

Assessment

44 We note that Motorola appears to have a well-established and granular mechanism to transfer costs of this nature incurred by one member of the Motorola corporate group for products/services provided by another member.

45 In its response to our working paper Motorola made no comment on our analysis of this issue.

Provisional view

46 We have not seen any evidence to suggest Motorola's SG&A support services transfer charges have not been determined on an objective, arm's length basis. Therefore, we do not currently propose to make any changes to these. For the purposes of analysing profitability and our charge control remedy proposal this means that we only (provisionally) make adjustments in relation to the parent company guarantee fee (see above), the strategic support fee (see below), and 'MSI field engineers' (see below).

Strategic support

Background

47 Motorola told us that the strategic management fee had been charged by MSI from 2019 onwards in order to compensate MSI for:

(a) ongoing supply of know-how;

(b) commitment to provide TETRA technology advances and fixes as needed;

(c) management commitment to the customer at the highest levels within MSI;

(d) guarantees of system operation; and

(e) ensuring coordination for ESN transition.[553]

48 Further, Motorola explained, strategic support from MSI in those earlier years (ie 2016 to 2018) had been provided in MSI's role as a shareholder protecting its investment (which would not be appropriate to charge-out) versus the provision of strategic management services/know-how/technology commitment. [554]

49 The strategic management fee, Motorola further explained, had not been charged in earlier years immediately post-acquisition because Airwave Solutions' management had remained in place and the company had operated independently. The organisational integration of Airwave Solutions and MSUK management and also the progress made toward moving ESN to a revenue-producing platform that required integration and transition coordination with Airwave Solutions had not taken place until much later.[555]

50 Motorola also told us that it had removed from Airwave Solutions the following positions whose holders had provided strategic management to Airwave Solutions at the time Motorola acquired the business:

(a) Chief Executive Officer (CEO);

(b) Chief Operating Officer;

(c) Chief Financial Officer;

(d) Chief Technology Officer;

(e) Head of Strategy and Corporate Finance;

(f) Director Customer Service; and

(g) Head of Legal.[556]

51 In addition, Motorola told us that it changed the entire leadership team of Airwave Solutions, including the CEO, within six months of it acquiring the business in order to help it improve its relationship with the Home Office.[557]

52 In Motorola's Hearing we asked Motorola to explain why this fee had appeared in 2019.[558] Motorola's [✂] explained that the reason why it had not been instigated earlier was largely because Airwave Solutions was still operating as a standalone company even though it had been part of Motorola since its acquisition in 2016. While it was the case that Airwave Solutions' senior management had departed, a lot of the old Airwave Solutions processes remained intact and in place, so that it continued to operate independently. With the ending of the original Airwave contracts in 2019, Motorola put in place more oversight of Airwave Solutions to ensure that it

[553] Motorola response to Q11 of the RFI dated 16 December 2021, paragraph 32.
[554] Motorola response to Q11 of the RFI dated 16 December 2021, paragraph 32.
[555] Motorola response to Q11 of the RFI dated 16 December 2021, paragraph 32.
[556] Motorola response to Q7c) to RFI dated 16 December 2021, paragraph 8 and attachment setting out the relevant individuals and their positions.
[557] Motorola Hearing with the CMA on 10 February 2022.
[558] Motorola Hearing with the CMA on 10 February 2022.

reflected Motorola's corporate policy in terms of the ESN strategy, in terms of overseeing the contracts with the Home Office, what were the next steps and things like that. An assessment, Motorola explained was done and it was benchmarked with a third-party consultant as well who came back with a range for a possible transfer charge. That was when the strategic management fee had been put into place.[559]

53 Motorola told us that the benchmark came back with a range of 3 to 7% of revenue. Motorola selected an estimate of [✂]% of revenue, being at the conservative end of the range.[560]

KPMG Report relating to the strategic support fee

54 As explained in paragraph 21 Motorola provided us with the KPMG Report.

55 In this report KPMG describe the primary and supporting functions and key assets associated with MSI's provision of know-how and strategic support services to Airwave Solutions.[561] The primary functions are listed as: contract negotiation (Airwave extension and ESN transition), R&D, oversight and strategic decision-making and maintaining the relationship with the Home Office. The supporting activities are described as: IP protection and the provision of expertise in managing the network. The key assets are listed as: Brand / Motorola credibility, technical know-how and TETRA technology.

56 In addition, KPMG set out what it saw as the economically significant risks to Motorola when providing know-how and strategic support services to Airwave Solutions, including: reputational risk, contractual risk, and network outage risk.

57 KPMG described how it sought to identify comparable internal and/or external agreements that involve transfers of goods, services, intangible property or financing in comparable circumstances. It used the Intangible Spring[562] database to identify agreements involving the provision of strategic know-how and support services. KMPG identified ten agreements (Licensor / Licensee) and their respective royalty rates.

58 KPMG found that the inter-quartile range of royalty rates identified in the selected comparable agreements was between 3.3% and 7.0%, with a median of 5.0%. Therefore, in relation to MSI's provision of strategic know-how and support services to Airwave Solutions, a transfer charge ranging from 3.3% on Airwave Solutions' net sales to 7.0% on Airwave Solutions' net sales was considered consistent with arm's length principle.

Assessment

Our assessment of KMPG's analysis

59 We note that the approach adopted by KMPG benchmarks Motorola's strategic support to Airwave against a franchisor/franchisee model. In our provisional view, we do not consider, as a point of principle, that this is a reasonable characterisation of the nature of interactions between

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[559] Motorola Hearing with the CMA on 10 February 2022.
[560] Motorola Hearing with the CMA on 10 February 2022.
[561] The KPMG Report.
[562] Intangible Spring is a US firm that, amongst other things, offers access to proprietary databases relating to intangible-owning businesses. Customers of Intangible Spring would therefore be able to benchmark the value of their, or their own clients', intangible assets using data held in these databases.

Airwave Solutions and the rest of Motorola. The elements of a standard franchise agreement typically include:

(a) An initial franchisee lump sum investment;

(b) royalty payments to franchisor expressed as a percentage of franchisee revenue to cover use of franchisor's name, brand, methods, know-how, processes, marketing efforts, and strategic support;

(c) franchisee's purchase of inputs/materials from franchisor;

(d) franchisee's right to operate exclusively in a defined territory; and

(e) franchisor's right to terminate the franchisee's contract.

60 We note that

(a) Airwave Solutions operated in its current form independently of Motorola for the first 15 years of its lifespan and therefore appears to have had the know-how etc to provide LMR network services without Motorola's support;

(b) it continues to use its own brand rather than Motorola's;[563]

(c) Motorola separately provides services in the UK via its involvement in ESN (ie Airwave Solutions does not have an exclusive right to operate in the UK);

(d) Airwave Solutions' purchases of inputs from Motorola are qualitatively similar to the situation when the two businesses were under separate ownership; and

(e) it is not clear to what extent Motorola has the right to terminate Airwave Solutions' contract with the rest of Motorola (if any such contract exists for these strategic support services) or what the practical implications would be for Airwave Solutions if it were to do so.

61 We are also concerned that the approach adopted by KPMG may result in the double-counting of costs in Airwave Solutions' financial statements. In particular, we observed that we would expect many, if not all, of the know-how and support services detailed in the KPMG Report to be covered by other, pre-existing transfer charges within Airwave Solutions' financial statements. For example:

(a) Under the primary functions, KPMG refers to MSI's support taking the form of reviewing and approving business cases for new investment in network equipment or R&D, setting annual strategic objectives and sharing metrics to help gauge efficiency and operating risk over time to better understand the Airwave network's performance.[564] We consider these activities to reflect the normal provision of management services / guidance that might be expected within a corporate group and that we might expect to be covered by a recharge of group- and/or regional level overhead / administrative costs. As set out in paragraphs 38 to 46 above, we understand that Airwave Solutions is recharged for such group- and regional-level costs, including a [✂]% mark-up for the centre. It is unclear, therefore, why any further additional charge is required;

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[563] Further, we note that we are not aware that Airwave Solutions has made any 'lump sum' investment in Motorola to adopt the brand or take on its ways of working as is usual in a franchise agreement.
[564] The KPMG Report, pages 56–63.

(b) KPMG states that Motorola provides Airwave Solutions with the benefit of its extensive know-how in providing mission critical communications (in general) and TETRA technologies, software and services (in particular). However, Airwave Solutions pays a specific fee for MSI field engineers, which Motorola describes as covering hardware maintenance and software support. These costs are included in Airwave Solutions operating costs, as they were prior to Motorola's acquisition of the business in 2016;

(c) KPMG describes the strategic fee as covering Motorola's protection of its IP rights, the benefit of the credibility of the Motorola brand, the benefit of MSI-specific patents and know-how in respect of TETRA technology, which is embedded in switching platforms and base stations that are deployed by Airwave Solutions in delivering the Airwave Network, and the investment in supporting the ongoing functionality of the equipment. However, we consider that when a firm like Airwave Solutions purchases Motorola branded goods then it is also buying all these product features as part of the brand promise that is associated with them, ie these 'benefits' or features are included in the purchase price of the equipment. An emergency communications network, such as Airwave Solutions, would not purchase equipment that was unlikely to be supported over its useful life, nor would it expect to pay extra (ie over and above the purchase price) for the embedded features of that equipment or for the supplier's costs of protecting its IP. We note that Airwave Solutions purchases significant capital equipment from Motorola and we set out our assessment and provisional view of the level of these transfer charges in paragraphs 109 to 113 below.

Other points

62 In order to distinguish the services provided under this heading from services already separately charged for either discretely or as part of a bundle, we would expect to see more specific documentation setting this out than we have so far seen. For example, a contract / contracts between the relevant two legal entities within Motorola might set out these services and associated deliverables and stipulate what would happen in the case of non-performance.

63 In addition, we observe that valuing other aspects of the 'strategic support' provided by the rest of Motorola to Airwave Solutions, notably the support in building relationships with and/or negotiating with the Home Office, based on a royalty/franchisee model appears problematic in the situation where Airwave Solutions has significant market power vis-à-vis its main customer, the Home Office. It is very difficult to distinguish the value added from these negotiation services from any potential supernormal profits Airwave Solutions is able to generate from customers and ultimately taxpayers.[565] An approach which valued such management time and input at cost (or cost plus a small margin) would avoid this potential circularity where market power apparently raises costs. In this context, we note that Airwave Solutions is already 'recharged' for global and regional group costs as set out in paragraphs 38 to 46 above. Motorola has not provided evidence or argumentation to support the view that these recharges do not fully /appropriately recover the costs of the support provided to Airwave Solutions.

64 We note Motorola's submissions at paragraphs 49 to 52 regarding the timing of changes in the way the Airwave Solutions business was managed once Motorola took ownership and the

[565] We observe that much of the contribution that Motorola management is making to Airwave Solutions, and also MSUK in relation to the ESCMP, appears directed at improving the terms on which Motorola is able to negotiate with the Home Office (Airwave Solutions principal customer), rather than to improve the level of service / reduce the level of resources used to provide the service actually delivered.

changes Motorola made to the leadership team of that business. We find these submissions somewhat contradictory in that, on the one hand, they suggest Motorola took immediate measures to change the leadership team, and to reduce its cost to Airwave Solutions, on assuming control of the business in 2016 and, on the other hand, they suggest that substantive changes in the way the business was managed, and by implication changes to its cost base, did not take effect until 2019. In this regard we observe that Airwave Solutions' total staffing costs remained broadly static across 2016 and 2017, at around £34 million per year, before increasing to between £36 to £38 million per year in the years 2018 to 2020.[566]

65 There are situations where one part of a corporate group, typically the centre, makes investments that benefit other parts of the corporate group and the recovery of those investments, unlike here, cannot be reflected in the price charged for transfers of goods or services across the internal supply chain, simply because no such internal supply chain exists. In that case an internal charge based on a percentage of revenues or profits might serve both as a means to recover the cost of such investments and a mechanism for the resulting financial benefits to be shared. We understand, however, that in such cases it would be expected that the incremental positive impact on the level of profits generated by the recipient of the charge would be capable of being demonstrated. Motorola has not provided us with any such analysis or evidence to support the level of its strategic support fee. Further, as set out above, we note that Airwave Solutions appears to be charged via various fees for this type of services (SG&A recharges, 'MSI field engineers' and capex), ie there is an internal supply chain, such that a strategic support fee is not required in addition, ie it would double-count these services.

66 As previously noted at paragraph 28, the KPMG Report is a planning study without conclusions eg in relation to the level of the royalty fee chosen and which set of revenues it was applied to. Again, we would have expected to have also been provided with a document setting out the amount chosen and the basis for that choice.

Motorola's response to our working paper

67 In its response to our working paper Motorola told us that, in addition to the services that it provided to Airwave Solutions under this umbrella (as set out in paragraph 47), it had also secured a [✂] credit facility [✂].[567]

68 Motorola also explained that it saw the intercompany relationship between Airwave Solutions and the rest of Motorola as involving numerous interconnected transactions that in combination had no clear market analogue. As the activities and IP of each party contributed significantly to the combined profit or loss of Motorola as a whole, a profit split method might be, Motorola told us, appropriate for UK/US tax purposes. It however had rejected that as administratively complex. It also wanted to avoid too drastic a shift from the prior transfer pricing methods for transactions in existence before the 2016 Airwave Solutions acquisition.[568]

69 Motorola further explained that it had therefore sought another mechanism for pricing the supplemental transactions and value that had been brought to the Motorola-Airwave Solutions business relationship, one of which[569] was Motorola's strategic support, technical expertise and know-how, contract negotiation support, project coordination with respect to ESN migration and

[566] As per CMA analysis of the amounts disclosed in the statutory financial statements for staffing costs.
[567] Motorola response to the Transfer Charges Working Paper, 27 May 2022.
[568] Motorola response to the Transfer Charges Working Paper, 27 May 2022.
[569] The other supplemental transaction being the parent company guarantee.

interoperability, and strategic project commitment with respect to the network refresh, including technical know-how (collectively 'know-how and strategic support').[570] Motorola quoted the KPMG report as being clear about the fact that the nature of the support that Motorola provided to Airwave Solutions was similar to a franchise arrangement and that KPMG has suggested the use of a royalty-based approach, rejecting other potential approaches.[571]

Provisional view

70 We note that KPMG's range for this transfer charge is based on royalty agreements and that a set percentage is applied to Airwave Solutions' revenues. We however provisionally conclude that this is not appropriate for the following reasons:

(a) We are not minded to regard the interactions between Airwave Solutions and the rest of Motorola as meeting the criteria in paragraph 59 for characterising the relationship as akin to those between a franchisor and franchisee; we note that in its response to the working paper, Motorola neither disputed those criteria nor sought to challenge our application of each of those criteria to the rest of the Motorola / Airwave Solutions relationship.[572]

(b) There appears to be significant double-counting in terms of the support, know-how and services that are stated to be covered by this strategic support fee but for which other (material) transfer charges have been made to Airwave Solutions;

(c) While Airwave Solutions may benefit from the advantageous credit facilities set out in paragraph 67, these will be reflected in financing costs rather than operating costs. In our WACC assessment, we have considered a range of capital structures, including 100% equity-financing and one in which the relevant cost of debt is 2.5%. In either of these cases, our financing cost allowance will be more generous than the costs actually incurred by Airwave Solutions in this respect and is, therefore, favourable to the business in the context of profitability analysis;[573]

(d) This transfer charge appears to us to be, at least partly, capable of remunerating MSI's efforts to potentially extract supernormal profits for Airwave Solutions in its negotiations with the Home Office;

(e) Motorola's support reflects Motorola's overall interests, including with respect to ESN, not Airwave Solutions' interests in isolation (and so should not be wholly attributed to Airwave Solutions in any case); and

(f) Finally, and to the extent that MSI's input is directed at improving the operational performance of Airwave Solutions, and that input that is not already reflected in the cost base, it appears to us that using a royalty-based system is not an appropriate way to measure the true economic cost of MSI resource deployed. Costings based on the use of timesheets of the relevant personnel would directly provide evidence of the cost to Motorola of the expertise being provided to Airwave Solutions. Alternatively, a detailed quantitative assessment of the value added to Airwave Solutions by the provision of the

[570] Motorola response to the Transfer Charges Working Paper, 27 May 2022.
[571] Motorola response to the Transfer Charges Working Paper, 27 May 2022.
[572] Motorola response to the Transfer Charges Working Paper, 27 May 2022.
[573] See Appendix J: Cost of Capital.

strategic support services, could also provide a basis for assessing the economic value of these services and therefore what the potential economic cost may be.

71 For these reasons, and in particular due to the inclusion of material other transfer charges which, in our view cover the various services which Motorola submits are remunerated by the strategic support fee, our provisional view is that the level of this fee within our analysis should be set to zero in order to avoid double-counting and we have done so for the purposes of the analysis of profitability and informing our charge control remedy proposal.

'MSI field engineers'

Background

72 As stated at paragraph 9, our initial focus in the area of maintenance charges was the increase in charging for MSI field engineers.

73 In Motorola's Hearing we observed that for 'MSI field engineers' between 2016 and 2019 there had been a transfer charge around about £[✂] million per year on average but that was by 2020 up to £[✂] million, roughly doubling. We asked what caused this increase.[574]

74 Motorola provided two explanations. First, Motorola told us that a similar assessment to those for the guarantee and strategic support fees had been undertaken.[575] In summary, the prices that had been agreed originally between Motorola and Airwave Solutions were very out of date at that point. Therefore, an extensive piece of work had been done in order to ascertain what the current prices should be. That, Motorola explained, was why there had been a significant increase between those years.[576]

75 Airwave Solutions' [✂] told us that a piece of work had been done to evaluate what Motorola called software support agreements (SSAs). That was a fee levied against the support of the software and hardware repairs. Motorola characterised this as a typical support arrangement. Motorola had gone through a valuation piece of work to understand what would be an appropriate software support charge for what had become an increasingly aging asset. Motorola stated that there had been an internal paper to support the transfer charge.[577]

76 Motorola provided us with the following two reports which it described as follows:[578]

(a) Airwave [Hardware] (HW) [Software] (SW) Support – Final Rationale Document Updated October 2020;[579] and

(b) Airwave Motorola Support Agreement Extension Jan 2022 to Dec 2022 V3 Final.[580]

[574] Motorola Hearing with the CMA on 10 February 2022.
[575] Motorola Hearing with the CMA on 10 February 2022.
[576] Motorola Hearing with the CMA on 10 February 2022.
[577] Motorola Hearing with the CMA on 10 February 2022.
[578] Motorola response to Q1b) and c) to RFI dated 16 February 2022, paragraph 6.
[579] Motorola response to Q1b) and c) to RFI dated 16 February 2022, paragraph 6 label for attachment 'Airwave HW SW Support – Final Rationale Document [re MSI engineers] Updated October 2020' dated July 2020.
[580] Motorola response to Q1b) and c) to RFI dated 16 February 2022, paragraph 6.

Final Rationale document for revised pricing for the period 1 January 2020 to 31 December 2022

77 In this document,[581] Motorola set out the following:

> The latest Airwave - Motorola Support Services Contract expired on 31 December 2019 and renewal was requested to extend the Term by a further 3 years to 31 December 2022.
>
> The previous pricing model had not been updated since 2016 and no longer correctly represented the current and forecast system configuration and components, and was also based on 2017 pricing.
>
> In order to bring the Contract up to date for 2020 and beyond, an outline forecast of the Airwave Network profile for the years 2020 to 2022 inclusive was provided by Airwave.
>
> This outline Airwave Network profile provided a forecast for the quantity of [✂] infrastructure zones as well as the estimated number of [✂][582] ([✂][583] & [✂][584]) and the evolving dispatcher provision anticipated at the end of each calendar year over the extended Term of the Contract. Given that the component quantities were constantly changing over time, due to network refresh activities, a midyear average view was taken for each component as a basis for the pricing model.[585]

78 This document set out that, having taken account of Motorola's forecast component quantities for 2020, 2021 and 2022,[586] and applying uplifts for both Motorola's assumed profile for obsolescence of the existing infrastructure and inflation at a nominal rate of [✂]% per annum,[587] the relevant transfer charges to Airwave Solutions, according to Motorola's service calculator, should be a flat £[✂] million for those same years.[588] [589] Finally, in line with common practice, the document explained, a fair market value (FMV) discount of [✂]% had been applied to the total value. The total discounted annual SSA charges are shown below, generating a charge of £[✂] million per year.[590]

Support Agreement Extension for the period 1 January 2020 to 31 December 2022

79 This document is a contract[591] ('agreement between Airwave Solutions Limited (Company Number 03985634) and Motorola Solutions UK Limited (Company Number: 00912182)') entitled *Work package between Airwave Solutions and Motorola Solutions UK [13021]*. Page 2 sets out the history of the contracts between Motorola and Airwave Solutions since 30 June 2011 when the original framework agreement between Motorola and Airwave Solutions was entered into.[592]

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[581] The document itself is titled: *Airwave - Motorola Support Services Contract Update Rationale (July 2020).*
[582] [✂].
[583] [✂].
[584] [✂].
[585] Motorola response to Q1b) and c) to RFI dated 16 February 2022.
[586] Motorola response to Q1b) and c) to RFI dated 16 February 2022.
[587] Motorola response to Q1b) and c) to RFI dated 16 February 2022.
[588] Motorola response to Q1b) and c) to RFI dated 16 February 2022.
[589] Motorola response to Q1b) and c) to RFI dated 16 February 2022.
[590] Motorola response to Q1b) and c) to RFI dated 16 February 2022.
[591] It may be / have been a requirement of the Original PFI Contract for all supplier agreements to be contractually agreed.
[592] Motorola response to Q1b) and c) to RFI dated 16 February 2022.

80 This 36-page document dated 'July 2020' but with a footer dated December 2019, Schedule F – Pricing states that:[593]

> Motorola shall supply to Airwave the Deliverables as described within this Work Package at the charges set out in the figure below:

Figure H-2: Table of charges for years 2020 to 2022

[✂]

81 Schedule F also has sections on 'Hardware Charge Variations' and 'Subsidiary Service Charges' with a link to the TOPS (Terminal and Other Peripheral Suppliers) webpage at Airwave Solutions' website.[594]

Field engineers seconded from MSUK

82 Motorola told us that field engineers seconded from Motorola UK continued to be deployed within Airwave Solutions but as from January 2020 were not included within the scope of the above contract ie the Support Agreement Extension.[595]

Motorola response to our working paper

83 Motorola told us that the cost for support from 'MSI field engineers' reflected in the Airwave Solutions financial statements for the period until 2019 had been artificially reduced because of a pricing concession offered to Airwave Solutions in 2014 that should have been reverted much earlier. The subsequent increase was, Motorola explained, the consequence of the removal of an outdated discount combined with an increasing complexity of the support requirements given that a substantial portion of the Airwave Network's infrastructure at this time was beyond the end of support life.[596]

84 The support fees from 2020 onwards, Motorola continued, had been calculated using the Motorola service calculator, which was its standardised tool for generating prices based on the key inputs of the system being supported. That service calculator was used throughout Motorola for pricing service packages across all technologies and regions and took as inputs, for example, the number of sites, the number of control rooms, the current system release and the age of the equipment. The output of the service calculator pricing was shown in Table 2 of the Final Rationale document.[597] [598]

85 Motorola told us that field engineers seconded from Motorola UK were now excluded from the contract and that was the explanation for why the figures quoted in the Final Rationale document were £[✂] million lower than those in the financial statements for Airwave Solutions.[599]

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[593] Motorola response to Q1b) and c) to RFI dated 16 February 2022.
[594] Motorola response to Q1b) and c) to RFI dated 16 February 2022.
[595] Motorola response to the Transfer Charges Working Paper, 27 May 2022.
[596] Motorola response to the Transfer Charges Working Paper, 27 May 2022.
[597] See paragraphs Appendix H:77 to **Error! Reference source not found.** above for an explanation of this document.
[598] Motorola response to the Transfer Charges Working Paper, 27 May 2022.
[599] Motorola response to the Transfer Charges Working Paper, 27 May 2022.

Motorola response to our formal information request

86 In its response Motorola further commented on the level of the previous charging to Airwave Solutions. It told us that in the previous re-negotiation, in 2014, for hardware and software support it had been clear that Airwave Solutions [✂] for software support.[600] Furthermore, [✂].[601]

87 In response to one of our questions on 'MSI field engineers', Motorola told us there had not been any material change to either the cost to MSUK of seconding engineers to Airwave Solutions or the transfer charges levied by MSUK for these engineers over the period 2016-2021. The higher level of transfer charges, Motorola, explained, referred to the higher pricing charged on Hardware and Software Maintenance Support.[602]

88 Motorola explained that, in contrast to the approach taken within the management accounts for the Airwave Business Unit, Airwave Solutions financial statements also reflected a large component of cost attributable to software licensing and support. That, Motorola explained, covered the upfront costs for software development, labs, testing etc, and all the support that comes with the right to use Motorola software such as software updates, patches, security updates and engineering support on various levels for troubleshooting, defect resolution and maintenance. Those costs were not allocated to the Airwave Business Unit but attributed centrally to Motorola's R&D departments.[603]

Analysis of level of internal charges by different type of maintenance activity

89 We asked Motorola to give us a year-by-year analysis of internal charges for maintenance on two bases: one based on transfer charges and the other based on the costs attributed to maintenance as reported within Motorola's management accounts for the Airwave Business Unit. The costs in the management accounts are reported on the basis of the 'actual expense incurred (labour and repairs)'. We summarise that analysis in Table H-5 below.

[600] Motorola gave examples of Redhat, VmWare, Oracle and SAP as charging more for software support. Motorola response to Q2 of RFI dated 12 April 2022.
[601] Motorola response to Q2 of RFI dated 12 April 2022.
[602] Motorola response to Q2 of RFI dated 12 April 2022.
[603] Motorola response to Q1 of RFI dated 12 April 2022.

Table H-5: Internal charges for maintenance costs 2016 to 2021, £ million

Contract negotiated with	*per Airwave Solutions transfer charges basis*						*per Airwave Business Unit basis*					
	Macquarie (see Note)				*Motorola*		*Macquarie*				*Motorola*	
	12 months to						*12 months to*					
Categories	2016	2017	2018	2019	2020	2021	2016	2017	2018	2019	2020	2021
'MSI field engineers'	[✂	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Software & hardware support	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Total	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]

Note: The contract with Macquarie is dated December 2013 and covers the period from 1 January 2015 to 30 June 2017. (Motorola response to Q2 of RFI dated 12 April 2022. The parties to the contract, Airwave Solutions and Motorola, then agreed on 30 June 2017 to extend the duration of the contract to December 2019. (Motorola response to Q2 of RFI dated 12 April 2022)

Source: CMA analysis based on Motorola response to Q1 of RFI dated 12 April 2022.

90 We also gave Motorola an opportunity to make further submissions presenting any additional evidence or analysis that supported the higher level of internal charging for 'MSI field engineers' over and above the contemporaneous documentary evidence that it had which supported the terms of the revised contract.[604] We received no response from Motorola.

Assessment

91 Our provisional view is that the price charged from 2014 to 2019 does not necessarily reflect a below fair market price. We would expect the then owner of Airwave Solutions, Macquarie, to have sought to achieve the best prices from all its external suppliers, including Motorola. The level of the charge reflected the outcome of a negotiated bargain between two large, well-informed firms. As we write in paragraph 4, Airwave Solutions would have had every incentive to minimise its cost base with an external third party. This contrasts with the current situation where the level of the charge reflects a unilateral decision on the part of the rest of Motorola that is imposed on Airwave Solutions.

92 Whilst it might be possible that the activity, and therefore the cost, of maintaining a network would increase as it nears the end of its economic useful life, Motorola has not, through the documentation submitted to us, evidenced that across the period before and after the rise in this fee. Instead, it appears to us that Motorola has applied standardised premia to reflect the increased level of activity that it is forecasting. We also cannot, within the documentation provided to us, see evidence to support the increases in prices charged for individual tariff elements that generate the total sums shown in the tables in the Final Rationale document.

93 We note that Motorola has told us that the sums that it charges Airwave Solutions for hardware and software support are generated by its service calculator[605] but it has not provided us with that calculator, populated with the relevant inputs which generate the outputs as shown in table 2 of the Final Rationale document, notwithstanding our request for all documents that existed when the revised internal contract was drawn up to support / explain the higher level of internal

[604] Email from CMA to Motorola, 13 April 2022.
[605] See paragraph Appendix H:84.

charging. Other information that Motorola has provided, however, provides an alternative explanation for the increase in the level of internal charges post 2018: an increased recovery of around £[5 to 10] [✂] million per year for software overheads.[606] That suggests to us that the level of the charge has been increased by Motorola materially, something it may well not have been able to do if it had had to negotiate with a third party.

Provisional view

94 In summary we observe:

(a) we have not received evidence that the level of fees agreed in 2014 was not in line with market prices – we provisionally consider this to be the best evidence we have of arm's length prices for such support (as negotiated between two independent, well-informed parties);

(b) no evidence has come to our attention of the need for increased levels of support despite Motorola's submissions that an adjustment to the previously negotiated level of fees (effective from 2014 to 2020 inclusive) would be warranted to take account of the additional volume of work); and

(c) based on all the submissions we have received from Motorola, it appears to us that that Motorola has chosen to increase mark-ups on the direct cost of providing the services contracted for.

95 In the absence of evidence for increased support activity on the ground, our provisional view is that the level of the economic costs should be set at the previous level ie at approximately £[✂] million per year for the purposes of the profitability analysis and informing our charge control remedy proposal. We propose to index this sum for inflation over the 2020 to 2026 period.

Equipment purchases

Background

96 Motorola adopts two different approaches to costing internally sourced capex items for Airwave Solutions. For internal decision-making purposes it uses one basis ('net production cost') and for the basis of preparing statutory accounts it uses other bases as explained below.

Net production cost

97 Motorola told us that, in relation to the Airwave Business Unit, transfer charges for network equipment manufactured, acquired and/or assembled by other Motorola companies, were recorded at net production cost to Motorola.[607]

98 Motorola told us that net production cost was established via a global, internal online database referred to as the '[✂]. That [✂] was maintained by its Product and Supply Chain Costing team. The cost figures in the [✂] were refreshed [✂] through an automatic global reformulation process. That process calculated the cost of each item based on a historic [✂] purchase average cost, or the last [✂] days (whichever was lower). The [✂] was also updated [✂] to include the

[606] See paragraph Appendix H:88 and also Motorola response to Q1 of RFI dated 12 April 2022.
[607] Motorola response to Q14 of the RFI dated 16 December 2021.

cost of new part items. Motorola maintained that it always adopted that approach (ie the use of the [✂]) to establish the net production cost for all types of Tetra equipment.[608]

99 Motorola told us that it had used the June Model as a scenario planning model when contemplating how it was going to respond to the Home Office request to give it a price on an extension to the Airwave Contracts. That capex had been priced on the internal cost to Motorola of manufacturing its own equipment.[609]

Basis of transfer charging into Airwave Solutions

100 Motorola told us that Motorola's August Model had been prepared on the same basis as the statutory financial statements. All of Motorola's capex would be reflected at what Motorola internally calls the gross price, in other words on a third-party pricing basis. That, Motorola noted, had been the basis on which equipment had been purchased before Airwave Solutions had been acquired by Motorola.[610]

101 Motorola subsequently clarified that transfer charges into Airwave Solutions, the legal entity rather than the internal reporting unit, were calculated on one or other of the following two bases:

Motorola's 2012 Price Book for Airwave Solutions

Items[611] appearing in its 18-page Word document entitled *Motorola / Airwave 2007 Agreement Price Book 2012* ('**The 2012 Price Book**') are priced in accordance with the prices set out therein.[612] Motorola explained that this price book was in place prior to Motorola's acquisition of Airwave Solutions and was still used at present.[613]

2015 derived mark-up rates added to net production cost

For all Motorola-sourced equipment purchases that were not catalogued by Motorola for Airwave Solutions in or up to 2012, Motorola now charges Airwave Solutions according to a pricing formula that seeks to replicate the approach Motorola took when seeking to provide a price to the Home Office for an interworking solution[614] in late 2015. Motorola uses mark-up rates on net production costs pegged to the rates used in the development of its pricing for that interoperability solution between the Airwave Network and ESN. As these rates were first utilised in 2015, they pre-dated Motorola's acquisition of Airwave Solutions.[615]

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608 Motorola response to Q25a) of the RFI dated 16 December.
609 Motorola Hearing with the CMA on 10 February 2022.
610 Motorola Main Hearing Transcript, 10 February 2022.
611 The 2012 Price Book not only sets out the price to Airwave Solutions for various items of equipment but also the charge out rates for various grades of Motorola personnel and also for the provision of training. We nevertheless refer to all these items in this context as 'equipment purchases'.
612 Motorola response to Q1e) to the RFI dated 16 February 2022.
613 Motorola response to Q1e) to the RFI dated 16 February 2022.
614 The Home Office as part of the ESN Lot 3 contract had directly approached Motorola in 2015 to price up an interworking solution between the Airwave Network and ESN. This occurred before Motorola agreed to acquire Airwave Solutions.
615 Motorola response to Q25b) to the RFI dated 16 February 2022.

Motorola's list prices

102 Motorola had earlier told us that it did not give any discounts to Airwave Solutions off list price as the equipment it supplied was bespoke/tailored to the Airwave Network.[616]

Average mark-ups on equipment sourced from rest of Motorola

103 Motorola provided us with its latest capex forecast for the Airwave Network for the period 2021 to 2026 analysed by network refresh programme element and also year-by-year. Figures were prepared on two bases, the 'cost' figure based on the [✂] materials only' costing approach and the 'transfer charge' based on either the 2012 Price Book or the mark-ups reflected within the 2015 interworking proposal. We have re-cast that information to generate the following table.

Table H-6: Rest of Motorola-sourced expenditure for Airwave Solutions network refresh capex programme 2021 to 2026 (all figures in £ millions unless otherwise indicated)

	Network refresh programme element	Cost	Transfer charge	% mark-up
[✂]	[✂]	[✂]	[✂]	[✂]
	[✂]	[✂]	[✂]	[✂]
	[✂]	[✂]	[✂]	[✂]
	[✂]	[✂]	[✂]	[✂]
	[✂]	[✂]	[✂]	[✂]
	[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]	[✂]
	Total rest of Motorola-sourced capex	[✂]	[✂]	[✂] [250 to 300]

Source: CMA analysis which re-presents Motorola's latest capex forecast for the Airwave Network. Motorola's latest capex forecast (Capex Forecast (FINAL)) was provided on 22 April 2022 in response to Q5 of the RFI dated 8 April 2022).

104 This analysis indicates that the most individually significant network refresh programme elements which utilise Motorola equipment are the replacement of the existing end-of-life Megastream circuits historically provided by BT and for base station upgrades. Mark-ups on materials costs / net production costs across each programme element vary considerably.

Motorola's margins on equipment sales to third parties

105 We asked Motorola to provide us with its global margins on the sales of TETRA/LMR products or equipment (excluding handsets) to third parties across the world averaged over the three-year period 2019 to 2021 inclusive. Costs for this calculation, so we requested, should be based on contemporaneous net production cost as per its [✂].[617]

106 We requested this information in order to compare the average level of mark-up on costs Motorola was recently able to achieve on sales of LMR equipment against that it achieved on the

[616] Motorola response to Q27b of the RFI dated 16 December 2021.
[617] Request 19 of the Motorola RFI dated 12 April 2022.

sale of other types of equipment and also to use these levels as a cross check against the mark-up levels Motorola is achieving when selling its equipment to Airwave Solutions.

107 In its response, Motorola provided a disaggregation of its margins between sales for 'Systems New MSI' and the rest of its business. Motorola explained that 'Systems New MSI provided the margins earned on sales of LMR products excluding handsets. Motorola further explained that it had adjusted costs (and therefore margins) to include only costs that are included within the [✂].[618]

108 We have re-presented the information that Motorola provided and set this out in Table H-7, on which we make the following observations.

(a) We requested information on margins on the sales of equipment but Motorola has in fact provided us margins on the sales of equipment and sales of services based on that equipment combined; and[619]

(b) Not all costs reported within Motorola's cost of sales are captured in Motorola's [✂] costing system. The former included additional direct type costs such as 'product labour', 'intercompany profit elimination' and 'indirect overhead'.

[618] Motorola response to the Transfer Charges Working Paper, 27 May 2022.
[619] Motorola reconciled the figures provided to the aggregate of its two operating segments, namely 'cost of *products* sales', 'cost of *services* sales'.

Table H-7: Motorola's disaggregated global average sales margins and mark-ups on costs for 2019 to 2021 (all figures in $ millions unless otherwise indicated)

		'Systems New MSI'			*All other products / services*			*Total Motorola*		
		2019	2020	2021	2019	2020	2021	2019	2020	2021
= a	Net sales	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	7,888	7,414	8,171
= b	Materials cost (as per [✂])	[✂]	[✂]	[✂]						
a-b = c	Gross margin on materials cost (='mark up')	[✂]	[✂]	[✂]						
= d	Other (non-[✂]) direct costs	[✂]	[✂]	[✂]						
b+d = e	Total cost of sales	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	3,957	3,806	4,130
a-e = f	Gross margin (based on cost of sales)	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	3,931	3,608	4,041
c/a x 100 = g	**Gross margin %** (materials cost)	[✂]	[✂]	[✂]						
f/a x 100 = h	**Gross margin %** (total cost of sales)	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	50	49	49
c / b = i	**Mark up on materials cost** expressed as a multiple of materials cost	[✂]	[✂]	[✂]						
i x 100 = j	above expressed as a percentage	[✂]	[✂]	[✂]						
			[150 to 200 for the row above]							
f / e = k	**Mark up on cost of sales** expressed as a multiple of cost of sales	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	0.99	0.95	0.98
k x 100 = l	above expressed as a percentage	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	99	95	98

1.4

Source: CMA analysis which re-presents Motorola response to Q19 of the RFI dated 12 April 2022.

Assessment

109 The evidence that we have gathered does not allow us to assess robustly whether the prices charged to Airwave Solutions for Motorola capital equipment and labour can be considered to be arm's length. We note the following points:

(a) The Analysys Mason and Deloitte reports indicate that the cost of TETRA equipment has declined significantly over the last two decades. In this context, we are concerned that the use of outdated price books, ie those from 2012, may result in a higher price than may be justified in current market conditions.

(b) The mark-ups charged by Motorola to Airwave Solutions on capital equipment (which average [250 to 300] [✂]%) are materially higher than the average mark-up charged on sales of such equipment across Motorola as a whole over the 2018 to 2020 period (which average [150 to 200] [✂]%).

(c) The information provided does not allow us to assess whether the level of mark-ups charged on capex reflect current market conditions across the full range of capital purchased by Airwave Solutions. In particular, the mark-up charged by Motorola on the interworking solution proposal may not reflect the reasonable level that it might expect to earn on other projects and/or in other situations. We note that during its hearing Motorola explained that the (high) margin on the interworking solution was usual for software due to the need to recover R&D costs.[620] However, an internal Motorola email referred to the pricing of this solution as '[✂].'[621]

110 In response to our working paper on transfer charges Motorola told us that we had ignored completely that part of the interworking order that is associated with cost and equipment (to which the mark-up is applied) only accounted for only around [✂]% of the total contract value.[622] We however note that the email we refer to refers to 'delivery [of] the interworking capability to the scope, price and delivery timescales offered'.

Provisional view

111 We provisionally conclude that there are two basic approaches that would be valid to adopt here, one based on costs and the other based on external pricing. An approach based on mark-up on costs, which in principle would include a suitable return on its capital employed, would reflect a 'single Motorola' approach to its dealings with the Airwave Solutions. In other words, Motorola looks at the pricing of equipment through the lens of the incremental return it derives from Airwave Solutions. On this basis the selling of equipment and other capex could be seen as a secure add-on business to its operation of the Airwave Network. The other approach would be to price the equipment sales on the basis of margins / profits achieved on comparable third-party sales.

112 There appears to be no way for us to reliably narrow down what the range should be for the level of individual transfer charges for the array of equipment, some of which is customised to the specific requirements of the Airwave Network, that Airwave Solutions is acquiring from the rest of Motorola without also investigating the LMR equipment market. We do, however, note that, based on the evidence provided to us by Motorola, its margins / mark-ups on TETRA/LMR based products appear to be lower than that it achieves elsewhere within its business[623] and lower than the level it envisages achieving across the Airwave Network refresh programme.[624]

113 In practice this means that, since we are unable to do so, and unlike for the other transfer charges we consider in this appendix, we are provisionally not making a specific conclusion on what we consider the level of the individual transfer charges should be here. We take into account this reality as part of a broader judgement that feeds into our outline proposals for a charge control remedy. For the purposes of our profitability analysis we use the capital expenditure actuals / forecasts for internal purchases that Motorola has recently provided us, which reflect its latest central expectation for spending on Airwave Solutions' network refresh programme subject to specific adjustments we make unrelated to the basis for transfer charging that Motorola has adopted.[625]

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[620] Motorola Hearing with the CMA on 10 February 2022.
[621] Internal Motorola email, 17 February 2016.
[622] Motorola response to the Transfer Charges Working Paper, 27 May 2022.
[623] See paragraphs Appendix H:105 –Appendix H:108.
[624] See paragraph Appendix H:109(b).
[625] See Appendix G.

Appendix I: Identification and valuation of fixed assets

Introduction

1 In section 6 we set out our provisional assessment of the valuation of the assets Airwave Solutions employs in providing the Airwave Network. This appendix contains the evidence which we have considered on the various approaches to valuing Airwave Solutions' assets.

2 Airwave Solutions employs a range of tangible fixed assets and current assets in providing its network services. These are recognised on its balance sheet and we consider that they should be included in its capital base.

3 We asked Motorola whether there were any assets not included on the balance sheet that Airwave Solutions required to provide its services. Motorola told us that it believed this question became irrelevant when opening asset values are established on the basis of a proper modern equivalent asset value ('MEAV') looking at replacement costs rather than assets listed on the balance sheet.[626] Therefore, we have focused our analysis on the tangible fixed assets employed by the business.

4 We note that our analysis takes into account current assets and liabilities separately, as set out in Appendix G.

Evidence on replacement cost estimates

5 This subsection sets out the evidence we assessed on the potential value to the business of the assets of the Airwave Network. The Analysys Mason report was prepared during our investigation whereas the other pieces of evidence that we have considered were prepared prior to our investigation:

(a) An expert report dated 28 February 2022 from Analysys Mason estimating the total replacement cost of the Airwave Network;

(b) An expert report, prepared by Deloitte for Motorola, on the fair market value of Airwave Solutions' assets.[627] This report was dated 3 August 2016 and was prepared 'to assist in estimating the fair value of certain intangible assets acquired and liability assumed from Airwave Solutions Ltd… for financial reporting purposes'. This gave a 'fair market value' of Airwave Solutions' assets of £[✂] million; and

(c) An internal Motorola email, dated 31 January 2017 and titled 'Airwave Acquisition Valuation', setting out [✂] ([✂], Motorola) views on the replacement cost of the Airwave Network assets.[628] This suggested that the replacement cost at fair market value of the network's assets was $[✂] million, or approximately £[✂] million at exchange rates at that time.[629]

[626] Motorola's response to the profitability methodology working paper, 10 January 2022, paragraph 34.
[627] Deloitte report for Motorola, 3 August 2016.
[628] Internal Motorola email, 31 January 2017.
[629] Exchange rate of $1.26 to £1 as of 31 January 2017.

Analysys Mason Report (2022)

6 Analysys Mason was commissioned by Motorola to develop a modern equivalent asset (MEA) assessment of the Airwave Network. The MEA valuation considered the capex and opex expected to be incurred through deployment and operation of a modern equivalent Airwave Network between the extension period of 1 January 2020 and the current Airwave national shutdown date (NSD) of 31 December 2026. The report also considered potential use cases beyond the NSD and assumed a sale of useful passive assets (towers) to partly offset the decommissioning costs.[630]

7 Analysys Mason explained that the MEA valuation required costs to be modelled based on the principles of providing a replacement network with the same functionality and capacity, noting the following assumptions:

TETRA technology provides the necessary quality for the contracted service and mitigates the need for end-user terminal replacements and re-training;

the same number of base stations as utilised today is assumed, so as to offer the same nationwide voice coverage;

all build capex is assumed to be incurred prior to operation on day one.[631]

8 Analysys Mason's MEA results are shown in Figure I-1 below.

Figure I-1: Analysys Mason MEA assessment for Airwave Solutions capex and opex

[✂]

Source: Analysys Mason Report, slide 7.

Figure I-2: Analysys Mason break-down of capex estimate (total and 'other' capex)

[✂]

Source: Analysys Mason Report, slides 11 and 20.

9 Analysys Mason estimated total capex of £[✂] million to replace the Airwave Network, plus a further £[✂] million of opex to be incurred during the set-up period, ie a total MEAV of £[✂] million. Their analysis assumes that substantially no further capex is required after the initial set-up period until 2026. Of this £[✂] million total, £[✂] million was based on the gross book value ('GBV') of certain assets (IT assets, tools, spares etc), as set out in Airwave Solutions' Fixed Asset Register.

10 With respect to opex, Analysys Mason estimated that this should be in line with Airwave Solutions' current opex forecasts for the period 2020 to 2026.

CMA discussion of Analysys Mason Report

11 We note that the Analysys Mason Report makes a number of assumptions that appear to us to be questionable. In particular, the CMA has concerns that:

[630] Analysys Mason report for Motorola, 28 February 2022.
[631] Analysys Mason report for Motorola, 28 February 2022.

(a) The assumption of TETRA as the replacement technology is likely to inflate the cost base materially in comparison with an LTE solution which would benefit from significant economies of scale;

(b) The active equipment cost estimates adopted by Analysys Mason appear high, with [✂]; and

(c) The opex costs, particularly the transmission costs, assumed for a new network appear high.

12 We did not make any adjustments to the Analysys Mason figures, because we are not minded to regard replacement cost as the appropriate basis on which to estimate the asset valuation (see section 6).

Deloitte Report (2016)

Annex B: Deloitte produced estimates of the replacement cost new ('RCN') and the fair value of the base stations and switch sites of the Airwave Network. As of February 2016, these assets comprised around 85% of total assets employed by *Airwave Solutions*, as measured by their original acquisition cost. It was directed by Motorola to assume that the fair value of the remaining assets (non-network assets and network assets attributable to the base stations or switch sites) was equivalent to net book value.

13 On this basis, Deloitte estimated the RCN of the network assets to be £[✂] million, and the fair value of these assets to be £[✂] million. This compares with a GBV of these assets of £[✂] million and a NBV of £[✂] million.[632] Those assets which were not revalued by Deloitte had an acquisition cost of £[✂] million and a NBV of £[✂] million. Overall, therefore, Deloitte found the fair value of Airwave's assets to be £[✂] million, compared with a total NBV of £[✂] million.

14 Deloitte's report explains the valuation approach that it took to 'personal property assets' as follows:

> We considered and evaluated the three traditional approaches to value the intangible asset: the income approach, the market approach, and the cost approach… We relied on the cost approach, specifically the replacement cost new ("RCN") approach because we believe
>
> (1) this approach was appropriate for the valuation analysis, and
>
> (2) sufficient information was available for its use.
>
> We did not rely upon either the income approach or the market approach, because we did not consider it to be applicable to the analysis, and because we determined that the collected data was insufficient to achieve credible results.
>
> The method was selected for the following reasons:
>
> - RCN data was readily available for the Personal Property Assets

[632] The gross book value of the assets will reflect the total cost incurred by Airwave in building/developing and maintaining the Airwave network from its inception to the date of the report, ie 2016. The net book value of the assets reflects a combination of the GBV and the depreciation policy selected by Airwave Solutions.

- RCN is typically the starting point for the Cost Approach to value
- RCN is defined as the current cost of a similar new property having the nearest equivalent utility as the property being appraised. RCN incorporates such things as improvements in design, layout, process flow, or improved technology.

RCN is typically the starting point for the cost approach because a prudent investor would not spend excess funds to simply duplicate the existing asset if the same utility can be obtained for less cost (ie, the principle of substitution).[633]

After estimating an RCN, additional adjustments are necessary to account for other forms of depreciation resulting from physical deterioration, functional (or technical) obsolescence, and economic (or external) obsolescence. These are defined as follows:

- Physical deterioration is the loss in value or usefulness of a property due to the using up or expiration of its useful life caused by wear and tear, deterioration, exposure to various elements, physical stresses, and similar factors.
- Functional obsolescence is the inability of the property to adequately perform the function for which it is utilized. Alternately, it is the loss in value or usefulness of a property caused by inefficiencies or inadequacies of the property itself, when compared to a more efficient or less costly replacement property that new technology has developed.
- Economic obsolescence, sometimes called "external obsolescence," is the loss in value or usefulness of a property caused by factors or economic forces external and unrelated to the property itself.

RCN was developed using cost estimates for installed assets provided by Management. To arrive at an indication of value, the estimate of RCN for each asset was adjusted for physical deterioration and obsolescence.[634]

15 The results of the Deloitte analysis are set out below for base station assets and switch sites. Figure I-3 shows which of Airwave Solutions' assets Deloitte revalued and which were assumed to be carried at NBV.

Figure I-3: Fair value analysis for Base Station Assets

[✂]

Figure I-4: Fair value analysis: switch site assets

[✂]

[✂].

Figure I-5: Deloitte summary of asset values for Airwave Solutions

[✂]

16 The combined RCN for those assets that have been fair-valued and the GBV of those assets that have not been separately assessed by Deloitte, gives a total replacement cost of Airwave's assets

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[633] Deloitte report for Motorola, 3 August 2016, page 11.
[634] Deloitte report for Motorola, 3 August 2016.

of £[✂] million as of 2016. However, we note that £[✂] million of this sum is simply the historical acquisition cost of certain assets that have not been fair-valued and that many of the assets included in this figure are likely to have reduced significantly in price in the intervening years. For example, it includes £[✂] million of [✂], £[✂] million of [✂] and £[✂] million of [✂].

17 Between 2016 and the end of 2019, we note two potential offsetting effects on the valuation of assets. First, Airwave Solutions incurred a further £89 million[635] of capex over this period, which would have increased the fair value of the asset base, although would (presumably) not have affected the RCN. Second, the rest of the asset base would have continued to decline in value due to physical, technological and economic obsolescence, as set out by Deloitte in its report. We consider the net effect of this below.

Motorola's internal documents

18 As part of our evidence gathering, we collected a large number of internal documents from Motorola in relation to its investment in Airwave Solutions. One email, sent by [✂] ([✂], Airwave Solutions Limited) and dated 31 January 2017 stated:

> I have spoken to [✂] and [✂] - this is all they have from [✂] for the valuation of the Airwave network:
>
> <u>Replacement Costs (at FMV)</u>
>
> 3800 base stations (MSI product) --> $[✂]M
>
> 3800 base station sites (cooling, antenna, UPS & batteries, labour) --> $[✂]M
>
> 3600 dispatcher interfaces (CCI ports) --> $[✂]M
>
> 102 core switching zones (product & install) --> $[✂]M
>
> TOTAL --> $[✂]M
>
> They now need supporting price list/invoice evidence that comes back to these values. I am not sure how to proceed without [✂] and how he arrived at these valuations.

19 This email suggests a total replacement cost (at fair value) of the Airwave Network of approximately £[✂] million. This is significantly above the fair market value (FMV) estimated by Deloitte and significantly below Deloitte's estimate of the RCN of the Airwave Network. It is unclear what the basis of this estimate was or for what purpose these estimates were prepared.

Parties' submissions on replacement cost evidence

20 In our Profitability Working Paper, we set out the emerging view that, to the extent that the replacement cost approach, rather than the recoverable value approach, was appropriate, we should place most weight on the Deloitte Report in terms of coming to a view on the value of Airwave Solutions' network assets in their existing state, noting that this report was prepared for Motorola/Airwave Solutions in the normal course of business, and that we should use the associated opex and capex forecasts prepared by Airwave Solutions and based on the costs of

[635] Airwave Solutions published accounts 2016 to 2019 inclusive.

running and maintaining the network that it contains. This report estimated the fair value of the asset base in its state as of mid-2016 to be £[✂] million. We adjusted this by adding all additional Airwave Solutions' capex from 2016 to 2019 inclusive and depreciating the overall asset base, assuming a 10-year useful economic life. This gave an asset value of £[✂] million as of the end of 2019.

21 In its response to our working papers on profitability and the cost of capital, Motorola made the following points:[636]

(a) The purpose of the Deloitte report was to provide an estimation of the fair value of certain intangible assets acquired and liability assumed from Airwave Solutions for financial reporting purposes;

(b) It told us that our approach of rolling forward the 2016 Deloitte figure to 2019, which it called applying a correction for technical deterioration and obsolescence to RCN, ie using depreciated replacement cost (DRC) may be appropriate for an adjustment of net book values for accounting purposes, but did not make much sense from an economic perspective. Motorola highlighted the UK government's own guidance on asset valuation, the Government Financial Reporting Manual, which gives directions on preparing government annual reports and accounts, which states that:

DRC should only be used as a last resort. It should be used only where there is no useful or relevant evidence of recent market transactions due to the specialised nature of the asset … Where DRC is being used to value specialised property (regardless of whether or not the property is historic or listed), it will rarely be appropriate to cost a modern reproduction of the asset (i.e. using an identical replacement or modified reconstruction approach). The value of the property should normally be based on the cost of a modern equivalent asset that has the same service potential as the existing asset and then adjusted to take account of obsolescence.

(c) It stated that the Deloitte approach did not consider what would actually be needed to construct a replacement network. For example, it does not consider internal staff costs etc. Further, Motorola notes that some of the cost estimates appear very low, eg £[✂] per tower whereas in Motorola's view an estimate of upwards of £[✂] would be closer to a fair price in the UK. Some cost items may be missing, for example backhaul, and the sampling approach (on which there are few details) may ignore that there is typically a long tail of very high-cost sites (eg sites that require construction of access road etc.); and

(d) Airwave Solutions did not in fact write-down its assets to the fair value estimate provided by Deloitte.

22 Motorola submitted that we had dismissed Motorola's email evidence without seeking further clarification on the basis for the estimates contained therein.

23 The Home Office submitted that we had noted that the assumption of Analysys Mason to use TETRA as a replacement technology may inflate the cost base materially but did not appear to have addressed this reservation for Deloitte's replacement cost estimate. Further, the Home

[636] Motorola's response to the CMA's working paper on Profitability and the Cost of Capital, 20 May 2022, paragraph 30 onwards.

Office highlighted that we had adjusted Deloitte's asset valuation to account for the changes between 2016 and 2019 – namely, for any additions to, and depreciation of, the asset base – and that these adjustments lead to an increase in the asset value in 2019 relative to 2016. The Home Office noted that over this period, its understanding was that CAPEX was £89m, while accounting depreciation on network equipment alone was over £240m. This suggested a reduction in value may have been appropriate.[637]

CMA assessment of replacement cost evidence

24 We noted Motorola's submissions on the accuracy of the Deloitte Report and its comments on the levels of certain costs used therein. However, first we observed that the Deloitte Report states in several places that its replacement cost figures / assumptions with either prepared by or approved by 'Management', which we take to be the management of either Motorola or Airwave Solutions. Second, we observe that the two reports (prepared by Analysys Mason and by Deloitte) provide broadly similar estimates of the ***new*** replacement cost of Airwave Solutions' assets (assuming that TETRA is the most appropriate MEA), ie around £[✂] million. This suggests that the overall level of the RCN as estimated by Deloitte is reasonably accurate.

25 Furthermore, on the basis of Management provided or approved assumptions, Deloitte estimates the obsolescence of the assets reduces their fair value, as of mid-2016 to £[✂] million. We note in this context that this detailed report was prepared independently and outside the context of our market investigation.

26 We observe that the government guidance as set out in paragraph 21 above appears entirely consistent with the approach that Deloitte has taken – estimating DRC in the case of a specialist asset (which the Airwave Network is), considering the modern equivalent asset cost[638] and then applying an adjustment for obsolescence. We note that Motorola has not submitted any evidence of recent market transactions with respect to the Airwave Network assets, which might suggest an alternative value, and that its estimates of the residual value of these assets (as set out in paragraph 34) are very significantly lower than the Deloitte fair value figure.

27 We note that the Airwave Network is ageing and Motorola has submitted that it now requires significant investment in maintaining and replacing elements of it in order to ensure its continued functionality. For example, Airwave Solutions is forecasting £[✂] million of capital expenditure between 2020 and 2026.[639] In keeping with these estimates, at the site visit that we attended at Airwave Solutions' premises on 30 November 2021, [✂] highlighted the age and obsolescence of the Airwave Network and the technological challenges associated with maintaining the resilience of the network in that context.[640]

Figure I-6: Airwave Solutions site visit, slides on network issues

[✂]

[✂]

Source: *Airwave Site Visit Slides*

[637] Home Office's submission and response to working papers, 24 May 2022, paragraph 42.
[638] To the extent that Deloitte is considering an old like-for-like replacement, as noted in the previous paragraph, the cost estimate is the same as Analysys Mason's MEAV estimate.
[639] Motorola financial model, 31 August 2021.
[640] Motorola site visit.

28 This evidence supports the view that the existing asset base suffers a high level of obsolescence and this is consistent with the valuation set out in the Deloitte Report.

29 For these reasons, we provisionally conclude that the most reliable approach in terms of identifying a replacement cost is to value Airwave's network assets in their existing state, drawing on the Deloitte report which was prepared for Motorola/Airwave Solutions in the normal course of business, and to use the associated opex and capex forecasts[641] prepared by Airwave Solutions and based on the costs of running and maintaining the network that it has. This ensures consistency across all elements of our analysis. On this basis, we observe that the value placed on Airwave Network assets was around £[✂] million as of mid-2016. Between 2016 and 2019, Airwave Solutions incurred further capex of £89 million, which should be added to the replacement cost of the assets as of the end of 2019. However, the existing assets would also have continued to depreciate in value due to physical, technological and economic obsolescence. For the purposes of our analysis, ie to come to a view on asset value as of the end of 2019, we have assumed that all existing and new assets are depreciated over a 10 year useful economic life. [✂].[642] This produces an asset value of approximately £[✂] million as of the end of 2019.

30 We considered the Home Office's submission that our approach increased the value of Airwave Solutions' assets over this period, whereas actual depreciation charged would have resulted in a reduction in the asset value. However, we provisional*ly* conclude that this comparison is not apt as our analysis starts with Deloitte's Fair Value figure and takes into accounts additions and a re-calculated depreciation schedule, whereas Airwave Solutions did not write down its NBV to reflect Deloitte's Fair Value, choosing to keep its pre-existing NBV (which was approximately twice the level) and then charged depreciation against that higher figure. We note that an approach of using Airwave Solutions' NBV as of 2016 (of £[✂] million), charging accounting depreciation of a further £240 million against it and then adding on £89 million of capex produces a very similar figure (£[✂]million) to that arrived at from our approach of using fair value and adjusting for subsequent capex.

31 We also considered the Home Office's submission that the Deloitte Report's use of TETRA equipment may inflate its RCN estimates. We agree, in principle, with this objection. However, we note that we do not have access to any alternative estimates based on a lower cost technology which we could use in our analysis. We consider that this suggests that our depreciation replacement cost estimate may be somewhat inflated. However, it remains the most reliable estimate that we have. We consider alternative approaches, including residual value as well as the Home Office's own suggestion on estimating the VTB of the assets as of 2016 elsewhere in order to come to a balanced overall view on asset values.

32 We note Motorola's submission that the CMA should have made further inquiries regarding the figures set out in [✂]'s email but did not accompany its submission on this matter with any further argumentation or evidence in that respect. As a result, we place limited weight on this evidence. We invite Motorola to make further submissions on [✂]'s email if it considers this evidence to be important to our understanding and assessment of the value of Airwave Solutions' assets.

[641] We note that we have made some adjustments to Airwave Solutions' opex and capex forecasts based on our review of the business' transfer pricing policies and other internal documents. See Appendix G and Appendix H for further details of these adjustments.
[642] Motorola site visit.

Evidence on residual value

Parties' submissions on residual value

33 We asked Motorola what value it would place on the Airwave Network once customers had switched to ESN. Motorola told us[643] that it had focused its efforts on the tower sites, as they provided the biggest potential to be monetised upon customers' switch from the Airwave Network to ESN and were estimated at over [✂]% of 2020 NBV. It told us that the remaining fixed assets (such as, for example, furniture and fittings, motor vehicles, computer hardware and software, networking equipment and switches), were relatively low in value (especially with regard to re-sale value) and that a plan would be made in due course as to what would happen to these assets when the Airwave Network was shut down.

34 Motorola told us that each attractive tower site was valued at £[✂] to £[✂], meaning a total value of approximately £[✂] million (based on [✂] attractive sites), and that this amount was gross of any fees that would be required to progress any transaction for example professional advisor fees, legal fees to transfer the leases.[644]

35 Motorola told us that a tower site would be deemed 'attractive' if it was suitably located, which depended on:

(a) Whether [✂];

(b) Whether [✂].

36 In a later response,[645] Motorola clarified that the value of £[✂] to £[✂] was based on the discounted cashflow of the income the tower may receive, minus the opex (ie ground rent and maintenance costs) and minus the re-build capex (Motorola told us that the Airwave towers were generally too small to host mobile network operator (MNO) equipment). The valuation was prepared by Analysys Mason in a report entitled 'Modern equivalent asset valuation of the Airwave network'[646] and a supporting document entitled 'Analysys Mason valuation commentary for the CMA process.'[647] The report and commentary set out two main potential use cases for the Airwave Network post NSD: option one was the carve-out and selling of the passive infrastructure for mobile TowerCo use, and option two was the reconfiguration of the network for private mobile radio (PMR) use. Option one would be the preferred option whereas option two would not make economic sense:

37 In a divestment of the passive infrastructure, according to a detailed bottom-up geographic analysis, approximately [✂]% of Airwave Solutions' owned portfolio ([✂] sites) were in locations potentially attractive to MNOs in the market and could gain an MNO anchor tenancy. These could potentially command a valuation of £[✂] to £[✂] per site, based on the present value of an attractive site's expected perpetual cashflow once capex had been recovered. Each site could provide a tower cashflow (revenue less ground-lease) of £[✂] to £[✂] per site, [✂].

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[643] Motorola response to Q31 of the RFI dated 16 December 2021.
[644] Motorola told us that the transfer of leases in some cases was subject to landlord consent which may impair the valuation to the extent a landlord does not consent to the transaction.
[645] Motorola response to Q31 of the RFI dated 16 February 2022.
[646] Analysys Mason report for Motorola, 28 February 2022.
[647] Submission from Analysys Mason to the CMA, 17 January 2022.

(a) There were some costs regarding the sale: in order to host an MNO anchor tenancy, the sites would need to be rebuilt which would incur significant capex (£[✂] per site); sites would also take time to be leased-up to MNOs, therefore providing negative cashflows until co-located in the absence of an Airwave Network anchor tenancy. The high capex requirement and lack of anchor tenancy positioned the sale more towards that of a portfolio of land banks as opposed to a tower sale and therefore would not command the same valuations seen for other portfolios in the market. Analysys Mason assumed that the rest of the portfolio would have to be decommissioned at NSD.

(b) The value of the Airwave Network's physical infrastructure was also dependent on the timing of the sale; the portfolio was ideally positioned to enhance MNOs' rural coverage, which was of focus in the MNOs' shared rural network (SRN) initiative with the UK government. SRN deployment had already begun and was likely to run for the next ten years. The further out the sale of the Airwave Network's assets, the less of this SRN demand the portfolio would be able to capture. Assuming the sale of the portfolio did not occur until 2026, it was quite likely that a number of the attractive locations identified in Analysys Mason's report would have been overbuilt – reducing the number of sites that could be sold off and therefore the value of the portfolio.

(c) Motorola told us that the Airwave Network was a possible candidate for PMR use across the nation. However there was no significant demand for nationwide PMR use in the UK[648] Motorola's commentary suggested the reasons why there may be little demand for PMR services for a repurposed Airwave network: firstly, mobile coverage was already very well established making it a cheaper alternative to PMR and mobile could provide good enough coverage to compete with the Airwave Network's nationwide PMR services. Secondly, where organisations existed that needed the type of PMR functionality provided by the Airwave Network, the geographic scope of those organisations was much more limited. Thus the PMR requirement could be fulfilled through a dedicated private network in the specific location (eg London Bus, Heathrow Airport). These localised private networks were more cost effective that the full nationwide network that the Airwave Network provided. In addition these private networks were already built (capex had been spent), so decommissioning the private network in favour of a PMR rental model with Airwave Solutions would not make economic sense.

38 Motorola told us that it expected the sites to be sold to an existing TowerCo (ie a company which strategically purchases cell towers).[649] Outside of either an existing or newer TowerCo, Motorola told us that it considered that financial sponsors in the form of private equity funds could also have an interest in Airwave Solutions' tower sites.

39 Motorola provided us with a 2015 report called 'Project Panda II independent review' prepared by EY[650] which estimated a range of £[✂] million to £[✂] million for the sale of certain towers to a TowerCo. Management's estimate was lower, at £[✂] million to £[✂] million, primarily because of different assumptions. The report noted that any assessment of potential value was highly

[648] We note that BT said "Airwave is not a commercial communication system. Its whole purpose is to improve the safety of the general public and, ultimately, save lives." Annex B to the minutes of evidence of the PAC 22 April 2002
[649] Motorola gave examples of TowerCos which it was aware were interested in Airwave's tower sites: [✂].
[650] EY report, 27 May 2015, page 12.

sensitive to a number of key factors.[651] The report also noted that, as other operators built out their own networks over the following 12-24 months, the potential value of the Airwave tower network to a TowerCo was likely to materially reduce. We asked Motorola if it could explain the difference between the valuation contained in the Project Panda II review (£[✂] million to £[✂] million) and its estimate provided in response to our RFI in December 2021 (£[✂] million). It told us that the value ascribed in the 2015 review was very sensitive to the assumptions made (in particular the number of tenants that might be achieved), and that this explained the large difference between the view expressed by EY (the party who conducted the review) and management at the time. Motorola suggested that the additional network build by MNOs and TowerCos that had taken place since 2015 would have in all likelihood reduced the number of sites that would be attractive sales targets and that this explained the reduction in the value attributed to the option of selling sites to TowerCos.

CMA's provisional assessment of residual value

40 We noted that the internal evidence on the residual value of assets gave a relatively broad range of values, with the most recent estimate prepared by Motorola being significantly lower than earlier estimates. However, we found the reasoning provided for this decline in value to be coherent, ie the reduction in average site value as further tower sites were rolled out across Great Britain, and noted that the 'Project Panda' estimates were prepared around seven years ago. Therefore, we provisionally concluded that the most reliable estimate of residual value was the £[✂] million figure as estimated by Motorola.

Assessment of Motorola's returns from 2016 onwards

41 Finally, we considered the Home Office's suggestion that we take the amount paid by Motorola for Airwave in 2016 and assess the returns that Motorola expected to earn on this to the end of 2019 and consider how expected returns change with the extension of the contract beyond 2019. We note that the February 2016 purchase price of £[✂] million by Motorola for Airwave[652] should provide an upper limit to the recoverable amount[653] of those assets since it reflects what investors were prepared to pay for the business achieved via a competitive sales process. However, we note that this valuation may well exceed the recoverable amount in a well-functioning market since it can be expected to capitalise any monopoly rents that an investor may expect over the remaining life of the assets.

42 To the extent that recoverable amount has increased since 2016, this must be the result of the extension of the life of the Airwave Network and the potential to earn supernormal profits over that period, which represents a 'windfall gain' and we do not consider that it would be appropriate to capitalise in the asset valuation as this would introduce a circularity to the analysis.

43 We have, therefore, compared this purchase price with the amounts recovered by Motorola between 2016 and the end of 2019. This suggests that Motorola (more than) recovered its investment, taking into account a nominal pre-tax WACC of 6-7% by the end of 2020, ie with only

[651] Factors included terms of Airwave Solutions' leaseback of towers and length of anchor tenancy, achieving competitive tension around a sale process, bidders' view on multiple tenancy potential of towers, capex required to extend network life, linked to valuation term assumed, and operating costs avoided by Airwave Solutions in view of transfer of tower ownership.
[652] Deloitte report for Motorola, 3 August 2016.
[653] In this case, this 'recoverable amount' is the 'value in use' of the assets.

a one year extension. This analysis is set out in Table I below. It suggests that the VTB of the Airwave Network assets at the end of 2019 would have been relatively low in the absence of a material further extension and the ability to earn supernormal profits over that extension period. As noted above, we provisionally consider any such uplift in the recoverable amount of the Airwave Network assets from such an extension represents a ‘windfall gain’, which should not be included in its asset base.

Table I-2: Analysis of Motorola’s returns on its investment in Airwave Solutions

	WACC	Dec-15	Dec-16	Dec-17	Dec-18	Dec-19	Dec-20
Net Cash Flows		[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
DCF	6%	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
	7%	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Cumulative NPV	6%	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
	7%	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]

Appendix J: Cost of capital

Introduction

1 The approach to assessing profitability, as set out in our Guidance[654], is to compare the profits earned with an appropriate cost of capital. In this Appendix, we set out our provisional assessment of the nominal pre-tax weighted average cost of capital (WACC) for the Airwave Network. As set out in Section 6, we are assessing the profitability of the Airwave Network separately over two periods: 2001 to 2019 and 2020 to 2026, with our primary focus on the second of these periods on the basis that this gives the most relevant information on the current profitability of the business and the underlying conditions of competition that have given rise to these profits. Therefore, we have estimated the cost of capital on two bases:

(a) At the start of the “historical” or “PFI” period, ie around 1 April 2001; and

(b) As of late 2019/early 2020, ie at the start of the “extension” period. This is the cost of capital that we provisionally consider is of primary relevance to our profitability analysis since it provides the benchmark for the “extension” period.

2 In coming to a provisional view on the WACC of the Airwave Network at these different points in time, we note that some elements of the WACC estimate, such as the relevant beta value and total market return (TMR) are often assumed to be stable over time, while other elements, such as the risk-free rate, the tax rate and the cost of debt are assumed to fluctuate. Our approach reflects this, with constant values being assumed for beta and TMR, based on the most up-to-date data and understanding of these parameters, while we have reflected changes in broader market costs for the other elements of the WACC.

3 In addition to estimating a WACC on the bases set out above, we have also considered the appropriateness of using a higher hurdle rate as the benchmark against which to assess the profitability of the Airwave Network. We discuss our provisional analysis and conclusions in this respect further in paragraphs 84 to 88 below.

4 Our provisional assessment of the WACC for the Airwave Network in the two periods is set out in Table J-1. For the purposes of our profitability assessment, we have taken the mid-point of each of the ranges as our point estimate, ie a WACC of 8.6% (pre-tax nominal) for the historical or “PFI” period and 5.5% (pre-tax nominal) for the “extension” period.

5 As discussed in our working paper[655], we continue to consider that it is not necessary to come to a firm conclusion on the appropriateness of applying an uplift to the historical period WACC in the form of a hurdle rate as we are not focussing on this period for the purposes of our profitability analysis. However, regardless of the appropriateness of such an uplift in the historical period, it is our provisional view that no such uplift should be applied to the extension period since all the initial uncertainties and risks associated with the Airwave project, which might have merited such an uplift, had long been resolved.

[654] CC3

[655] Cost of capital working paper, 6 May 2022.

Table J-1: CMA estimates of nominal pre-tax WACC

	Estimate for "PFI" period (as of April 2001)		Estimate for "extension" period (as of late 2019 /early 2020)	
	Low	High	Low	High
RFR (CPI-real)	2.5%	3.0%	-2.0%	-1.0%
Equity beta[656]	0.60	0.76	0.62	0.55
TMR	6.2%	7.5%	6.2%	7.5%
CPI Inflation	2.0%	2.0%	2.0%	2.0%
Tax	30%	30%	22%	22%
Gearing	50%	35%	50%	0%
Kd pre-tax	6.5%	6.5%	2.5%	N/A
Kd post-tax	4.6%	4.6%	1.9%	N/A
Ke post-tax	6.8%	8.5%	5.1%	5.7%
Ke pre-tax	8.8%	11.3%	6.0%	6.8%
WACC Pre-tax (nominal)	**7.7%**	**9.6%**	**4.3%**	**6.8%**

Source: CMA analysis

6 In carrying out our analysis, we have drawn on evidence from internal documents prepared by and for Airwave Solutions and Motorola, the CMA's recent redetermination of the cost of capital for water companies in Great Britain and its hearing of the energy appeals, together with broader market evidence.[657] In addition, we have taken into account submissions received from Motorola and the Home Office in response to our working paper.[658]

7 The remainder of this section sets out our methodology and the analysis we have conducted. As set out in our Guidance,[659] we generally look to the capital asset pricing model (CAPM) when considering the cost of capital, and this is the approach we have adopted in estimating the cost of equity for the Airwave Network. We have estimated the cost of debt with reference to corporate bond yields over the period, as well as evidence gathered from Airwave Solutions and Motorola on their costs of debt.

General approach to estimating the WACC

8 There are several factors that we have taken into account in estimating an appropriate benchmark cost of capital for the Airwave Network. These include:

(a) how to estimate the WACC – use of the capital asset pricing model (CAPM);

[656] Note: the equity betas differ slightly due to the differing tax rates. The underlying asset beta range is the same across both time periods (a range of 0.35-0.55). The equity beta in the post-2019 period "high" case is lower than in the "low" case due to the lack of gearing in the "high" scenario, ie the "high" case assumes a higher asset beta of 0.55 than the low case (asset beta of 0.35) but the impact of gearing results in a lower equity beta.
[657] See CMA (2021), Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire. Water Services Limited price determinations final report and CMA (2021), Energy Licence Modification Appeals.
[658] See Home Office submission and response to working papers, 24 May 2022 and Motorola's response to the CMA's working papers on Profitability and the Cost of Capital, 20 May 2022.
[659] CC3, Annex A, paragraph 16.

(b) which cost of capital provides an appropriate benchmark – specification of the basis of the WACC;

(c) over which time period(s) should the cost of capital be measured – at the start of the relevant period(s), or an average for the relevant period(s)?; and

(d) whether an appropriate benchmark for returns should be a simple WACC, or whether, in light of the risks associated with constructing and operating the Airwave Network, it is appropriate to uplift a WACC to reflect a "hurdle rate" or the risk of loss from an innovative/uncertain investment.

Capital asset pricing model

9 Our Guidance highlights that we generally use the CAPM when considering the cost of equity since this is a widely understood technique with strong theoretical foundations.[660]

10 The CAPM relates the cost of equity $E[R_i]$ to the risk-free rate (R_{rf}), the expected return on the market portfolio (R_m), and a firm-specific measure of investors' exposure to systematic risk (beta or β) as follows:

$$E[R_i] = R_{rf} + \beta(R_m - R_{rf})$$

11 If a business were entirely funded by equity, the expected return on equity could be considered to be its 'cost of capital'. However, most firms are funded by a combination of both debt and equity, such that the appropriate cost of capital to consider is the weighted average cost of debt and equity. The WACC is given by the following expression:

$$WACC = E[R_i] \times E/(D+E) + K_d \times D/(D+E)$$[661]

12 Finally, the cost of capital must take into account the effects of tax on returns to capital providers. The returns to debt holders take the form of interest payments which are usually tax-deductible. The returns to equity holders (dividends), on the other hand, are taxed. Hence, where the cost of capital is expressed 'pre-tax', the cost of equity used must reflect the fact that the actual return to shareholders will be reduced by the rate of tax. We have estimated the cost of capital on a nominal pre-tax basis:[662]

$$\text{Pre-tax } WACC = [(1/(1-t)) \times E[R_i] \times E/(D+E)] + [K_d \times D/(D+E)]$$

Specification of the basis of the WACC

13 In keeping with the theoretical basis of the CAPM, our approach seeks to estimate the WACC of the Airwave Network itself, which is invariant to the larger corporate group of which it may form a part, ie we consider the relevant WACC to be that of the Airwave Network rather than that of Motorola or of any previous owners, such as Macquarie or BT.

14 Our profitability analysis seeks to measure the returns earned by all sources of capital invested in the business. As these returns are measured before interest and/or tax is paid, they are not

[660] CC3, paragraph 116.
[661] Where D is debt, E is equity and Kd is the cost of debt.
[662] This avoids the need to adjust nominal financial information to remove the effects of inflation.

affected by the capital structure of the business.[663] However, in estimating the relevant WACC for the Airwave Network, we rely on a variety of market-based evidence, which will reflect the capital structures of the businesses used as comparators. Where relevant, we have used this data to come to a view on the appropriate capital structure for the Airwave Network (ie its gearing level), as well as adjusting beta estimates to ensure consistency with this conclusion on gearing.

15 We have measured the WACC of the Airwave Network with reference to a range of potential comparator firms, as set out in Table 3. The choice of comparators is a matter of judgement with the range of comparators reflecting various attributes of the Airwave Network, including industry (telecoms), the utility nature of the business, its geographical location etc.

Relevant time period

16 We are analysing the profitability of the Airwave Network over the period between 2001 and 2026, with a particular focus on the 2020 to 2026 "extension" period. This period spans both the past, for which actual data is available on both the Airwave Network's performance and the costs of capital available in the market, and the future, for which we must use forecast information with respect to both the Airwave Network's likely profits and the expected cost of capital.

17 We note that there is some uncertainty regarding the "end date" of the analysis as the Home Office has the right to require an extension of the life of the Airwave Network by providing appropriate notice to Motorola. [✂], there remains the possibility of a further extension in case ESN is not ready in time and/or where not all users have been able to transition to the new solution ahead of 31 December 2026. [✂].[664]

18 In this context, we have considered two different perspectives in terms of the cost of capital for the business. First, we have considered the expected cost of capital for the 2001 to 2019 period, as assessed at the start of 2001. Second, we have considered the cost of capital the Airwave Network may reasonably expect to apply over the extension period, ie the period from 1 January 2020 onwards.

19 We have considered the issue of whether or not a hurdle rate is appropriate in paragraphs 84 to 88 below.

Parties' submissions

Airwave Solutions and Motorola

20 Motorola told us that, well-advised parties had agreed contractual terms with reference to an agreed fair internal rate of return (IRR) for the life of the Airwave Network, whatever that would be. The hurdle rate for the Airwave project was negotiated, set between the parties at the outset, and is well documented and understood by the parties. There were no provisions that would protect Airwave Solutions from actual returns turning out to be lower than the hurdle rate agreed *ex ante,* nor any claw-back provisions that would require Airwave Solutions to reduce prices if actual returns turned out to be higher. Motorola submitted that all that could be established through an *ex-post* assessment of profitability was whether matters had turned out better or

[663] The capital structure affects how earnings before interest and tax is divided between the various providers of capital.
[664] Home Office Hearing with the CMA on 2 March 2022.

worse for a party than expected. Moreover, for this, profitability would have to be assessed over the entire life of the project, ie 2001 to 2026.[665]

21 Motorola submitted that it makes no sense to use a WACC derived from a standard application of the CAPM to Airwave or Motorola, highlighting the following from the Oxera paper[666]:

> [i]n profitability assessments of realised rates of return, the relevant cost of capital is the ex ante cost of capital — i.e. the cost of capital that was used in assessing the project at inception. This is particularly important for risky projects that carried a high likelihood of failure. The ex ante cost of capital has to be adjusted upwards to capture the inherent risk (the result is commonly known as a hurdle rate). When a competition authority is assessing returns that have been realised, a comparison of the realised rate of return with an ex post cost of capital that does not reflect the risk of failure of the project could lead to an overstatement of profitability" [667] (Emphasis added by Motorola)
>
> it is common to see companies marking up the cost of capital when setting 'hurdle rates' (i.e. required returns) to appraise individual projects or investment plans … This premium accounts for project-specific risks, which are not reflected in the company's cost of capital generated by the CAPM approach or other asset pricing models. One clear example where a mark-up is applied is for large investment projects with a high degree of asymmetric risk, i.e. when there is a relatively large downside risk of failure compared with the likelihood of success. The CAPM and other models do not capture such asymmetric risk. (Emphasis added by Motorola).[668]

22 Motorola submitted that, in this case, there should be no dispute about the appropriate benchmark as the parties discussed and agreed on a target IRR at the outset, and one which compares very favourably to other government projects for which data is available. The IRR agreed between the parties is set out in a financial model[669] put into escrow that would be used to assess the reasonableness or otherwise of potential future variations of charges. This model specified a real, post-tax target IRR of [✂] (nominal pre-tax: [✂]).[670]

23 In response to our Cost of Capital Working Paper, Motorola submitted[671] that we should have placed weight on the WACC analysis set out in the Deloitte report which we had relied on in relation to the valuation of the Airwave Network's assets. Motorola highlighted that Deloitte i) relied more on technology companies and less on regulated utilities as peers and ii) explicitly takes account of the revenue risk to which investors in Airwave Solutions was exposed at the time, including a company-specific risk premium of 8 percentage points.

24 Motorola submitted that while the impact of the difference in estimated beta was limited (from the Deloitte approach), the acknowledgment of the substantial revenue risk results in a much

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665 Motorola's response to the CMA's working paper on Profitability, 10 January 2022, paragraph 3.
666 Motorola's response to the CMA's working paper on Profitability, 10 January 2022, paragraphs 36-39.
667 Oxera (July 2003), Assessing profitability in competition policy analysis, paragraph 7.9.
668 Oxera (July 2003), Assessing profitability in competition policy analysis, paragraph 7.28.
669 Motorola's response to the CMA's working paper on Profitability, 10 January 2022, paragraph 3.
670 Motorola's response to the CMA's working paper on Profitability, paragraph 38.
671 Motorola's response to the CMA's working papers on Profitability and the Cost of Capital, paragraph 50.

higher WACC estimate of 17% overall, which is not dissimilar to the target IRR agreed at the outset when the original Airwave contract was signed. [672]

25 Motorola highlighted the risks arising from the Home Office's decision not to commit to an extension period but "rather to require Airwave to provide mission critical services for an undefined period until ESN eventually became available." Motorola submitted that this uncertainty and the associated risk cannot simply be dismissed with reference to the notion that the technological challenges that would initially have justified a substantially higher hurdle rate had by then been resolved. To the contrary, Motorola observed that Airwave has recently experienced, and will continue to experience, some of the most significant technological challenges experienced over its entire contract. Therefore, Motorola submits that while the specific risks to which Airwave was exposed have changed, they have not disappeared, even before one considers the significant technological challenges associated with keeping an ageing network operational to the required standard in an environment where spares are increasingly unavailable and third-party inputs on which the network relies are reaching their end of life and are being withdrawn and replaced at a quickening pace due to shorter lifecycles, resulting in hardware and software obsolescence and needing support.[673]

Evidence gathered from Airwave Solutions and Motorola Inc.

26 In addition to considering Motorola's submissions, we also reviewed a range of internal documents collected from Motorola/Airwave Solutions which set out views on the relevant cost of capital for the Airwave Network.

27 Goldman Sachs prepared a valuation report for Motorola in February 2015 in advance of the acquisition of Airwave Solutions.[674] This report estimated a WACC for the Airwave business of 5.1% and used a range of between 4% and 6% in the valuation work that it carried out. We understand that these figures are post-tax, nominal WACC estimates.[675] See Figure J-1 for details of each element of the WACC calculation.

28 We note that this is equivalent to a pre-tax nominal WACC of 6.4% (using the 20% tax rate assumed by Goldman Sachs).

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[672] Motorola's response to the CMA's working papers on Profitability and the Cost of Capital, paragraphs 49 to 51.
[673] Motorola's response to the CMA's working papers on Profitability and the Cost of Capital 20 May 2022, paragraphs 52 to 53.
[674] Discussion materials, report provided by Goldman Sachs for Motorola, 17 November 2015, provided to the CMA as part of the 2016 CMA merger inquiry.
[675] We note that the 3.5% cost of debt and the 8.8% TMR implied by Goldman Sachs' estimates suggests that these figures are nominal rather than real given actual costs of debt and the usual level of TMR estimates. For example, Dimson, Marsh and Staunton estimate that total returns on UK equity markets over the last 120 years has been approximately 5-7% in real terms. Therefore, a TMR of just under 9% suggests that this is a nominal estimate. See Credit Suisse, Global Investment Sourcebook, 2021.

Figure J-1: Goldman Sachs WACC estimates for Airwave

WACC Calculation

	WACC Calculation	
1	Risk Free Rate	2.0%
2	Historical Beta	0.80
3	ERP	6.8%
	Ke	**7.5%**
4	Kd[1]	3.5%
5	t	20.0%
	Kd x (1-t)	**2.8%**
6	E/L	50.0%
	D/L	50.0%
	WACC	**5.1%**

Assumptions

1. Risk free rate based on the UK 2025 government bond per Bank of England
2. Historical beta based on selected comparable peers[2]
3. ERP based on Duff & Phelps 2015 Report (IMF U.K. Long Term Government Income Return – 20 years)
4. Cost of debt based on equity and debt capital markets teams perspective
5. Tax rate as per UK government corporate tax regulation
6. Target capital structure based on GS IBD estimates and client's guidance

Source: Goldman Sachs Opinion Letter, prepared for Motorola Inc, December 2015

29 Deloitte prepared a report for Motorola on the 'Fair Value of Certain Intangible Assets and Liability Acquired From Airwave Solutions Ltd'. The report was dated 3 August 2016.[676] This report included an estimate of the WACC of approximately 17%[677] based on the following parameter estimates:

(a) Risk-free rate of 2.17%;

(b) Equity Risk Premium of 6.5%;

(c) An unlevered beta of 1.00, and a levered beta of 1.20;

(d) A small company premium of 1.8%;

(e) A country-specific risk premium of 0.60%;

(f) A company-specific premium of 8.0%;

(g) A gearing ratio of 20%; and

(h) A post-tax cost of debt of 4.20%.[678]

30 Motorola carries out an impairment review each year, including with respect to the Airwave business. In the review dated 31 December 2020,[679] a discount rate of [✂]% was used in order to value the Airwave business, with sensitivity analysis applying a range of [✂], ie 1% higher or lower than this point estimate. We understand that these figures are nominal, post-tax estimates. In its 2018 Impairment Review, Motorola stated that:

> These cashflows have been discounted using a discount rate [✂]% which is consistent with prior year in the absence of any market economic factors or company specific

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[676] Deloitte report for Motorola, 3 August 2016.
[677] We understand that this figure is a post-tax nominal estimate, which approximates to a pre-tax nominal WACC of 21.4%.
[678] Deloitte report for Motorola, 3 August 2016, Exhibit 6.
[679] Motorola impairment review, 31 December 2020.

factors that are deemed to be impacting to the Airwave discount rate over the last 12 months. We believe this to be a prudent discount rate for Airwave cashflows which are contracted and therefore very low risk and would therefore be attractive to investors who are seeking low risk low return investments. [680]

31 Finally, the PFI model[681], prepared around 2000 when negotiating the original PFI Agreement for the development of the Airwave Network, contained a real, post-tax discount rate of [✂]%. This is approximately equivalent to a nominal, pre-tax WACC of just over [✂]% (using the 30% tax rate in effect at the time and an inflation assumption of 2.0%).

Home Office

32 In response to our Cost of Capital Working Paper,[682] the Home Office told us that it agreed with the CMA's approach to estimating the cost of capital at two moments in time—at the start of the original PFI period (around April 2001) and at the start of the extension period (end of 2019). It also agreed in principle with the CMA using the capital asset pricing model (CAPM) to estimate the cost of capital.

33 The Home Office made a number of further detailed submissions on the risk-free rate, set of comparator companies and gearing levels. These are summarised and assessed in the relevant sections below.

34 Overall, the Home Office proposed a revised analysis that reduced the estimated cost of capital in the PFI period from a range of 7.9% to 9.6% to 7.4% to 8.5% and the estimate for the extension period from a range of 4.9% to 6.8% to 2.0% to 4.2%.[683]

CMA estimation of WACC

35 This section sets out the analysis that we have undertaken to estimate the components of the WACC calculation, which includes both generic and industry-specific components. The former comprise the risk-free rate (RFR), the total market return (TMR) and the tax rate; the latter comprise beta, gearing and the cost of debt.

Risk-free rate

36 In order to estimate the risk-free rate applicable over the period of our investigation, we have focused on UK index-linked gilt yields, which have negligible default and inflation risk.

37 We usually consider long-maturity gilts to be most relevant to the RFR in the cost of equity since equities also have long (indefinite) maturity.

38 The Home Office submitted that the maturity of the gilts should match the expected duration of the Airwave contract, noting that in estimating the RFR as of 2001, it would be consistent to use gilts with a maturity of between 10 and 25 years, as that broadly matches the expected duration of the contract, while as of the end of 2019, it was expected that the network would be shut down after three years (as at the time the contract was extended only until December 2022). As a

[680] Motorola impairment review, 31 December 2018, section 8.
[681] PFI model, 2000.
[682] Home Office submission and response to working papers, 24 May 2022, paragraphs 46 to 47.
[683] Home Office submission and response to working papers, 24 May 2022, paragraph 77.

result, the Home Office submitted that the CMA should consider index-linked gilts of a shorter-term maturity than 10 to 25 years. The Home Office highlighted that as of 2019, shorter maturities had significantly lower yields, with the average spot yield on index-linked gilts with maturities between three and seven years being -2.5% on 31 December 2019, while the average spot yield on index-linked gilts with maturities between 10 and 25 years was -2.1% on that date.[684]

39 Further, the Home Office submitted that the CMA could also avoid the risk-free rate being affected by the volatility of the spot yields on a specific date by using a 6-month average instead. The Home Office observed that the 6-month average of spot yields on gilts of 3 to 7 years maturity was 0.3 percentage points lower than the 31 December 2019 spot yield.[685]

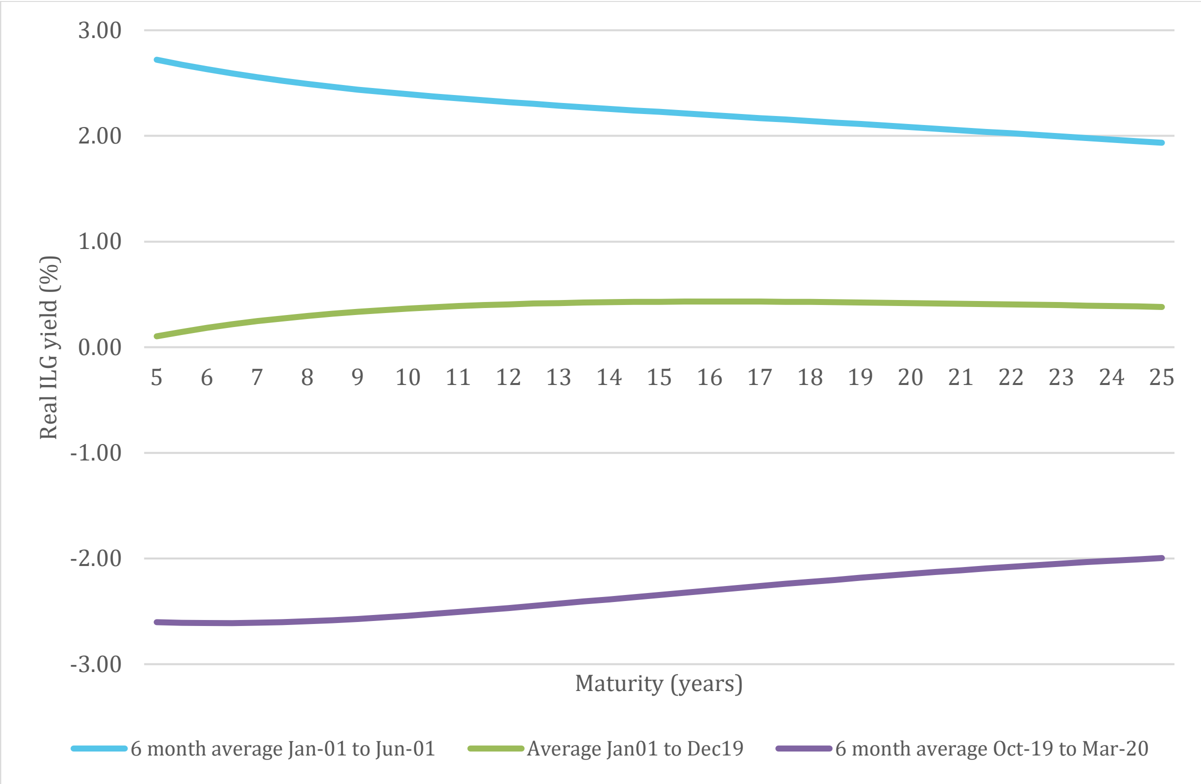
40 In coming to a provisional conclusion on the appropriate RFR for the period starting in 2001, we considered yields on gilts with a maturity of between 10 and 25 years. We note this is consistent with both the long life-span of equities and the 15 to 20 year expected life of the Airwave contract at its start. Figure J-2 shows real gilt yields as of the start of 2001, and as of late 2019/early 2020, as well as the average over the period between these two dates.

41 This evidence demonstrates that ILG yields have declined by around four percentage points since 2001. As of January 2001, gilt yields on longer-dated maturities were approximately 2%, while by the end of 2019, they had declined to around -2%. The average for the 2001 to 2019 period was approximately 0.4%.

42 We provisionally agreed with the Home Office that considering a six-month average rather than a single-date spot yield would reduce volatility in the estimates, and have adopted this approach for both the period starting 2001 and that starting at the beginning of 2020.

[684] Home Office submission and response to working papers, 24 May 2022, paragraphs 61 to 63.
[685] Home Office submission and response to working papers, 24 May 2022, paragraphs 64 to 65.

Figure J-2: Yield curves on UK index-linked gilts, 2001 to 2022



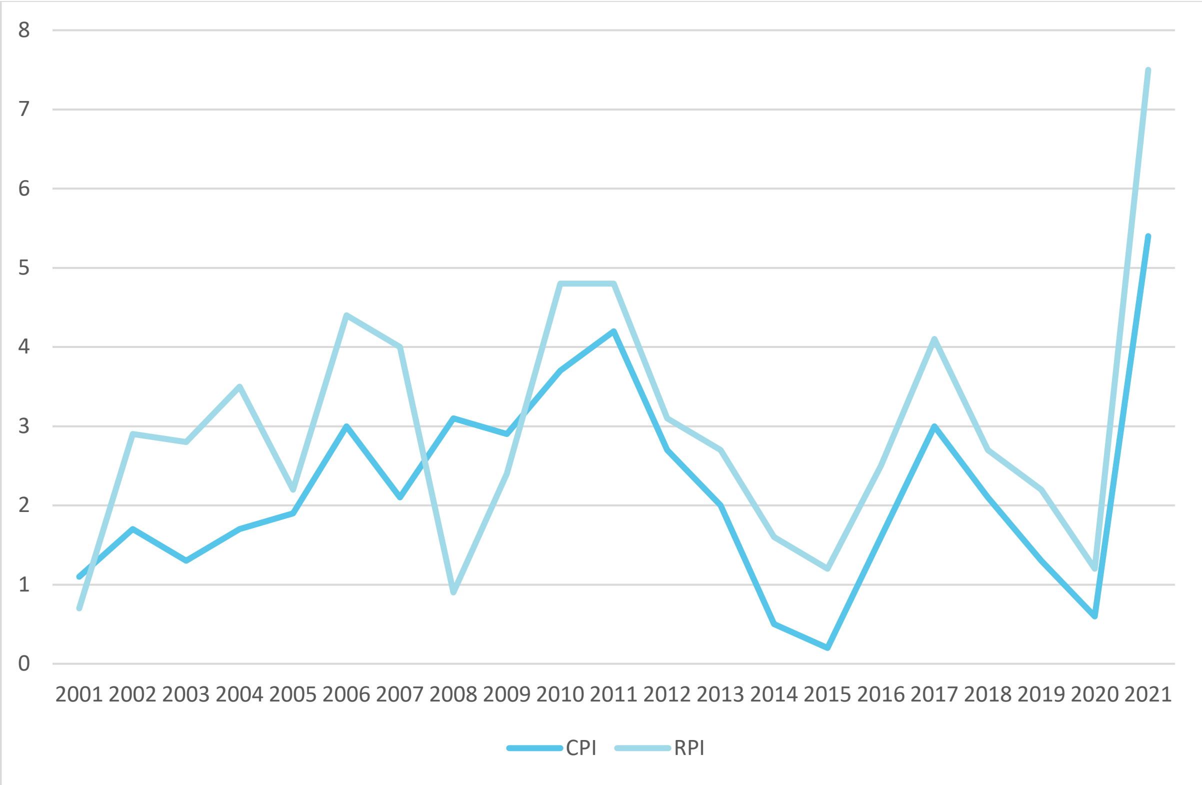
Source: Bank of England, real spot yield curve data.

43 We considered the Home Office's suggestion that shorter maturity yields were more relevant when considering the cost of capital for the Airwave Network as of the end of 2019 given its more limited expected life-span as of that date. While we agreed with elements of the Home Office's reasoning in this respect – notably that the maturity should approximately match the expected life of the assets – we noted that the network's life has been extended to 2026 at this time and that there is continued uncertainty over what its actual useful life will be of the network (see paragraph 17). We consider, therefore, that it is reasonable to have reference to gilts with maturities of at least 7 years – since the network will not be shut down before the end of 2026. While we do not seek to make predictions regarding the actual useful life of the network, we have considered gilts with maturities of between 7 and 15 years. As of late 2019/early 2020, such gilts had yields of between -2.3% and -2.6%.

44 ILGs are indexed to RPI inflation rather than CPI inflation, with the latter widely considered to be a better measure of price changes in the economy.[686] Figure J-3 shows these two inflation measures from 2001 to 2021. CPI has averaged 2.2% over this period, while RPI has average 3.0%, ie the 'wedge' between the two measures has been approximately 0.8 percentage points. However, this differential is expected to increase slightly in the future, with the Office for Budget Responsibility (OBR) forecasting a difference of 0.9 percentage points in the next few years. [687]

[686] See UK Consumer Price Statistics: A Review – UK Statistics Authority for a full discussion of the relative merits of RPI and CPI inflation.
[687] Office for Budget Responsibility (December 2019), Forecast evaluation report, pages 20–21 Box 2.3.

Figure J-3: RPI and CPI inflation, 2001 to 2021



Source: CMA analysis of ONS data

45 On this basis, we consider that an investor at the start of the period, ie around 2001, would have expected a CPI-real RFR of between 2.5% and 3.0%[688] for the expected life of the Airwave Network. Similarly, while we note that future changes in yields curves are uncertain, for the period from 2020 onwards, we provisionally consider a CPI-real RFR of approximately -2.0% to -1.0% is reasonable.[689] We note that this range is somewhat broader than that given by adjusted gilt yields around late 2019/2020 but we provisionally consider that such an approach is appropriate given uncertainty over potential future movements in gilt yields.

Total market return and equity risk premium

46 The ERP is the additional return that investors require to compensate them for assuming the risk associated with investing in equities rather than in risk-free assets. When seeking to understand what the ERP was over a historical period of time, it is necessary to identify the returns which investors expected to make on the market (the "Total Market Return" or "TMR") and deduct the relevant RFR (as estimated above).

47 There are two types of approach that can be used to estimate the TMR. Historical methods seek to derive the TMR from a long run of data on realised returns on equities. Forward-looking

[688] These figures are equal to the 1.7% to 2.2% range of yields shown in **Error! Reference source not found.** as of January 2001 uplifted by 0.8% to allow for the difference between CPI and RPI inflation.
[689] A range of -1.4% to -1.7% is given if one uplifts the -2.6% to -2.3% range of gilt yields by the 0.9 percentage points of the RPI-CPI wedge.

approaches seek to estimate the expected TMR based on either the reported expectations of market participants or the TMR implied in asset prices at the start of the period.

48 There is no universally accepted method for deriving the TMR or the ERP. Both concepts are concerned with investors' ex-ante expectations of returns, which are largely unobservable. The academic literature on the subject is large and can be categorised into three types:

(a) Studies that assume that historical realised returns are equal to investors' expectations ('historical ex-post approaches').

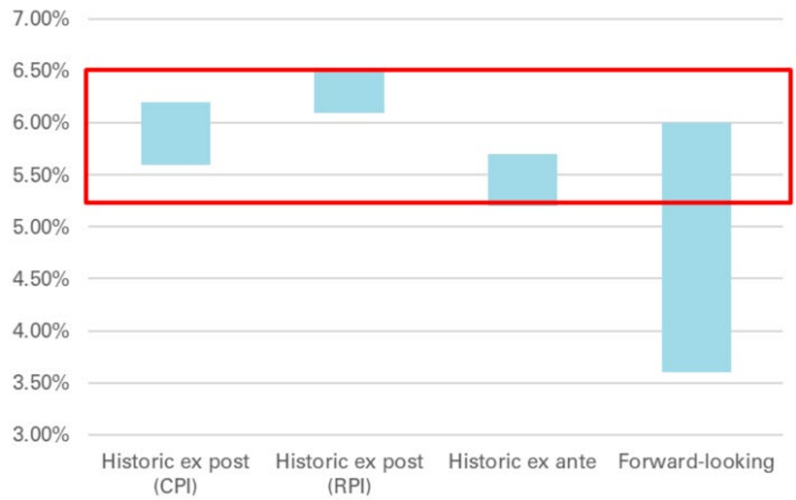
(b) Studies that fit models of stock returns to historical data to separate out ex-ante expectations from ex-post good or bad fortune ('historical ex-ante approaches').

(c) Studies that use current market prices and surveys of market participants to derive current forward-looking expectations ('forward-looking approaches').

49 All of the above methods have a degree of uncertainty associated with them, and any answers from these analyses require a large number of assumptions and significant amounts of judgement.

50 The CMA recently assessed the evidence on TMR in detail in its Ofwat PR19 price redeterminations.[690] It concluded that a (CPI-)real TMR range of 6.15% to 7.46% was appropriate, with a mid-point of 6.8%. A summary of its analysis is set out in Figure J-4 below.

Figure J-4: CMA analysis of evidence on TMR (RPI-real), PR19

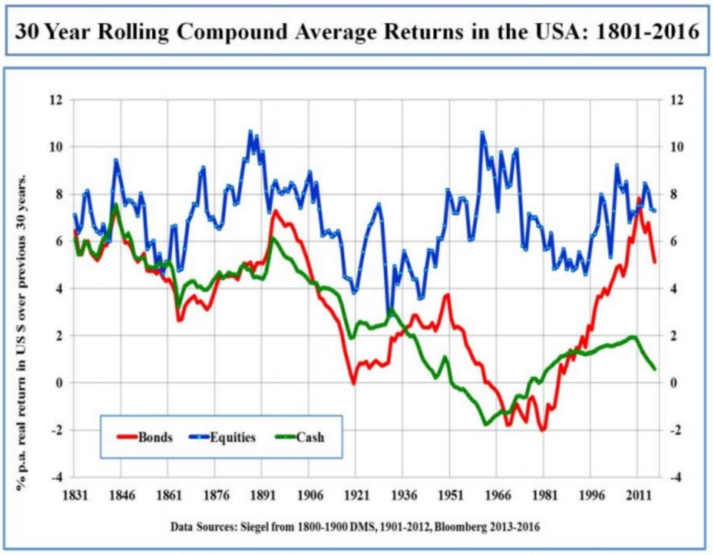


Note: All figures in this chart are "RPI-real". To achieve an equivalent "CPI-real" estimate, these figures should be increased by approximately 1 percentage point.

51 We note that the market evidence provides some support for the view that the TMR is more stable over time than the ERP (see Figure J-5 below). As a result, we do not believe that a different TMR should be applied at different points over the lifetime of the Airwave Network and provisionally consider that the CMA's assessment for the PR19 redetermination remains appropriate for this market-wide element of the cost of capital. We have included this range in our provisional WACC estimates.

[690] CMA (2021), Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited price determinations final report

Figure J-5: Compound average real returns on bonds, equities and cash in the USA between 1801 and 2016



Source: UKRN Report 2019, Figure 4.4

Tax Rate

52 The corporation tax rates applicable over the period are set out in Table J-2. The average tax rate for the period as a whole is 25%, with rates at 30% around 2001, and expected to be 22% (on average) from 2020 to 2026. We have used these figures in our WACC estimates.

Table J-2: UK corporation tax rates (historic & forecast)

	2001	2002	2003	2004	2005	2006	2007	2008	2009
%	30	30	30	30	30	30	30	30	28

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
%	28	26	24	23	21	20	19	19	19	19

	2020	2021	2022	2023	2024	2025	2026
%	19	19	19	25	25	25	25

Source: Main rates for all profits except ring fence profits from HMRC.

Equity betas

53 The beta of an asset measures the correlation between the volatility of the returns on the asset and the returns on the market as a whole, or the exposure of the firm to systematic or 'non-diversifiable' risk. It is in return for assuming this (market) risk that investors require an (equity risk) premium over the risk-free return.

54 The beta value of a listed firm can be directly estimated as the covariance between the stock's returns and the market's returns, divided by the variance of market returns. However, when estimated in this way, the beta value reflects the full range of activities undertaken by a listed business and, as a result, may differ from the beta of the relevant activities for the purposes of our investigation.

55 Within a CAPM framework, changes in gearing affect equity betas. Hence, it is necessary to adjust for gearing differences in order to make comparisons between equity betas. We do this by calculating the asset beta, ie the beta at zero gearing. In this section, we first set out the range of beta estimates that we have collected on our sample of comparator firms.

Identification of relevant comparator firms

56 In order to estimate an appropriate beta for the Airwave Network, it is first necessary to identify a set of relevant comparator firms.

57 In our Cost of Capital Working Paper, we drew on the analysis undertaken by Goldman Sachs for Motorola. This identified 15 potential comparator firms, 10 of which it considered to be "key peers" (see Figure J-6 below). We reviewed this list of firms and found many of the "key peers" to be relevant comparators. However, we reasoned that Centrica was a less relevant comparator than some of the other firms listed, given that its portfolio of activities includes upstream oil and gas exploration and energy market trading.

58 We set out our preliminary view that most weight should be placed on the UK utilities as comparators due to the following similarities with the Airwave Network:

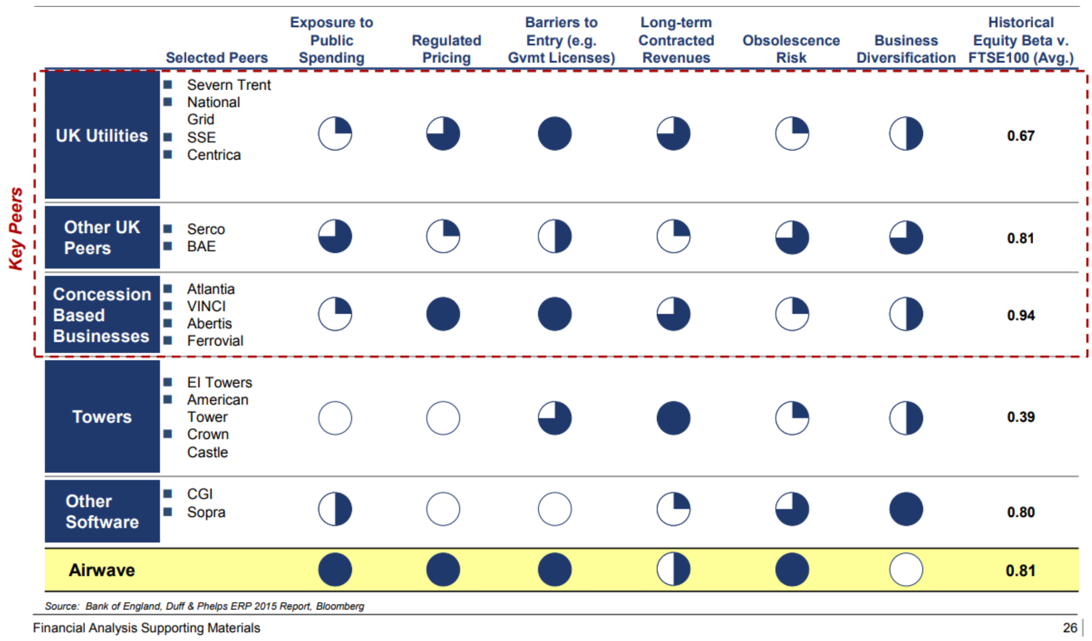
(a) First, they are largely natural monopoly / network businesses with the accompanying barriers to entry and therefore faced limited or no competition;

(b) Second, they benefit from revenues which are inflation-indexed, with limited exposure to changes in customer demand across the economic cycle due to the essential nature of the products/services they provide; and

(c) Third, the main risk faced by these businesses is managing costs in developing and operating their networks over time and ensuring that certain levels of service are maintained (in order to avoid penalties).

59 In addition to these factors, we noted that Airwave Solutions also has the benefit of very limited risk of bad debts due to the nature of its customer base. In this context, we considered that United Utilities should also be included as a relevant UK utility comparator.

Figure J-6: Goldman Sachs analysis of comparator firms to the Airwave Network



Source: Goldman Sachs Opinion Letter, prepared for Motorola Inc, December 2015

60 In response to our Working Paper, the Home Office submitted that only utility companies should be included in the comparator set for the Airwave Network, agreeing with the CMA's reasoning, as set out above, and noting the following points:

(a) Similar to the Airwave Network, utilities generally have high asset intensity. Furthermore, while the length of the initial PFI agreement of nearly 20 years is longer than typical utilities' regulatory periods, which could be argued to introduce greater potential for cost fluctuations, a longer contract implies no regulatory resets and no regulatory risk. Therefore, on balance, the Home Office considers that the risks of the Airwave Network and regulated utilities are similar.

(b) The Home Office agrees with the CMA's exclusion of Centrica due to its activity in upstream oil and gas exploration and energy market trading, however it considers that less weight should be placed on SSE as a comparator, given the different risks it faces from pure-play regulated utilities;

(c) The CMA has not provided equivalent justification for the inclusion of other UK contractors (Serco and BAE) and other concession-based businesses outside of the UK (Atlantia, Ferrovial, and VINCI) in the comparator set. The Home Office does not consider the five additional comparators selected by the CMA which operate outside the utility sector, to be suitable comparators to the Airwave Network, for the following reasons:

(I) In terms of the selected UK contractors (Serco and BAE), while it is understood that the risk of individual contracts held by Serco and BAE may happen to be similar to the risk of the Airwave contract, the Home Office told us that it fails to see why the risk of a business based on bidding and winning multiple contracts would be comparable to the risk of a single project. In other words, one of the largest factors driving revenue of these contractors would be their ability to win new contracts or renew the existing ones – this is distinct from the revenue risk of a single contract such as for the Airwave Network, which has inflation-indexed revenue and limited exposure to changes in demand.

(II) The concession-based comparators selected by the CMA—VINCI, Ferrovial and Atlantia—are mainly focused on concessions related to highways and airports. The Home Office submitted that the transport sector faces different risks to those of the Airwave Network, namely due to more significant volume risks, at least some of which are correlated with economic activity – also making them unsuitable comparators. In addition to transport, VINCI and Ferrovial are also involved in the construction industry which has risks different from those of the Airwave Network. Importantly, similar to the revenue risks faced by BAE and Serco, VINCI and Ferrovial would need to bid for and win new construction contracts, which is substantially different to the revenue risk faced by Airwave Solutions.

(d) Finally, the Home Office highlighted that, in a study undertaken for HM Treasury in 2002, a comparator set consisting solely of UK utilities was used to assess the value for money of PFI projects.[691] [692]

61 The Deloitte Report,[693] which Motorola submitted[694] we should place weight on, included a large number of additional companies with a greater focus on technology firms. Motorola did not put forward, and the Deloitte Report did not contain, any reasoning to support the inclusion of these firms.

Figure J-7: Deloitte analysis of Airwave's beta

Ticker	Guideline Companies	(1) Total Book Value of Debt (1)	(1) Total Book Value of Preferred	(2) Total Market Value of Equity	Total Market Value of Capital	Debt to Capital	Equity to Capital	Marginal Tax Rate	(3) Levered Equity Beta	(4) Unlevered Equity Beta
MSI	Motorola Solutions, Inc.	4,390	-	11,715	16,105	27.3%	72.7%	40.0%	0.69	0.56
A	Agilent Technologies, Inc.	1,655	-	12,430	14,085	11.8%	88.2%	40.0%	1.27	1.17
DHR	Danaher Corp.	15,012	-	60,404	75,416	19.9%	80.1%	40.0%	1.10	0.96
DOV	Dover Corporation	2,768	-	9,472	12,241	22.6%	77.4%	40.0%	1.25	1.06
ETN	Eaton Corporation plc	8,672	-	25,916	34,588	25.1%	74.9%	40.0%	1.40	1.16
HRS	Harris Corporation	5,026	-	9,307	14,333	35.1%	64.9%	40.0%	1.25	0.94
IR	Ingersoll-Rand Plc	4,239	-	13,796	18,035	23.5%	76.5%	40.0%	1.25	1.06
NCR	NCR Corporation	3,252	-	3,674	6,926	47.0%	53.0%	40.0%	1.32	0.86
PH	Parker-Hannifin Corporation	3,299	-	13,691	16,991	19.4%	80.6%	40.0%	1.34	1.17
RTN	Raytheon Company	5,330	-	37,330	42,660	12.5%	87.5%	40.0%	0.84	0.77
ROK	Rockwell Automation Inc.	1,654	-	13,472	15,126	10.9%	89.1%	40.0%	1.19	1.11
COL	Rockwell Collins Inc.	2,475	-	11,430	13,905	17.8%	82.2%	40.0%	0.81	0.72
TEL	TE Connectivity Ltd.	3,870	-	22,468	26,338	14.7%	85.3%	40.0%	1.03	0.94
TYC	Tyco International plc	2,298	-	14,368	16,666	13.8%	86.2%	40.0%	1.08	0.98
BT.A	BT Group plc	12,432	-	55,570	68,002	18.3%	81.7%	20.0%	1.04	0.88
AIR	Airbus Group SE	10,534	-	48,762	59,296	17.8%	82.2%	25.0%	1.12	0.97
VOD	Vodafone Group Plc	55,801	-	80,971	136,772	40.8%	59.2%	20.0%	0.74	0.48
					Average	22.2%	77.8%			0.93
					[illegible]	19.4%	80.6%			0.96
					[illegible]d	**20.0%**	**80.0%**			**1.00**

Source: Deloitte, 2016, Exhibit 6.

62 We considered both the Home Office's and Motorola's submissions on the appropriate comparator set carefully. First, we noted that comparator list used by Deloitte contained a range of firms with materially different characteristics from Airwave. In particular, several of the firms appear to focus on industrial manufacturing (eg Parker Hannafin, Dover Corp, Agilent and Ingersoll-Rand), while others have a technology focus (eg Rockwell Automation and NCR Corporation). These firms do not exhibit the critical infrastructure (and associated investment)

[691] PwC in association with Professor Julian Franks (2002), 'Study into the rates of return on PFI projects'
[692] Home Office submission and response to working papers, 24 May 2022, paragraphs 49 to 57.
[693] Deloitte report for Motorola, 3 August 2016.
[694] Motorola's response to the CMA's working papers on Profitability and the Cost of Capital, paragraph 50.

characteristics of the Airwave Network, or its relatively long-term contracted and guaranteed revenues. We did not, therefore, consider these firms to be good comparators in general.

63 With respect to the Home Office's submissions regarding Serco and BAE, we recognise that the risks associated with a single, existing contract may be lower than those associated with businesses which seek to win new long-term contracts on an on-going basis, due to the latter's greater exposure to volume risks with potential for the economic cycle to influence overall volumes. Similarly, we agree that the risks associated with concession businesses active in the highways, airports and construction sector were likely to be greater than the risks faced by the Airwave Network, with more significant exposure to the economic cycle. We noted, however, that we have already placed more weight on UK utilities when assessing the overall level of beta and provisionally did not consider that further adjustment was required in this respect.

64 The full list of comparators we have considered is set out in Table J-3 below.

Beta estimates

65 The betas of the listed comparator companies are shown in Table J-3 and have been calculated on a daily, weekly and monthly basis over the last 10 years.[695] For UK-listed firms, we have estimated their betas against the FTSE All-Share index, while for overseas-listed businesses, we have estimated their betas against the broadest home-country index available.

66 Our sample of firms as a whole has an average asset (or unlevered) beta of between 0.52 to 0.57. The UK utility comparators as a group have significantly lower average betas than the other firms. Within this Group, SSE, which had material unregulated revenues over the last 10 years, has a materially higher beta than the other UK utilities. The pure-play regulated firms had asset betas of between 0.25 and 0.35, while SSE's beta was around 0.4 to 0.6.

Table J-3: Levered and unlevered betas of comparator firms (last 5 years)

	Levered beta			**Unlevered beta**		
Company	*Daily*	*Weekly*	*Monthly*	*Daily*	*Weekly*	*Monthly*
Severn Trent	0.59	0.62	0.56	0.32	0.34	0.31
National Grid	0.61	0.60	0.39	0.37	0.36	0.24
United Utilities	0.60	0.63	0.50	0.30	0.32	0.25
SSE	0.86	0.83	0.58	0.61	0.59	0.41
Average UK Utilities	*0.67*	*0.67*	*0.51*	*0.40*	*0.40*	*0.30*
Serco	0.86	0.89	0.81	0.71	0.73	0.67
BAE	0.89	0.91	1.01	0.80	0.82	0.92
Atlantia	0.84	0.83	0.91	0.51	0.50	0.55
VINCI	1.17	1.09	1.01	0.90	0.83	0.77
Ferrovial	0.80	0.82	0.77	0.62	0.64	0.60
Average others	*0.91*	*0.91*	*0.90*	*0.71*	*0.71*	*0.70*
Average all	***0.80***	***0.80***	***0.73***	***0.57***	***0.57***	***0.52***

Sources: Refinitiv

[695] We have focused on longer-term beta estimates given the extended time period of our analysis. We also estimated betas over the last 2 and 5 years as a cross-check and noted that there was significant consistency between these estimates and those calculated over the last 10 years.

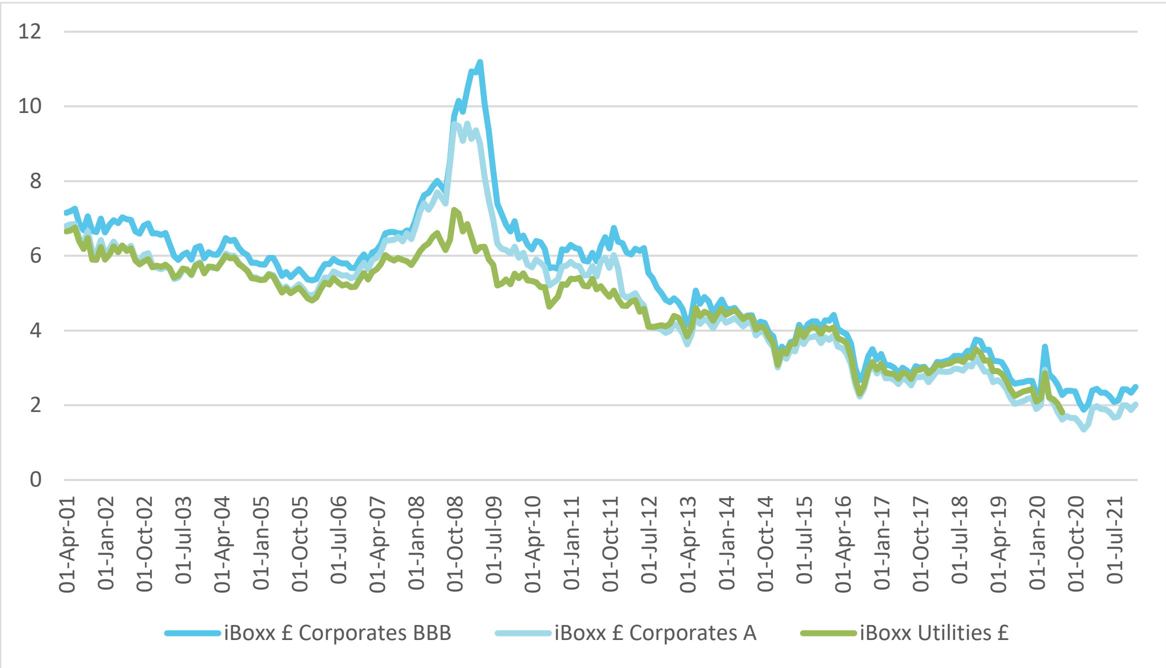
**Betas have been unlevered using the following formula: Unlevered Beta = Levered Beta / (1 + ((1 – Tax Rate) x (Debt/Equity))), where the tax rates used is the average statutory corporate tax rate in UK. The tax rates used are set out in Table J-2. The levered beta is also called the equity beta; the unlevered beta is also called the asset beta.*

67 As discussed in paragraph 29, we provisionally consider that it is appropriate to place more weight on the UK utility comparators given their numerous similarities to the Airwave business. Therefore, our provisional conclusion is that an asset beta of between 0.35 and 0.55 is appropriate for the Airwave business. The lower end of this range, which is slightly lower than that used in our WACC Working Paper, reflects the average asset beta of UK utility comparators (when measured on a daily and weekly basis)[696] once a reduced weight is placed on SSE due to its material unregulated revenues, while the upper end of this range reflects the average of all the comparators as a whole. When combined with gearing of between 0% and 50% (see paragraph 55 onwards), this gives an equity beta of around 0.55 to 0.62.

Cost of debt

68 In order to come to a view on an appropriate cost of debt for the Airwave Network, we have collected data on yields on UK corporate bonds with investment-grade credit ratings over the relevant period as shown in Figure J-8.[697] We consider that this credit rating is consistent with both the ratings of the comparator companies we have considered when estimating beta for Airwave and with our gearing estimate.

Figure J-8: Corporate bond annual yields, 2001 to 2021



Source: IHS Markit, CMA analysis

69 The average yields are set out in Table J-4. We compared these figures with the debt costs of 3.5% used by Goldman Sachs in their valuation of the Airwave business (see Figure J-1) and 4.2% used by Deloitte. We note that the yields on these indices were around 3.5% in 2016, albeit yields were

[696] We note that monthly asset betas are materially lower for UK utilities, averaging around 0.30.
[697] Yield is calculated from iBoxx GBP Liquid Corporates Large Cap Index available on Markit.

around 3 percentage points higher as of 2001, while the current costs of debt are around 1 percentage point lower.

Table J-4: Average corporate bond yields

	iBoxx Corp A	*iBoxx Corp BBB*	*iBoxx Utilities*
Av. yield 2001[29]	6.5%	6.9%	6.4%
Av. yield 2001 to 2019	5.0%	5.5%	4.8%
Av yield 2019 to 2020	2.1%	2.7%	2.5%

Source: IHS Markit, CMA analysis

70 On this basis, we consider that a nominal cost of debt of approximately 6.5% was appropriate as of the beginning of the historical period, ie around 2001, and a debt cost of approximately 2.5% is appropriate for the period from January 2020 onwards.

Gearing

71 We considered both the analysis undertaken by Goldman Sachs and Deloitte for Motorola, as well as the gearing of comparator firms in coming to a view on the appropriate gearing assumption for the Airwave business.

72 Goldman Sachs assumed gearing of between 40% and 60% in its valuation of the business, while Deloitte assumed gearing of only 20%.

73 The Home Office highlighted that Airwave Solutions currently has no debt in it and that this level of gearing is reasonable in the context of a business with an uncertain and limited lifespan.[698]

74 Table J-5 shows the average gearing of the comparator group of firms over the last decade. The UK utilities as a group have higher average gearing than the other firms in the sample, with gearing of between 35% and 55%. The gearing of the other firms varies materially across the group but averages around 25%.

[698] Home Office submission and response to working papers, 24 May 2022, paragraph 71.

Table J-5: Gearing levels of the comparator firms

Company	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Average
Severn Trent	52.5	51.6	47.8	47.5	48.0	50.7	56.5	50.3	54.0	46.2	**50.5**
National Grid	45.0	43.0	38.9	40.8	44.6	44.3	49.9	45.7	50.1	51.8	**45.4**
United Utilities	55.9	56.4	49.6	50.4	53.5	56.5	59.7	55.1	56.9	51.3	**54.5**
SSE	27.9	30.8	27.6	24.5	31.3	35.4	46.1	40.0	38.1	33.6	**33.5**
UK utilities avg	***45.3***	***45.4***	***40.9***	***40.8***	***44.4***	***46.7***	***53.0***	***47.8***	***49.8***	***45.7***	
Serco	20.6	23.3	39.9	21.0	8.3	14.6	19.2	9.7	25.5	28.2	**21.0**
BAE	6.6	7.5	6.9	10.7	9.2	8.5	11.3	15.6	17.6	17.1	**11.1**
Atlantia	53.0	43.1	40.6	34.1	36.2	31.9	40.5	63.2	68.4	55.8	**46.7**
VINCI	41.0	30.7	36.6	29.0	27.8	23.6	27.8	29.4	31.8	26.3	**30.4**
Ferrovial	41.3	37.8	34.4	30.5	31.6	24.8	23.8	19.7	18.3	15.8	**27.8**
Other firms avg	***32.5***	***28.5***	***31.7***	***25.1***	***22.6***	***20.7***	***24.5***	***27.5***	***32.3***	***28.6***	
Average	***38.2***	***36.0***	***35.8***	***32.1***	***32.3***	***32.3***	***37.2***	***36.5***	***40.1***	***36.2***	

Source: Refinitiv and CMA analysis.

75 We note the current lack of debt in Airwave Solutions and the Home Office's submissions on this point. We provisionally consider that it is reasonable to assume zero gearing in a business such as this, ie 100% equity funding, for the period from early 2020 onwards. However, we have also considered the gearing levels of listed UK utility comparators of approximately 50% and included this in our WACC range. This is in line with our approach to the beta range, as set out above, ie placing most weight on the UK utilities as comparators. For the PFI period, we have continued to use a gearing range of 35% to 50% based on the overall sample average and the UK utilities average as set out in the table above.

Company-specific premium

76 We observed that the Deloitte Report included a company-specific premium of 8% when estimating a cost of capital for Airwave Solutions, which it describes as being "to account for uncertainty regarding how long the cashflows are expected to be generated from the existing LMR network system acquired from Airwave."[699]

77 The key theoretical premise of the CAPM is that investors are able to diversify their risk and therefore only require an additional return to the extent that the returns expected from investing in a given business are correlated with those of the broader market, ie systematic risk. (This is accounted for via beta, as discussed above.) They do not require compensation for company-specific risks since these can be diversified away.

78 We recognise that there are often uncertainties over cash flows in businesses but note that these are correctly addressed via considering a range of scenarios and probability-weighted cash flow forecasts. We observe that the Goldman Sachs report undertook a valuation of Airwave Solutions which adopted this approach, ie considered different potential periods over which cash flows would be received and the probability of each of those being realised. We provisionally consider that this is the methodologically correct way to adjust for such uncertainties over cash flows. A

[699] Deloitte report for Motorola, 3 August 2016, page 42.

company-specific premium is not. We have not, therefore, taken into account any such premium. We consider the arguments for the use of a hurdle rate separately, below.

Small company premium

79 As noted in paragraph 77, the key insight of the CAPM is that no incremental return is required for company-specific factors – including size – beyond covariance in returns with the broader market. We note that there are other asset pricing models, such as the Fama French three factor model, which include a size factor. However, we observe that the evidence to support the statistical significance of the factors posited in this model in the UK context is mixed at best and that the rationale for a small company premium is unclear and may well not apply to a business such as Airwave Solutions, which is critical infrastructure with revenues which are guaranteed by the UK state. The CMA has previously considered the inclusion of a small company premium for Bristol Water, allowing an uplift with respect to debt and associated liquidity costs. However, we note that Airwave Solutions has revenues that are approximately five times larger than Bristol Water. In this context, we provisionally consider that such uplift cannot be justified.

Country Risk premium

80 Finally, we note that Deloitte estimated a cost of capital using US benchmarks and then applied a UK-specific country risk premium to adjust for the difference in market risks between the UK and the US.

81 We note that our analysis has been based on UK-specific metrics (RFR, TMR, and to an extent Beta values where significant weight has been placed on UK utilities). In this context, we do not consider that any further country-specific adjustment is required as the risks of the UK market are fully reflected in the parameters estimated.

Provisional conclusions on WACC

82 Our WACC estimates are between 7.7% and 9.6% as of 2001 (mid-point of 8.6%), declining to between 4.3% and 6.8% (mid-point of 5.5%) by the end of 2019. All figures are stated on a pre-tax nominal basis.

Table J-6: CMA estimates of WACC

	Estimate for 'PFI period' (as of April 2001)		Estimate for 'extension' period (as of late 2019 / early 2020)	
	Low	High	Low	High
RFR (CPI-real)	2.5%	3.0%	-2.0%	-1.0%
Equity beta[700]	0.60	0.76	0.62	0.55
TMR	6.2%	7.5%	6.2%	7.5%
CPI Inflation	2.0%	2.0%	2.0%	2.0%
Tax	30%	30%	22%	22%
Gearing	50%	35%	50%	0%
Kd pre-tax	6.5%	6.5%	2.5%	N/A
Kd post-tax	4.6%	4.6%	1.9%	N/A
Ke post-tax	6.8%	8.5%	5.1%	5.7%
Ke pre-tax	8.8%	11.3%	6.0%	6.8%
WACC Pre-tax (nominal)	**7.7%**	**9.6%**	**4.3%**	**6.8%**

Source: CMA analysis

83 We note our WACC estimates for the "extension" period are in line with the range estimated by Goldman Sachs at the time of Motorola's acquisition of Airwave Solutions from Macquarie, and slightly below those used by Motorola for its impairment reviews, although, as noted above, Motorola has stated that its estimates for that purpose are conservative. Our WACC estimate as of 2001 is above the later estimates and sits around [✂] percentage points below the WACC included in the PFI model.

The relevance of hurdle rates

84 As set out in paragraph 21, Motorola submitted that, for the purposes of our profitability analysis, we should take into account the hurdle rate that was agreed between Airwave Solutions and the Home Office when the original PFI Agreement was signed, ie the [✂]% post-tax real / [✂]% pre-tax nominal WACC.

85 We recognise that prior to construction, there would have been some uncertainty over the costs Airwave Solutions would incur in developing the network and, therefore, over the returns that it could expect to make. We note that this uncertainty was reflected in the original price agreed between Airwave Solutions and the Home Office, which appears to have targeted a (higher) "hurdle rate" rather than a standard WACC for the Airwave Network. Moreover, we observe that it transpired that the costs of developing/building the Airwave Network were significantly higher than originally envisaged, albeit not sufficiently so to result in a loss for Airwave Solutions.[701]

86 It is less clear to us, however, that around 2001 there was, as Oxera describes, 'a relatively large downside risk of failure compared with the likelihood of success'. We do not have evidence to

[700] Note: the equity betas differ slightly due to the differing tax rates. The underlying asset beta range is the same across both time periods (a range of 0.4-0.55).
[701] This is reflected in the fact that Airwave earned an IRR which was slightly above its own WACC estimate, as set out in the PFI model, and below the "hurdle rate" reflected in the price agreed between Airwave and PITO.

inform us as to the relative probability of success and/or failure associated with the Airwave project.

87 Regardless of whether a higher hurdle rate should be used as the benchmark against which to assess profitability over the 2001 to 2019 period, however, we do not agree with a number of aspects of Motorola's submission. In particular:

(a) The price/revenues reflected in the PFI model[702] may not be the same as the competitive price given the limitations of the original tender.[703] As a result, the IRR implicit within the model may not reflect the actual / competitive hurdle rate for such an investment; and

(b) The PFI model and therefore the "hurdle rate" that it contained only related to the initial investment in the network to provide services to the police forces. It did not cover subsequent investments to provide additional resilience to the police forces, or to provide services to the ambulance or fire and rescue services, or to any other sharer organisations. We observe that the risks of extending an existing network to provide such services, including an extension to the originally-agreed lifetime of the network, are significantly lower once the original network had been developed. Therefore, we provisionally find that these activities would be more appropriately remunerated at the standard WACC of the business.

88 In summary, our current view is that it is unclear whether or not a hurdle rate should be used as the benchmark against which to assess the profitability of Airwave Solutions over the 2001 to 2019 period. Given that we are not focussing on this period for the purposes of our analysis, we do not consider that we need to come to a firm view on this point. However, our provisional conclusion is that it is not appropriate to apply a hurdle rate to any "extensions" to the original network, either in terms of extending services to additional customers, or extending the original life of the network. Once the Airwave Network had been rolled out and was functioning effectively, meeting the needs of the original customers (ie police services), it is clear that the risks of failure were substantially mitigated. Therefore, we provisionally find that the appropriate benchmark for our assessment of profitability between 2020 and 2026 is the WACC, as set out in Table J-6 above, ie 4.3% to 6.8%, with a mid-point of 5.5%.

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[702] The IRR figure put forward by Motorola was taken from the "PFI" model, which underpinned the original PFI agreement between the Home Office and Airwave. We note that the PFI model that has been provided by Motorola is not a complete model but rather a summary of outputs. [✂]. We would have liked access to the full model in order to critically assess how the various figures were built up. Without it, we can place only limited reliance on this "model".
[703] For example, see: NAO (2002), Public Private Partnerships: Airwave (HC 730). This report notes that [t]he procurement itself was hindered by a lack of competition when all but one of the original bidders withdrew'.

Appendix K: Applying a charge control

Introduction and Summary

1 This appendix provides further detail on our provisional assessment of how the proposed charge control should be applied. A summary of our assessment of these issues, and our provisional decision, are provided in Section 8.

2 The following sets of issues are addressed in turn:

- Charge control design issues: including the scope, form and duration of the proposed charge control, and the information provision requirements it should include.
- Charge control calibration: the levels at which charge control inputs and allowances should be set.
- Reporting requirements and assurance.

3 Our provisional views on charge control design are summarised in Figure K-1, and our provisional assessment of the revenue allowances that should be provided under the proposed charge control is shown in Table K-1.

Our provisional view is that the proposed charge control should:

- Take effect from the commencement of our Order which we expect to be in the first half of 2023, and remain in force until the end of 2029, with a review to be undertaken in 2026 (other than where the shutdown of the Airwave Network makes such a review and/or the continued operation of the charge control no longer necessary)
- Apply to the products and services provided by all Airwave Solutions' business lines, with the exception of: Ambulance Bundle 2; Pronto; CCCRS; Radio terminals (except where part of a managed service); and services associated with the development and provision of a new alternative interworking solution.
- Specify an overall revenue allowance for each year of the control that would limit the level at which charges for services within the scope of the control could be set, subject to CPIH indexation of the identified opex component and the Regulatory Asset Base (ie the relevant asset value), and to adjustments as a result of the cost sharing mechanism described below.
- Include a cost sharing mechanism that applies to capex on external (ie non-Motorola sourced) equipment, such that Motorola would retain 75% of savings achieved relative to a pre-determined target level for the given year (with the other 25% subsequently returned to customers), and Motorola would bear 75% of any over-spend relative to the target level (with the other 25% passed on to customers.
- Include requirements on Airwave Solutions regarding the provision of information to the Home Office, Airwave Network users and the CMA concerning the evolution of capex plans and spend over time.
- Specify reporting and assurance requirements through which Airwave Solutions would be required to demonstrate compliance.

Table K-1: Our provisional view on appropriate charge control allowances

£million

	2023	*2024*	*2025*	*2026*	*2027*	*2028*	*2029*

Allowed revenue	199	197	196	194	192	189	187

Source: CMA analysis
Notes: The Opex component of the allowed revenue figures shown in the table is in 2021 CPIH prices. The depreciation and return on capital components of the allowed revenue figures to be updated in line with CPIH indexation of the Regulatory Asset Base from the beginning of 2023. The proposed indexation arrangements are set out in paragraphs 120 and 164.

4 We published a Potential Remedies working paper in May 2022 which set out our then 'current thinking' on how a charge control should be applied, if it were to be introduced.[704] We consider the responses to that working paper, where relevant, below.

Charge control design issues

5 Charge controls can be developed and applied in a range of different ways, and the appropriateness of different approaches can be affected significantly by characteristics of the context within which the control is being introduced. In our Potential Remedies working paper,[705] we identified a range of design issues including those related to the following questions:

- Which services should the proposed charge control apply to?
- Should only charges be regulated, or should the proposed control also include provisions related to service quality?
- What form of charge control would be appropriate (ie what should it actually constrain, and how)?
- Over what time period should the charge control apply?

6 We consider these questions in turn below. In each case, we briefly describe the design issues raised by the question and the then 'current thinking', as set out in our potential remedies working paper, before summarising submissions we received from the parties which relate to the questions. We then set out our provisional assessment.[706]

Which services should the proposed charge control apply to?

7 This question is concerned with the scope of the charge control. In our May 2022 potential remedies working paper, we said that our current thinking was that a charge control should apply to all Airwave Solutions business lines, with the following exceptions:[707]

- Those services provided under the Ambulance Bundle 2 contract (Ambulance Bundle 2).
- Pronto and CCCRS: these are software business lines; Pronto is a data solution offered to police services, while CCCRS is a command central control room solution offered to police services.[708]
- Radio terminals, except where part of a managed service.

[704] Potential remedies working paper, 16 May 2022.
[705] Potential remedies working paper, 16 May 2022, paragraphs 27-72.
[706] Our framework for assessing potential remedies is set out in Section 8.
[707] Potential remedies working paper, 16 May 2022, paragraph 31.
[708] See Section 6.

8 We also said we were continuing to consider whether it may be appropriate for interworking services to be included within the scope of a charge control remedy.[709]

Parties' submissions

9 Motorola did not comment on this aspect in its response to the potential remedies working paper. However, our thinking was informed by earlier Motorola responses to questions on Airwave Solutions' services. In particular, Motorola told us that:

- Pronto and CCCRS were not integral to the provision of LMR, were run separately by a different leadership team, and their costs and revenues are tracked separately.[710]
- The Ambulance Bundle 2 contract covered control room services and terminals (including terminal support), and that the Department of Health and Social Care had split the Ambulance Bundle 2 requirements and awarded contracts to Frequentis (control room services) in 2016, Terrafix (mobile data services) in 2019, Exponential E (service partner) in 2021 and was looking to tender for LTE devices. [711] Motorola said that the Ambulance Bundle 2 contract with Airwave Solutions was set to roll off in 2022-2023 once the new providers went live.[712]

10 The Home Office said it considered that the charge control should apply to interworking services, and that Motorola's ownership of Airwave Solutions provided it with market power in terms of the delivery of interworking services in the same way as it provided it with market power in terms of the delivery of the original core services of the PFI Agreement.[713]

11 The Home Office said it agreed with the exclusion of radio terminals and Pronto (given the extent of competition in relation to those services), but requested that we consider further whether CCCRS services should be included within the scope of the charge control.[714] The Home Office said that CCCRS services were much more closely connected to the provision of Airwave Network services than was the case for Pronto.[715] The Home Office also said [✂].[716]

12 In relation to the Home Office's comments on the upgrade of control rooms, Motorola said that it had committed to enhancing its CRS product to include ESN functionality, and that this commitment had been made through direct contracts with user organisations as opposed to the Home Office.[717] Motorola said it had shared a plan with the Home Office and its customers setting out the ESN development roadmap for its CRS product which was due to complete in July 2023, and that it was tracking to that plan.[718]

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[709] Potential remedies working paper, 16 May 2022, paragraph 34.
[710] Motorola's response to the profitability methodology working paper, 10 January 2022, paragraph 11.
[711] Motorola's response to the profitability methodology working paper, 10 January 2022, section 2.
[712] Motorola's response to the profitability methodology working paper, 10 January 2022, section 2.
[713] The Home Office's Submission and response to the CMA's working paper on Potential Remedies, 31 May 2022, paragraph 8.
[714] The Home Office's Submission and response to the CMA's working paper on Potential Remedies, 31 May 2022, paragraph 7.
[715] The Home Office's Submission and response to the CMA's working paper on Potential Remedies, 31 May 2022, paragraph 7. The Home Office said that the treatment of Ambulance Bundle 2 services was a matter for the Department of Health and Social Care to comment on.
[716] Home Office submission and response to working papers, 24 May 2022, paragraph 225.
[717] Motorola's responses to the Home Office's responses to the CMA Working Papers, 4 July 2022.
[718] Motorola's responses to the Home Office's responses to the CMA Working Papers, 4 July 2022.

Provisional assessment

13 For a charge control remedy to mitigate detrimental effects on customers resulting from the AEC as comprehensively as is reasonable and practicable, we consider that it should be applied to all those services where the supplier is likely to be able to price above competitive levels and thereby able to earn supernormal profits. Proportionality requires that it should not apply more broadly than is required to address the detrimental effects of the AEC, ie to any products or services where there (already) exists a reasonably effective competitive constraint.

14 Our provisional view is that the proposed charge control should apply to the products and services provided by all of Airwave Solutions' business lines, with the following exceptions:

- Ambulance Bundle 2
- Pronto
- CCCRS
- Radio terminals, except where part of a managed service
- Services associated with the development and provision of a new alternative interworking solution.[719]

15 The Department of Health and Social Care/Ambulance Radio Programme did not respond to our Potential Remedies working paper, but in an earlier submission referred to its aspirational objective of exiting much of the Ambulance Bundle 2 services at the end of 2022.[720] We note that this appears consistent with Motorola's comment that the Ambulance Bundle 2 contract with Airwave Solutions was set to roll off in 2022-2023 once new providers went live. In line with this, our provisional view is that the charge control should not cover the provision of Ambulance Bundle 2 services.

16 We note that the Home Office agreed with the exclusion of radio terminals and Pronto, noting the extent of competition in relation to those services. Effective competition for these services would preclude Airwave Solutions from charging prices above the competitive level for them. Our provisional view is that these services should be excluded from the scope of the proposed charge control.

17 The Home Office requested that we consider further the treatment of CCCRS services, but did not provide evidence to support why it would be appropriate for CCCRS services to be included within the scope of the charge control. Our provisional assessment is that CCCRS services should be excluded from the scope of the charge control, in line with the approach we took in our Potential Remedies working paper. However, we are inviting further views on the extent to which relevant CCCRS services can be procured from other parties such that users can switch to alternative providers over time. We will consider this matter further and will take the additional information we gather on competition in relation to CCCRS services into account when forming our final view.

18 Our provisional view is that interworking services associated with the development and provision of a new alternative interworking solution should be excluded from the scope of the proposed charge control, as there is not currently a reliable basis upon which the likely costs associated with

[719] As set out in Section 8, our proposed interworking remedy applies to services associated with the development and provision of a new alternative interworking solution.
[720] Department of Health and Social Care/Ambulance Radio Programme submission, 2 September 2021, page 3.

such services could be assessed (in a context where the form of alternative interworking solution that may be required has yet to be specified). This practical issue does not apply to interworking services associated with the existing proprietary interworking solution, and our provisional view is that such services should be included within the scope of the charge control. This approach to interworking means that the charge control would not in itself provide a means of mitigating the detrimental effects of the AEC insofar as it relates to the unilateral market power of Airwave Solutions in relation to the provision of services specifically associated with the development and provision of a new alternative interworking solution. As set out in Section 8, our provisional view is that this issue should be addressed through our proposed interworking remedy.

Should only charges be regulated, or should the proposed control also include provisions related to service quality?

19 It is common for charge controls in regulated sectors to include a range of provisions related to service quality and/or the delivery of some defined outputs. That is, charge controls often include provisions that relate not simply to charge levels, but also to the specification of the services that the relevant charges are intended to provide for.

20 For Airwave Network services, there are existing contractual arrangements aimed at ensuring the appropriate provision of service quality over time. In our Potential Remedies working paper, we said that we had not received submissions pointing to material deficiencies in those existing arrangements, other than in relation to transparency issues and interworking. We said that – given this – our current thinking was that any charge control arrangements that may be introduced should focus only on charge levels, and that we should treat the specification of service requirements, and provisions in relation to service quality, as addressed adequately through existing contractual provisions.

Parties' submissions

21 In its response to our Potential Remedies working paper, Motorola did not comment on whether a charge control (if introduced) should focus only on charge levels and treat service quality issues as otherwise sufficiently addressed. However, Motorola said that imposing a charge control regime of the kind envisaged in the working paper would involve the Airwave service being provided under fundamentally different conditions.[721] In explaining this view, Motorola said it would be highly regrettable if it were unable to concentrate on making necessary mission-critical network changes no matter the cost, and to have to engage in a pre-approval process with the Home Office.[722] Motorola said that its experience from ESN was such that it could not undertake critical investments "on risk" in the hope that the Home Office might at some point agree to cover the costs. Motorola said that in that scenario – which it said was eminently foreseeable – the CMA's intervention 'could literally cost lives' by taking key operational decisions out of the hands of Airwave and putting them in the hands of the Home Office.[723] Motorola also emphasised the need to consider the risks of a charge control being set too tightly, and said that could put at risk necessary investments in the network.[724]

[721] Motorola's response to the CMA's working paper on Potential Remedies, 30 May 2022, paragraphs 4-5.
[722] Motorola's response to the CMA's working paper on Potential Remedies, 30 May 2022, paragraph 5.
[723] Motorola's response to the CMA's working paper on Potential Remedies, 30 May 2022, paragraph 5.
[724] Motorola's response to the CMA's working paper on Potential Remedies, 30 May 2022, paragraph 12.

22 The Home Office said that the existing contractual provisions had not led to significant concerns regarding service quality to date, and that it was unlikely that service level requirements would need to be regulated within the charge control, unless at some future point there was a significant deterioration in service for which the control may need to be reopened. However, the Home Office raised concerns over the potential for poor stewardship of the Airwave Network,[725] and said that there would need to be greater transparency around service performance and capital expenditure.[726]

Provisional assessment

23 We have not received submissions pointing to material deficiencies in existing contractual provisions related to service quality, and our provisional view is that the proposed charge control should not include additional provisions related to performance targets for service quality. However, as set out in Appendix B, the financial implications for Airwave Solutions of performance that falls short of contractually defined target levels, is that service credits may need to be applied, and the level of relevant service credits is determined by reference to the level of the charges that are payable for the relevant services. This implies that the introduction of a charge control that materially reduced the level of charges for Airwave Network services could also, indirectly, have the effect of reducing the financial implications for Airwave Solutions of its performance falling short of contractually defined target levels.

24 Our provisional view is that the financial implications for Airwave Solutions of performance levels that fall short of those that are contractually defined should not be lessened by the introduction of a charge control. In line with this, our provisional view is that the service credits to be applied when Airwave Solutions' performance falls short of contractually defined target levels should continue to be set at levels equivalent to those that would have applied were the proposed charge control not to be introduced.

25 As was noted in Appendix B, the Airwave Network has, in general, been considered to be a highly resilient network, with only 0.07 per cent of revenues paid back to the three main emergency service users in service credits over the ten years to the end of 2020. Given the limited extent of service credits that were required over that ten year period, and the scale of the capex allowances provided for in the proposed charge control, our provisional view is that this approach to the determination of service credit levels under the proposed charge control arrangements should not be viewed as generating any material additional factors that might be expected to affect allowed revenue levels.

26 We note that both Motorola and the Home Office emphasised the potential for future service quality issues to arise under charge control arrangements. However, we understand these concerns to relate to particular forms that a charge control might take, and/or to how a charge control might be calibrated, and we consider this to affect both the relevance of the concerns and how they might be addressed. We consider these points further in our provisional assessment of the appropriate form and calibration of the proposed charge control. In particular:

- Motorola explained its view that the introduction of a charge control would 'put at risk service quality and ultimately lives' by reference to a form of charge control that made the

[725] The Home Office's Submission and response to the CMA's working paper on Potential Remedies, 31 May 2022, paragraph 27.
[726] The Home Office's Submission and response to the CMA's working paper on Potential Remedies, 31 May 2022, paragraph 11.

eligibility of future capex for recovery through charges dependent on Home Office approval. It is this assumed dependence on Home Office approval – and, in particular, 'taking key operational decisions out of the hands of Airwave and putting them in the hands of the Home Office'[727] – that appears to underpin Motorola's stated concerns in this respect. We note however, that under our proposed charge control, cost recovery would not be dependent on Home Office approval. Our provisional assessment of the appropriate form for the proposed charge control to take is set out in paragraphs 44 to 84.

- Motorola's submission that the introduction of a charge control could put at risk necessary investments is based on the concern that it could be poorly calibrated (and in particular, set too tightly). It could also be viewed as assuming that a charge control would include insufficient protections against under-investment risks. Our provisional views on charge control calibration are set out in paragraphs 102 to 167. Our provisional assessment of how under-investment risks should be addressed is set out in paragraphs 45 to 60, and paragraphs 104 to 106.

- The Home Office's submission that a charge control could result in poor asset stewardship and risks to future service levels, is underpinned by the concerns over the potential effects of charge control arrangements that included strong cost reduction incentives. Our provisional assessment of the role that should be played by cost reduction incentives, and of how their potential effects should influence the design of the proposed charge control arrangements, are set out in paragraphs 51 to 73.

What form should the proposed charge control take: ie what should it actually constrain, and how?

27 In paragraph 14, we set out our provisional view on the set of services that the proposed charge control should apply to. However, there is a range of different forms in which a charge control could be applied in order to constrain the charges that could be levied in relation to those services. This section addresses the following issues:

(a) The extent to which charge control values should be determined or constrained by up-front assessments.

(b) The extent to which the proposed charge control should be determinative of charging outcomes, as opposed to, for example, acting as a 'backstop'.

(c) The extent to which the proposed charge control should be applied to revenues and/or specific charge levels.

28 Our Potential Remedies working paper reviewed a number of issues related to (a) and (b) above, and noted that we would be giving further consideration to how a charge control could be implemented (ie including (c)).

[727] Motorola's response to the CMA's working paper on Potential Remedies, 30 May 2022, paragraph 5.

The extent to which charge control values should be determined or constrained by up-front assessments

29 In our Potential Remedies working paper, we distinguished between the following two high-level approaches:[728]

- A charge cap approach, under which specific allowed charge levels would be determined up-front and would be intended to apply for the duration of the control period. In line with that approach, all relevant cost assessment activity would be undertaken up-front, and used to calibrate the specific charge cap levels that were set.

- A cost of service (or rate of return) approach, under which charge levels would be set on an indicative basis initially. The allowed return on capital would be specified, but beyond this, the revenue that could be recovered through charges for relevant services would be dependent on costs actually incurred during the control period, rather than on up-front assessments.

30 In our Potential Remedies working paper, we said that the case for adopting a charge cap approach is likely to be heavily dependent on the extent to which a reliable view of future expenditure requirements can be formed when the level of the charge cap is being determined.[729] We set out our 'current thinking' at the time that – given the challenges associated with assessing potential capex requirements – a charge cap would be unlikely to provide a reliable approach, in particular because there may be a significant risk that charges would be set at too high a level, and potentially on the basis of capex assumptions that exceeded those one might expect to observe in a well-functioning market, and exceeded the levels of capex that were ultimately undertaken.[730] We said we considered there to be a significant asymmetry of information in terms of the assessment of likely future capex requirements, with this heavily dependent on the current state of the network, and available options to address reliability risks.[731] We noted that we were continuing to review Airwave Solutions' cost forecasts, but said that our current thinking was that if a charge control were to be introduced, it would be likely to be appropriate for it to include at least some features of a 'cost of service' approach.[732]

31 We noted, however, that the adoption of a 'cost of service' approach would raise other risks of adverse outcomes arising, including because:[733]

- Such an approach can result in inefficient levels of cost being passed through into charges, including as a result of potential incentives for 'gold plating': that is, the undertaking of unnecessarily extensive capex enhancements in order to allow a return to be earned on a larger asset base.

- The extent to which Airwave Solutions sources inputs from Motorola, raises the concern that levels of reported cost (that may be passed through into charges) may be heavily affected by the transfer charging practices that are applied.

[728] Potential remedies working paper, 16 May 2022, paragraph 49.
[729] Potential remedies working paper, 16 May 2022, paragraph 51.
[730] Potential remedies working paper, 16 May 2022, paragraph 53.
[731] Potential remedies working paper, 16 May 2022, paragraph 53.
[732] Potential remedies working paper, 16 May 2022, paragraph 53.
[733] Potential remedies working paper, 16 May 2022, paragraph 54.

32 We identified three types of options for guarding against the risks highlighted above that we were considering further:[734]

- Cost sharing incentives: a target level of costs could be set up-front and Airwave Solutions could be exposed to a defined proportion of the difference between the up-front target level, and Airwave Solutions' actual level of relevant expenditure over the period. This kind of mechanism is typically intended to try to help better align supplier and customer interests by giving the supplier a stake in cost control, while at the same time not exposing it fully to the implications of different expenditure levels. As the proportion of the difference between target and actual costs borne by the company gets 'higher', this kind of approach gets closer to a form of charge cap, and as the proportion gets lower, it gets closer to a 'cost of service' approach. We said that we were continuing to consider whether the use of cost sharing incentives might form an appropriate part of charge control arrangements, and what this might imply for obligations it may be appropriate to include in relation to upgrades of the network. We noted that one calibration option would be to apply a 50 per cent cost sharing factor such that Airwave Solutions and its customers would be equally exposed to differences between the baseline allowance level and actual capex, but that in assessing how it might be appropriate to calibrate cost sharing incentives, we would be considering – among other things – the extent to which Motorola may benefit from higher capex levels as a result of the returns it may be able to earn, including as a result of increased levels of input sales to Airwave Solutions.
- Applying a different approach to opex and capex allowances: we said in our Potential Remedies working paper that our current thinking was that it may be appropriate to adopt a different approach to opex and capex within any charge control arrangements that may be introduced, as the uncertainties associated with future opex requirements appear to be much more limited than those related to capex. In particular, we said that our current view was that if a 'cost of service' approach were to be identified as appropriate for capex, then it may be appropriate to determine a fixed up-front allowance (subject to indexation provisions) for opex. We said we would consider further the extent to which this type of approach might be expected to give rise to undesirable incentive effects with respect to how costs are categorised, and company choices between different potential options.
- Including conditions on the eligibility of costs for recovery through charges: we said we were considering a number of different conditions that it may be appropriate to include as part of a charge control to determine whether costs should be treated as eligible, including:
  - Information provision and engagement requirements (including, for example, requirements on engagement with the Home Office on material changes to capex plans).
  - Transfer charging rules.
  - Assurance requirements, which could be related, for example, to information submissions and capex plans.

[734] Potential remedies working paper, 16 May 2022, paragraphs 55-64.

– A Demonstrably Inefficient and Wasteful Expenditure (DIWE) provision, such that expenditure found to be DIWE would not be eligible for recovery through charges.[735]

The extent to which the charge control should be determinative of charging outcomes

33 It is common for charge controls to provide some degree of flexibility such that actual charge levels can deviate from the levels that would be implied by their mechanistic application. This flexibility is typically provided through the use of charge caps, or limits, such that companies retain flexibility to set charges that are below the level of the relevant cap. In our Potential Remedies working paper we said that that our current thinking was that the provision of this kind of flexibility (to set charge levels below the maximum allowed for by a control) would be likely to be of little relevance to the likely effects of a charge control as Airwave Solutions would appear unlikely to have an incentive to set its charges below the maximum levels allowed for by a charge control.[736]

34 A different way of providing flexibility with respect to charging outcomes would be for the application of a charge control to be treated as a default or backstop option. In our Potential Remedies working paper we said we were considering whether it would be appropriate for a charge control to be treated as a default option, such that the Home Office and Airwave Solutions would have scope to seek alternatives that both parties considered likely to provide a better outcome than the automatic application of the charge control.[737] We noted that this may provide desirable flexibility to adapt to the evolution of circumstances over time in a context where the period of time over which Airwave Network services are required remains uncertain.[738]

Parties' submissions

Motorola submissions

35 As was noted in Section 8, Motorola said that imposing a charge control regime of the kind envisaged in the Potential Remedies Working Paper would involve the Airwave service being provided under fundamentally different conditions and would put at risk service quality and ultimately lives.[739] In explaining this view, Motorola said it would be highly regrettable if it were unable to concentrate on making necessary mission-critical network changes 'no matter the cost', and to have to engage in a pre-approval process with the Home Office.[740]

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[735] We noted that a DIWE provision is applied to NATS's capital expenditure (following the CMA's Determination of its price control appeal), and provides a means of guarding against demonstrably inefficient or wasteful expenditure being recovered from customers. See Paragraphs 9.44 – 9.66 of: CMA (2020), NATS (En Route) Plc/CAA Regulatory Appeal: Final report
[736] Potential remedies working paper, 16 May 2022, paragraph 65.
[737] Potential remedies working paper, 16 May 2022, paragraph 67.
[738] Potential remedies working paper, 16 May 2022, paragraph 68.
[739] Motorola's response to the CMA's working paper on Potential Remedies, 30 May 2022, paragraphs 4-5.
[740] Motorola's response to the CMA's working paper on Potential Remedies, 30 May 2022, paragraph 5.

36 Motorola also emphasised the need to consider the risks of a charge control being set too tightly, and said that could put at risk necessary investments in the network.[741] [✂].[742] [✂].[743] [✂].[744]

37 Motorola said that the risk associated with this type of eventuality is already allocated under the existing contractual arrangements, to the effect that Motorola simply has to "get it done" no matter the cost, but that the imposition of a charge control would fundamentally change that.[745] Motorola said that a whole workstream would need to be set up between the Home Office and Motorola to review options as to what needs to be done, at what cost, over what timeframe and payment schedule, and at what risk to service continuity, for the Home Office ultimately to approve.[746] Motorola said that this would be 'a vast, and likely extremely cumbersome, process to undertake with the Home Office, and that its experience with [✂].'[747] Motorola said it was ultimately [✂] consequences.[748]

38 Motorola said that a 'backstop' remedy of a charge control would fail because it could not reasonably be expected to invest faithfully in the possibility of accomplishing a successful re-negotiation of terms when:[749]

- 'The other party is the UK Government in the guise of the Home Office which has consistently shown itself to be extremely difficult to deal with'; and,
- 'The UK Government has the competition authority hovering in the background with the threat of an entirely draconian remedy at its disposal.'

Home Office submissions

39 The Home Office emphasised the potential for poor asset stewardship, which it said may not have an immediate impact, but could lead to service failures in future.[750] The Home Office said that a charge cap approach would give rise to a risk of poor asset stewardship as Motorola may seek to delay the replacement of failing or end of serviceable life equipment as much as possible.[751] The Home Office said that, in its view, a cost sharing approach would also provide inadequate disincentives to engage in poor asset stewardship.[752]

40 The Home Office said that an approach which applied a charge cap to opex (given greater certainty of future costs) and a cost of service approach to capex (where there is less certainty)

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[741] Motorola's response to the CMA's working paper on Potential Remedies, 30 May 2022, paragraph 12.
[742] Motorola's response to the CMA's working paper on Potential Remedies, 30 May 2022, paragraph 13.
[743] Motorola's response to the CMA's working paper on Potential Remedies, 30 May 2022, paragraph 13.
[744] Motorola's response to the CMA's working paper on Potential Remedies, 30 May 2022, paragraph 13, and Email from Winston & Strawn to CMA, 6 June 2022.
[745] Motorola's response to the CMA's working paper on Potential Remedies, 30 May 2022, paragraph 13.
[746] Email from Winston & Strawn to CMA, 6 June 2022.
[747] Email from Winston & Strawn to CMA, 6 June 2022.
[748] Email from Winston & Strawn to CMA, 6 June 2022.
[749] Motorola's response to the CMA's working paper on Potential Remedies, 30 May 2022, paragraph 16.
[750] The Home Office's Submission and response to the CMA's working paper on Potential Remedies, 31 May 2022, paragraph 25.
[751] The Home Office's Submission and response to the CMA's working paper on Potential Remedies, 31 May 2022, paragraphs 25-27.
[752] The Home Office's Submission and response to the CMA's working paper on Potential Remedies, 31 May 2022, paragraph 31.

would raise concerns over the potential for it to generate undesirable incentives in relation to cost categorisation.[753]

41 The Home Office said that it favoured the use of a cost of service approach that included conditions on which costs would be eligible for recovery, and which could include a requirement for engagement by Airwave Solutions with the Home Office on material changes to Capex plans, and a guard against allowing inefficient or wasteful expenditure to be recovered.[754] The Home Office said that, from its perspective, this approach would be least risky in terms of continuity of supply and quality of service, balancing value for money.[755] The Home Office said that this approach would not provide Airwave Solutions with an incentive for poor stewardship and would provide some control over cost escalation,[756] although it said it would necessarily need to include a mechanism for resolving disputes (in relation to cost recovery eligibility).[757]

42 The Home Office said that an alternative could be to implement a charge cap, but with 'specified adjustment provisions', such as:[758]

- Capex reopeners: to allow for cost allowances to be provided for schemes that are uncertain as to whether they will be needed and/or are beyond the control of Airwave Solutions.
- Charge control deliverables: with scope for revenue adjustments to be made if, for example, there were delays in the delivery of large, discrete renewals projects.

43 The Home Office said that it was not in favour of a backstop approach as the negotiation process would still be affected by asymmetric bargaining power in Motorola's favour given its monopoly position.[759]

Provisional assessment

The extent to which charge control values should be determined or constrained by up-front assessments

44 The following considers a number of issues raised by Motorola and the Home Office before summarising our proposed approach.

[753] The Home Office's Submission and response to the CMA's working paper on Potential Remedies, 31 May 2022, paragraph 33.
[754] The Home Office's Submission and response to the CMA's working paper on Potential Remedies, 31 May 2022, paragraph 34.
[755] The Home Office's Submission and response to the CMA's working paper on Potential Remedies, 31 May 2022, paragraph 35.
[756] The Home Office's Submission and response to the CMA's working paper on Potential Remedies, 31 May 2022, paragraph 35.
[757] The Home Office's Submission and response to the CMA's working paper on Potential Remedies, 31 May 2022, paragraph 36.
[758] The Home Office's Submission and response to the CMA's working paper on Potential Remedies, 31 May 2022, 31 May 2022, paragraph 37.
[759] The Home Office's Submission and response to the CMA's working paper on Potential Remedies, 31 May 2022, paragraph 39.

Service risks associated with requiring Home Office approval of changes to capex plans

45 As set out in paragraph 35, Motorola explained its view that the introduction of a charge control would 'put at risk service quality and ultimately lives' by reference to a form of charge control that made the eligibility of future capex for recovery through charges dependent on Home Office approval. It is this assumed dependence on Home Office approval – and, in particular, 'taking key operational decisions out of the hands of Airwave and putting them in the hands of the Home Office'[760] – that appears to underpin Motorola's stated concerns in this respect. Motorola's comments appear to be directed at the statement in our Potential Remedies working paper that we were considering whether the eligibility of cost for inclusion within the charge control calculation could be made conditional on Airwave Solutions having met some defined requirements on engagement with the Home Office on material changes to capex plans.[761]

46 As set out in paragraphs 59 to 60 below, our provisional view is that requirements related to Airwave Solutions' information provision on the evolution of its capex programme should be introduced as part of the proposed charge control. However, this would not introduce a new requirement for Home Office approval of changes to capex plans. That is, the introduction of requirements on Airwave Solutions to make the Home Office, Airwave Network users, and the CMA aware of material changes to capex plans, to explain the basis for those changes and their likely impacts, and to respond to queries that may be raised, would not imply that key operational decisions were being taken out of the hands of Airwave Solutions and put in the hand of the Home Office. Rather, we consider that such requirements would reflect the relevance of understanding how and why material changes to capex plans were being made to the assessment of risks in future years associated with service quality (given potential implications for network condition) and charge levels (if likely future investment needs were affected).[762] More generally, we note that it is common and reasonable for network monopoly businesses to be expected to engage with users and with bodies who are funding those networks, and in some cases to be subject to formal engagement requirements.[763] Given the above points, our provisional view is that Motorola's stated concerns with respect to Home Office decision-making should not have a material bearing on our proposed approach.

The risks of setting a charge control too tightly given the potential for material changes in circumstances

47 We note Motorola's comments on the need to consider the risks of a charge control being set too tightly, and we consider charge control calibration issues in paragraphs 97 to 167 below. We consider Motorola's reference to the possibility of [✂] to highlight the potential for some exogenous changes to have a substantial bearing on cost requirements.

48 Our provisional view is that the inclusion of a charge control review in 2026 provides an appropriate means of taking account of the risks associated with such changes. As set out in paragraphs 94 and 96, our provisional view is that the charge control should set revenue allowances – and associated provisions for capex – through to 2029, but be subject to review in 2026. The 2026 review would assess whether relevant changes in circumstances were such as to justify changes to the charge control, but that question could be assessed in a context where the

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[760] Motorola's response to the CMA's working paper on Potential Remedies, 30 May 2022, paragraph 5.
[761] Potential remedies working paper, 16 May 2022, paragraph 63(a).
[762] As we highlight further below, this latter point may be highly relevant to any future review of the proposed charge control that may be undertaken.
[763] For example, see: Bush, H. and Earwaker, J. (2015), The future role of customer and stakeholder engagement in the water industry.

default would be that the control remained unchanged. Given this, as part of the review process, Airwave Solutions would be able to seek an adjustment to its revenue allowances where an exogenous change in circumstances had given rise to substantial additional capex requirements (relative to the overall level assumed within the charge control).

49 The detailed assessment of such a request would be a matter for the proposed 2026 review. However, our provisional view is that, for an adjustment to be made, it should be expected that there would need to be evidence of the relevant change in circumstances and the reasons and extent to which it is considered to result in additional revenue requirements. We would expect that this evidence would also need to demonstrate how Airwave Solutions had sought to mitigate the costs associated with responding to the exogenous change, and why these costs (in whole or in part) should not be treated as having been provided for through existing allowances.

50 Our provisional view is that this scope for adjusting revenue allowances at the proposed 2026 review would provide an appropriate means of guarding against the risk of changes of the kind pointed to by Motorola in relation to its access to [✂]. In forming this view we have taken account of the way in which we arrived at our provisional assessment of the capex allowances that should be included within the proposed charge control (set out later in the charge control calibration section below), which was based largely on Motorola's own assessments of capex requirements), and our provisional view that 25 per cent of any identified 'overspend' of capex on external equipment – relative to the amounts used to set the initial charge control allowances – should be recoverable through charges in future years (as set out in paragraph 70).

The use of a cost of service approach

51 We note that the Home Office said that it favoured the use of a cost of service approach that included conditions (among other things, related to engagement) on which costs would be eligible for recovery. However, as we highlighted in our Potential Remedies working paper, adopting such an approach would involve risks associated with inefficient levels of investment, which may be exacerbated by the extent to which Airwave Solutions sources inputs from Motorola. We note, on this latter point, that just over a third of Airwave Solutions' capex in 2021 was sourced from Motorola, and that for 2019 the equivalent figure was around 41 per cent.[764]

52 Our provisional view is that the inclusion of conditions on the eligibility of costs for recovery through the charge control would not provide an adequate means of guarding against those risks. In particular:

(a) Our provisional view is that the inclusion of transfer charging rules (even with associated assurance requirements) would not provide a sufficiently robust basis upon which cost of service arrangements could be applied. In principle, constraints could be put on the mark-ups that Motorola was allowed to apply to its 'net' costs of provision when determining the eligibility of charges paid by Airwave Solutions for Motorola-sourced inputs. However, even with such arrangements there may be strong incentives for relevant assessments of 'net' costs to be adjusted. Our provisional view is that there is not an available proportionate means of guarding against these transfer charging risks.

(b) The standard 'gold plating' concerns associated with the use of cost of service regulation may be materially amplified by Motorola's role as an input provider even in the absence of

[764] CMA calculations based on Motorola response to Q5 of CMA RFI dated 8 April 2022.

any transfer charging concerns.[765] In particular, if the incremental costs to Motorola of providing additional capex inputs are a relatively modest proportion of the charge that Airwave would pay for those inputs (again, even without transfer charging issues arising), then Motorola may face strong incentives to increase such capex spend under a cost of service approach.

(c) While the inclusion of a DIWE provision would be expected to provide some degree of protection against inefficient expenditure, our provisional view is that it would not provide a sufficient safeguard. In particular, given the relatively high evidential threshold that would be associated with identifying costs as ineligible for recovery under this type of provision, there may be considerable opportunities for inefficient expenditure that would be unlikely to captured by a DIWE provision.

(d) While information provision requirements – together with appropriate monitoring arrangements – could in principle provide a means of mitigating risks associated with inefficient capex, our provisional view is that information provision requirements alone would only be partially effective in addressing the relevant information asymmetries, given the challenges associated with specifying information requirements up-front in a sufficient and robust manner.

53 We note that the above concerns are also relevant to the assessment of cost sharing approaches. In particular:

- The effective operation of such approaches would also be dependent on being able to identify actual capex over time in a reliable manner, and thus raises transfer charging issues of the kind highlighted in (a).
- The gold plating issues highlighted in (b) would also be relevant, albeit dampened to some extent depending on the degree of cost sharing.

54 In line with this, our provisional view is that applying cost sharing incentives to a baseline capex allowance could – as with a cost of service approach, given the extent of Motorola-sources capex – result in material risks associated with inefficient levels of investment, and that the inclusion of conditions on the eligibility of costs for recovery through the charge control would not provide an adequate means of guarding against those risks. In paragraphs 61 to 69 below, we set out our provisional view on how cost sharing incentives, appropriately designed, could nevertheless have a beneficial role in relation to external (ie non-Motorola sourced) equipment capex.

The risk of poor asset stewardship

55 In the light of the above provisional assessments, we have considered further how a charge cap approach could be applied, and how the use of such an approach could be supplemented by arrangements that guarded against the risks of adverse effects arising. We note the Home Office's concern that under a charge cap approach there may be a greater risk of poor asset stewardship (and that similar concerns would arise with a cost sharing approach). Motorola made two submissions relevant to this matter:

- Motorola pointed to the existing contractual arrangements as effectively meaning that it had to 'get it done', 'no matter the cost'. While (in line with our provisional views on

[765] The tendency to over-invest in capital under cost of service regulation is often referred to as the Averch-Johnson effect. See, for example: Carlton, DW and Perloff, JM (2005) Modern Industrial Organisation.

calibration below) the introduction of a charge control would be expected to materially reduce the overall level of revenue Motorola would earn for providing the relevant services, it would not change the underlying contractual arrangements determining the approval of capex, if other relevant requirements (including in relation to service standards) were to remain unchanged.

- However, Motorola also said that a charge control being set too tightly could put at risk necessary investments in the network. This tends to support the Home Office's view that the introduction of a charge cap approach that materially reduced overall revenues could generate a greater risk of poor asset stewardship.

56 Given the above points, our provisional view is that the proposed charge control should include provisions to guard against the risk of poor asset stewardship.

57 We note that the Home Office identified two types of mechanism that could be used together with a charge cap to guard against risks of adverse effects: capex reopeners and charge control deliverables. These types of mechanisms can provide a potential means of better aligning cost allowances with capex requirements that are identified and delivered over time in uncertain contexts. However, using them to address asset stewardship risks would appear to require the detailed up-front specification of what the initial charge control should be understood as providing for in terms of asset stewardship, and our provisional assessment is that it is unlikely to be feasible to provide for such up-front specification in this context in an effective manner. Given this, our provisional view is that the mechanisms proposed as a potential option by the Home Office would not provide an effective means of addressing relevant risks associated with asset stewardship.

58 We understand asset stewardship risks to be associated with two main issues:

- Assurance with respect to how risks associated with future service quality are being managed, in a context where that quality relates to the ongoing provision of critical services.
- The potential for asset stewardship decisions to materially affect future capex requirements. We note that the scope for the 2026 review to deliver effective outcomes is likely to depend on the CMA (in 2026) being able to reliably assess how future capex submissions relate to the Airwave Solutions capex plans upon which the charge control had been set.

59 Given these points, while (in line with paragraph 57) we do not consider that it would be appropriate to seek to specify up-front the deliverables that the proposed charge control capex allowances should be understood as providing for, our provisional view is that the charge control should include arrangements aimed at providing clarity over how and why Airwave Solutions' capex plans are evolving over time. In line with this, our provisional view is that the charge control should include requirements on Airwave Solutions to provide information to the Home Office, Airwave Network users and the CMA in a clear and timely manner on:

(a) Material changes to its capex plans: Airwave Solutions should explain why those changes have been considered appropriate and it should set out its assessment of what effects those changes may have on future service provision risks and cost requirements.

(b) Material deviations between actual capex levels and: (a) those that were included its capex plans; and (b) those that have been specified within the charge control arrangements. This should include deviations between actual and forecast levels of capex that is Motorola-sourced, and that is on external (ie non-Motorola sourced) equipment. Airwave Solutions should explain the factors that have given rise to these deviations (including the extent to which they relate to price levels being different to those that had been assumed in capex plans, and associated cost forecasts), and should set out its assessment of the implications the deviations may have on future service provision risks and cost requirements.

60 To support these information provision requirements, we consider that an obligation should be placed on Motorola to respond in full, and in a clear and timely manner, to Home Office, Airwave Network user and CMA queries and requests for further clarification and substantiation with respect to the information provided under (a) and (b).

Applying different approaches to different categories of cost

61 We note the Home Office's comment that applying different charge control approaches to opex and capex would raise concerns over the potential for this to generate undesirable incentives in relation to cost categorisation. We noted the potential for undesirable incentive effects in our Potential Remedies working paper but consider the weight that should be given to the risk of such effects arising to depend in part on the risks associated with alternative options.

62 In paragraphs 51 to 54, we set out our provisional view that the application of a cost of service or a cost sharing approach to overall capex would generate material risks associated with inefficient levels of investment and that the inclusion of conditions on the eligibility of costs would not provide an adequate means of guarding against those risks. This provisional view is underpinned by a recognition of the difficulties of guarding against inefficient levels of cost being passed through to charges under those approaches as a result of undue increases in the volume and/or cost of Motorola-sourced inputs. This consideration points to the potential benefits of applying a charge cap approach (which would largely remove the scope for such effects by setting fixed up-front allowances).[766]

63 However, as we set out in our Potential Remedies working paper, there may be a significant risk that – under a charge cap approach – charges would be set on the basis of capex assumptions that exceeded those one might expect to observe in a well-functioning market, given the extent of relevant information asymmetries. Given this, while a charge cap approach could provide an effective means of guarding against risks of inefficiently high costs (and associated charges) associated with the extent of Motorola-sourced capex, there is also a risk that a charge cap could result in charge levels that are unduly high.

64 Given this, we have considered whether a better outcome – that jointly manages both sets of risks – might be achieved through adopting an intermediate, hybrid approach. Our provisional view is that the following approach should be adopted:

- A charge cap approach should be applied that would set an overall revenue allowance for each year of the control, subject to (the indexation arrangements set out in paragraphs 120 and 164, and) adjustments that are required as a result of the following cost sharing mechanism;
- A cost-sharing mechanism should be included within the charge control that applies to capex on external (ie non-Motorola sourced) equipment. That is, a baseline allowance should be determined in relation to non-Motorola sourced equipment capex, and Airwave

[766] The potential for such effects would not be wholly removed, as decisions may be affected by perceptions of how they will be interpreted in a future review.

Solutions (and as a result customers) should be exposed to a fixed percentage of over- and under-spend relative to that baseline allowance.

65 This approach would allow the Home Office and users to benefit from circumstances where Airwave Solutions' actual third-party capex was lower than the baseline level assumed in the setting of the charge control. As a result it would tend to mitigate the risk that initial allowance levels had been set an unduly high level, and – as was highlighted above – we consider this to be a material risk. At the same time, in line with our comments in paragraph 50, it would mitigate to some extent the risk to Motorola that initial allowances levels had been set too low.

66 We note that there could be a risk that the different approach to Motorola-sourced and third-party capex could distort relevant decision-making, and encourage actions that shifted the identification of capex from Motorola-sourced to third-party sourced. The extent of this incentive effect would be dependent on the cost sharing factor that was applied. For example, if most (say, 90 per cent) of third-party capex overspend was recoverable through charges, then Motorola would face a choice between fully funding internally provided capex (in a context where the fixed up-front allowance would be unaffected by its decision), and funding only 10 per cent of the costs of the relevant capex, if it was secured from a third-party. That is, an approach that allowed a high proportion of overspend to be recovered through charges could provide a strong incentive on Motorola to seek to substitute third-party for internally provided capex.

67 In the light of the above points, our provisional view is that the cost sharing arrangements should provide for Motorola to be exposed to 75 per cent of divergences from the baseline level of external (ie non-Motorola sourced) equipment capex that is determined, with the Home Office and users exposed to 25 per cent. Such an approach would allow the Home Office and user to share in any savings associated with lower than assumed levels of third-party capex to some extent, while providing some protection against higher capex levels. We note that, with Airwave Solutions bearing 75 per cent of third-party capex overspend, Motorola would only be expected to be better off from substituting third-party for internally sourced capex if its incremental costs of providing that capex were equal to more than 75 per cent of the total cost of the third-party supplier. In line with our provisional assessment of transfer charges, we note that the 'net cost' of Motorola-sourced capex identified by Motorola is well below 75 per cent of the overall level of Motorola-sourced capex Motorola has identified as appropriate.[767]

68 We note that the proposed capex information provision requirements would provide an additional degree of protection against adverse effects arising as a result of differences between the treatment of Motorola-sourced and third-party capex. In particular, evidence on the evolution of capex plans ahead of the proposed 2026 review would inform whether, and if so how, capex allowances should be adjusted thereafter. That is, a material shift in the balance of Motorola-sourced and external equipment capex could be reflected in subsequent allowance levels.

69 A different concern that could arise in this context is that efforts could be made to reclassify costs so as to include them as third-party rather than Motorola-sourced. We have sought to lessen the likely relevance of this kind of reclassification risk by focusing the proposed cost sharing mechanism only on external (ie non-Motorola) equipment purchases, rather than all third-party capex inputs (which could include, for example, some outsourced labour). We set out our provisional views on reporting and assurance requirements in paragraphs 168 to 171.

[767] See Appendix H.

Summary of proposed approach

70 In line with the above comments, given the range of risks identified in relation to the determination of charge control arrangements, our provisional view is that those arrangements should include:

71 An overall revenue allowance for each year of the control that was fixed up-front, subject to (the indexation arrangements set out in paragraphs 120 and 164, and) adjustments that are required as a result of the following cost sharing mechanism.

72 A cost-sharing mechanism should be included within the charge control that applies to capex on external (ie non-Motorola sourced) equipment. Our provisional view is that a symmetric cost sharing rate of 75% would be appropriate such that Motorola would retain 75% of savings achieved relative to target level (for external equipment capex) set in the charge control (with the other 25% subsequently returned to customers), and Motorola would bear 75% of any over-spend relative to the target level (with the other 25% passed on to customers). This would be provided for through pre-defined adjustments that could be made to subsequent allowed charge levels.

73 Information provision requirements related to the evolution of Airwave Solutions' capex plans and spending levels over time. Our provisional views on the design on these arrangements were set out above.

The extent to which the charge control should be determinative of charging outcomes

74 As was noted above, Airwave Solutions may be unlikely to have an incentive to set its charges at levels that are lower than allowed for under the proposed charge control. However, we have not identified a reason for adopting a more prescriptive approach than setting a maximum level of charges (eg setting specific charge levels that must be applied). In line with this, our provisional view is that the charge control should be set as charge cap, such that Airwave Solutions has flexibility to set its charges at a lower level should it choose to do so.

75 We note that the Home Office was not in favour of a charge control being used as a backstop (given concerns over asymmetric bargaining power), and that Motorola considered that a backstop charge control remedy would fail. Our provisional view is that it would not be appropriate to view the provision of flexibility for Motorola and the Home Office to agree alternative arrangements to those set out in a charge control as contributing materially to addressing the identified AEC.

76 At the same time, we have not identified any reason to restrict the flexibility of the parties to contract away from the charge control arrangements, if they identified a mutually beneficial alternative. We note that as circumstances evolve, it is possible that the charge control arrangements could come to be viewed by both parties as including some undesirable (or unnecessary) requirements or constraints, and that flexibility to agree adjustments to the arrangements may be beneficial in such circumstances. In line with this, our provisional view is that the operation of the charge control arrangements should not prohibit this kind of flexibility, where all parties wish to move to alternative contractual arrangements.

The extent to which the proposed charge control should be applied to revenues and/or specific charge levels

77 Motorola has identified core network revenue – which, in 2020, accounted for almost three quarters of overall revenue from services that would be covered by the proposed charge control –

as not related to volume.[768] Motorola also identified police menu services and (existing) interworking services – which, in 2020, together accounted for a further [✂]% of overall relevant revenue – as not related to volume.[769] As a result, for these (core and police menu) services, a control on the level of revenues that Airwave Solutions' is allowed to recover, can be viewed as equivalent to providing a control on the level of charges it can apply.

78 However, Motorola identified revenue associated with the Police Traffic Unit, the Amber Light Contracts and Catalogue/Growth sales (which together accounted for around [✂]% relevant revenue in 2020) as being affected by relevant volumes. While a charge control could apply an overall revenue allowance to these services, such an approach may result in a misalignment between Airwave Solutions' costs for the provision of such services, and the revenues it is allowed to collect, and may generate undesirable incentive effects associated with the provision of the relevant services (as Airwave Solutions' would generate no additional revenue from the provision of such services but would incur some additional costs).

79 Our provisional view is that charge caps should be applied to each of the services provided in these areas (ie services under the Police Traffic Unit, the Amber Light Contracts and Catalogue/Growth sales) based on our provisional assessment of the overall level of revenue that Airwave Solutions should be allowed to recover in relation to services covered by the charge control, and evidence on the forecast volume of those services over the charge control period.

80 We note that where the costs of the relevant services are only partially dependent on volume, Airwave Solutions' financial performance may be affected by the relationship between forecast and actual volumes. We have considered whether it may be appropriate for the proposed charge control to provide scope for an adjustment to allowed charge levels (potentially at the planned 2026 review) to address the potential effect on Airwave Solutions' profits of material differences between forecast and actual volumes, but our provisional view, in light of the likely limited impact of such differences on Airwave Solutions' financial performance, is that it would not be necessary to include such a mechanism. We invite views on whether an adjustment mechanism of this kind (related to differences between forecast and actual volumes) should form part of the proposed charge control, and if so, what form of adjustment mechanism would be likely to be effective and proportionate.

81 The calibration section below sets out our provisional assessment of the overall revenues that Airwave Solutions should be able earn from its provision of services covered by the charge control. If applied, that provisional assessment would require a significant reduction in Airwave Network charges. This raises the question of how that reduction should be applied to current charge levels. Our provisional view is that the initial reduction in revenue that would result from the introduction of the charge control should be applied to core services only (which, as was noted above, in 2020, accounted for almost three quarters of overall revenue from services that would be covered by the proposed charge control).[770] We note that this approach would avoid the adjustment of charge levels that might influence decisions concerning the volumes of different network services that are used, and thus avoid the scope for unintended consequences to arise as a result of such an influence.

[768] CMA calculations based on Motorola response to Q1 of CMA RFI dated 26 May 2022.
[769] CMA calculations based on Motorola response to Q1 of CMA RFI dated 26 May 2022.
[770] We note that Motorola itself took this approach of focusing [✂] in the [✂] it put to the Home Office in [✂] 2022: Motorola ESN and Airwave Update, 7 September 2022.

82 In line with the above approach, our provisional view is that the charge control should be applied as follows:

(a) On the introduction of the proposed charge control, charge levels should be adjusted to align with the allowed revenue that has been identified for 2023 (or the remaining part of that year, as calculated on a pro rate basis) as follows:

(I) Charges for non-core services covered by the proposed charge control should be set at their then prevailing levels under the current arrangements.

(II) The level of revenue Airwave Solutions would be expected to earn from the provision of relevant non-core services at those charge levels should be calculated, using forecast volumes for those services where revenues are volume dependent to some extent.

(III) The estimated level of revenue from relevant non-core services (as calculated under (II)) should be deducted from the level of allowed revenue for 2023 (or the remaining part of that year), in order to determine the level of allowed revenue to be recovered from charges for core services.

(IV) Charges for all core services would be reduced by the fixed percentage amount required to align the revenue that would be recovered from those charges with allowed revenue to be recovered from charges for core services (as calculated under (III)).

(b) In future years, charges for all services (ie core and non-core services) should be adjusted (given the opening charge control levels identified under (a), or – where relevant – a 'full year' equivalent) in line with movements in the level of allowed revenues (after indexation and other relevant adjustments have been made).

83 We note that under the proposed charge control, allowed revenue for a given year would only be known ex post, because:

- Allowed revenue would be subject to the CPIH indexation arrangements (as set out in paragraphs 120 and 164), and the relevant level of CPIH would not be known ahead of when charge levels would need to be set; and,
- The charge control provides for cost sharing in relation to external equipment capex (as set out in paragraph 70), but the actual external equipment capex for a given year would not be known until after the end of that year.

84 Given these circumstances our provisional view is that Airwave Solutions should be required to set charges on the basis of its best estimate of the level of allowed revenue that would apply to the relevant year, and for there to be a mechanism through which the financial effect of differences between the estimated allowed revenue used to set charges and the finalised allowed revenue (after indexation and cost sharing adjustments have been made) can be adjusted for in an NPV neutral way.

Over what duration should the charge control apply?

85 In our Potential Remedies working paper, we said that in the event that we found an AEC, we considered that any charge control should:[771]

- Be put in place and take effect as quickly as is practicable, which we considered meant it should take effect in the first half of 2023; and
- Persist until either the final shutdown of the Airwave Network, or until such other arrangements can be put in place to prevent any further exploitation of unilateral market power by Airwave Solutions.

86 We said that, while there is currently a national shutdown date set for the end of 2026, it is possible that Airwave Network services may be required for some years beyond that. We set out our then current thinking that a charge control should be reviewed at the end of 2026, but that if the current national shutdown date were to be effective at the end of 2026 then that review would not be necessary. We said that our then current thinking was that it would be appropriate for the terms upon which that review should be undertaken to be defined relatively narrowly as part of our decision, both in terms of how adjustments and reconciliations in relation to (what at that point in time would be) past expenditure should be dealt with, and in terms of the bases upon and criteria against which the charge control might be modified on a forward-looking basis.

Parties' submissions

87 Motorola did not comment on duration of the charge control in its response to our Potential Remedies working paper.

88 The Home Office said that charge control provisions could be re-opened in 2026, in the event that Airwave services continue beyond this point.[772] The Home Office said that while it is difficult to say at this stage how the approach might be modified in 2026, the review should consider a narrow range of issues (such as past expenditure reconciliations, rolling forward of the asset base, updated forecasts of OPEX, CAPEX, residual value, as well as an updated view on the appropriate rate of return).[773]

Provisional assessment

89 As highlighted above (and as set out in our Guidelines), we tend to prefer remedies that take effect promptly and that can be sustained for as long as the AEC is expected to endure. Thus, we consider that, in the event we identify an AEC in our final report, a charge control should be put in place and take effect as quickly as is practicable. In line with this, our provisional view is that a charge control should take effect from the commencement date of our Order implementing the remedies identified in our final report, which we expect to be in the first half of 2023.

90 Our provisional view is that it would not be appropriate to set a charge control that expired before the end of 2026, given the risks associated with the potential for the provisional AEC – and

[771] Potential remedies working paper, 16 May 2022, paragraph 69.
[772] The Home Office's Submission and response to the CMA's working paper on Potential Remedies, 31 May 2022, paragraph 40.
[773] The Home Office's Submission and response to the CMA's working paper on Potential Remedies, 31 May 2022, paragraph 41.

its detrimental effects – to endure beyond that point. We note that Home Office was supportive of the charge control arrangements being 're-opened' in 2026.

91 Given this, we have considered three potential timescales over which we could set a charge control:

- To the end of 2026 (4 years);
- To the end of 2029 (7 years); or
- For a more extended period, eg to the end of 2032 or 2035.

In assessing the merits of these potential options, we have taken into account the following factors:

(a) the evidence we have collected indicates that the Airwave Network will be required until at least 2026, and with [✂] possibility until 2029;[774]

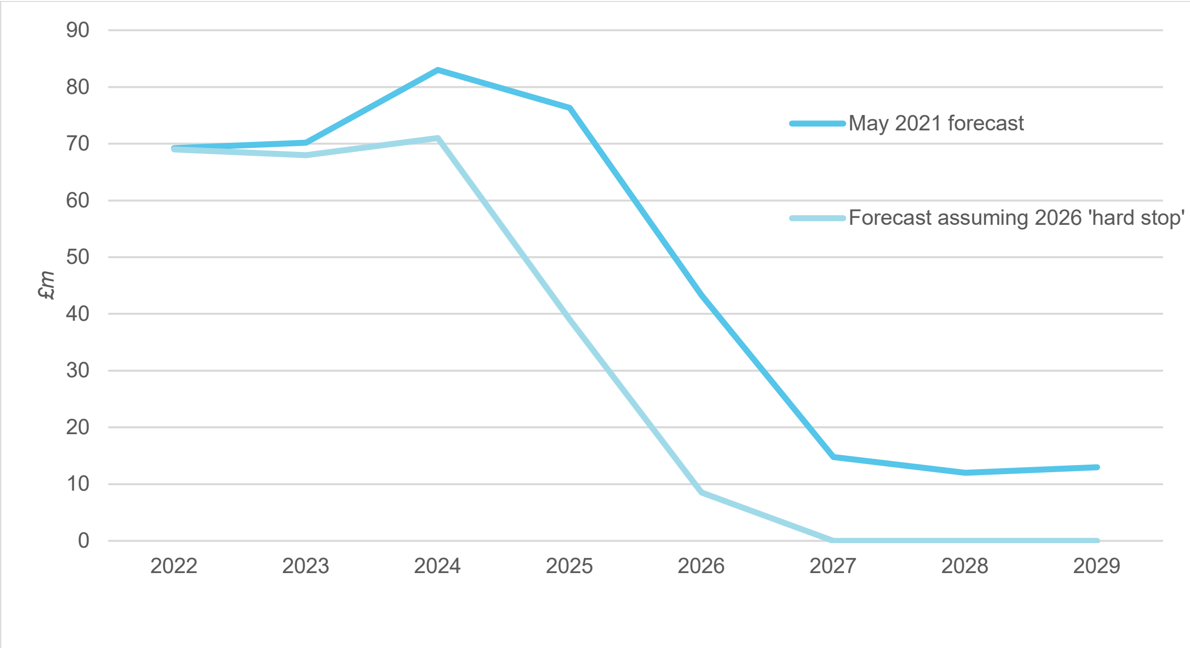
(b) our charge control remedy would address consumer detriment resulting from the AEC we have provisionally found to arise from Airwave Solutions' unilateral market power, but it would not address the provisional AEC at source. Such an outcome would only be realised when the supply of communications network services for public safety is subject to competitive pricing arrangements. As set out in section 8, this could be brought about in a number of ways, eg: a new network offering enhanced functionality replacing the Airwave Network such as ESN; or a competitive process that may result in changes to the ownership and operation of the Airwave Network and / or its assets taking place.

(c) the Home Office, as the key customer of the Airwave Network and the Government Department responsible for procuring the replacement network, should by 2029 be in a position to address the AEC we have provisionally identified at source (for example, by ensuring that an alternative communications network is put in place), or to safeguard against the risk of anti-competitive outcomes resulting from a continuing monopoly position in the provision of all or part of the Airwave Network by taking other measures available to it (for example, putting in place a regulatory function).

92 On this basis, we consider there may be material benefits associated with setting the charge control to the end of 2029, but for the charge control to be reviewed in 2026. As we set out in appendix G, Airwave Solutions' capex plans – including its forecasts of capex requirements to 2026 – are derived from forecasts to 2029. Indeed, Motorola told us that the assumption of a 'hard stop' in 2026 could not provide a meaningful basis for capex planning.[775] The relevance of this for the duration over which the control is set can be highlighted by reference to Figure K-2 below, which shows the most up-to-date forecast to 2029 that Motorola has provided us with (and identified as relevant), and its view of the capex requirements if a 'hard stop' (ie shutdown of the Airwave Network) were assumed at the end of 2026 (which – as noted above – Motorola has identified as not relevant for capex planning).

[774] As suggested by the fact that financial forecasts and supporting information prepared by Airwave Solutions / Motorola cover the period from 2022 to between 2026 and 2029, which indicates an expectation on the part of Airwave Solutions / Motorola that there is a [✂] possibility that the Airwave Network will remain in operation until 2029.
[775] Motorola response to CMA RFI dated 26 May 2022, Question 8.

Figure K-2: Comparison of Airwave Solutions capex forecasts



Source: Internal Motorola presentation dated 18 May 2021

93 Figure K-2 highlights that a significantly lower level of overall capex may be required if the network were not to be needed beyond the end of 2026. But it also shows that a high proportion of the forecast capex requirement to 2029 arises in the period to 2026. Given this, it would be important that the proposed review of the charge control in 2026 took proper account of the expected spend and delivery profile upon which allowances had initially been based. Our provisional view is that the most effective way of providing for this would be to set the charge control on the basis that it should endure through to 2029, on the basis of current capex forecast over that period, but to provide for a review of the control in 2026. The review would provide a basis to assess whether relevant changes in circumstances were such as to justify changes to the charge control, but that question could be assessed in a context where the default would be that the control remained unchanged.

94 In line with this, our provisional view is that the charge control arrangements should be reviewed in 2026. As this is the currently-agreed National Shut Down Date, it is logical that the need for a longer period of control be reviewed at that stage.

95 We considered whether it would be appropriate to extend the charge control beyond 2029 given the potential for further delays to ESN. However, our provisional conclusion is that such an extended charge control would not be an effective and proportionate remedy because we consider that the Home Office is well placed to ensure that an alternative communication network for the emergency services is introduced by the end of 2029 (which would address Airwave's market power at source), or to safeguard against the risk of anti-competitive outcomes arising by taking other measures available to it. As set out in section 8, we propose to make a recommendation to the Home Office that it should, as soon as possible, implement a plan to ensure that the supply of communications network services for public safety is subject to competitive pricing arrangements, or measures to similar effect, by not later than the end of 2029.

96 Therefore, our provisional view is that the charge control should terminate at the end of 2029.

Charge control calibration

97 In our Potential Remedies working paper, we noted that one potential approach to determining the level at which a charge control should be set was by reference to market evidence on the charges paid for similar services.[776] That is, charge levels could be benchmarked against available comparators, with this benchmarking analysis used as the basis for determining how a control should be calibrated. We said that our then current thinking was that the use of this kind of approach would not provide a feasible or reliable basis for setting a charge control for Airwave Network services given the limited extent to which information relevant to such an assessment is available.[777] Given this, we set out our current thinking that a charge control would need to be calibrated on the basis of an assessment of costs associated with the provision of the relevant services.[778] We said that this would involve assessing the following key charge control inputs, in order to estimate the revenue required to provide the relevant services over time: [779]

- Opex requirements;
- Capex requirements;
- An appropriate opening capital value;
- An appropriate approach to allowing for depreciation (and residual asset value);
- An appropriate return on capital.

98 The following summarises the submissions we received concerning charge control calibration in response to our Potential Remedies working paper, before setting out our provisional assessment of how the proposed charge control should be calibrated.

Parties' submissions

99 As noted above, Motorola emphasised the need to consider the risks of a charge control being set too tightly, which it said could put at risk necessary investments in the network.[780]

100 The Home Office said that setting Airwave Network charges by reference to market evidence of charges for similar services would not provide a feasible or reliable basis for setting a charge control, given the absence of like-for-like comparators and the limited extent to which information needed to make such an assessment is available.[781] The Home Office said that instead, a charge control would need to be calibrated on the basis of an assessment of Airwave Solutions' reasonable costs associated with the provision of the relevant LMR and ancillary services.[782]

101 The Home Office said that – at the point of any charge control review – there should be a reconciliation to address excess profits that have been earned as a result of Airwave Solutions'

[776] Potential remedies working paper, 16 May 2022, paragraph 39.
[777] Potential remedies working paper, 16 May 2022, paragraph 39.
[778] Potential remedies working paper, 16 May 2022, paragraph 40.
[779] Potential remedies working paper, 16 May 2022, paragraph 40.
[780] Motorola's response to the CMA's working paper on Potential Remedies, 30 May 2022, paragraph 12.
[781] The Home Office's Submission and response to the CMA's working paper on Potential Remedies, 31 May 2022, paragraph 12.
[782] The Home Office's Submission and response to the CMA's working paper on Potential Remedies, 31 May 2022, paragraph 13.

charge levels, and that at the very least this should cover the period from 1 January 2020 onwards (ie the period beyond the initial term of the PFI Agreement).[783] The Home Office said that the IRR of the cash flows to Airwave Solutions from 2020 until the expected end of the Airwave Network's operations should be aligned with the WACC.[784] The Home Office said that the residual value of the Airwave Network assets (after switch off) should be taken into account as a positive cash flow when a charge control is being calibrated.[785] The Home Office said it considered decommissioning costs to have already been paid for (as decommissioning was expected to be required at the end of the original PFI Agreement), unless Motorola provided evidence showing that the estimate had increased because of the extension of the agreement.[786]

Our provisional assessment of issues raised in the parties' submissions

102 This section addresses the issues identified above from the parties' submissions. The following section then sets out our provisional assessment of how each of the different charge control components should be calibrated.

Overall approach to calibration

103 Our provisional view is that seeking to determine allowed charges by reference to market evidence on the charges paid for similar services (using a benchmarking approach), would not provide a feasible or reliable basis for setting the proposed charge control, given the absence of appropriate comparators and the limited extent to which information relevant to such an assessment is available. We note that this is consistent with our provisional view that the benchmarking arrangements within the existing Airwave contracts would not – including if modified – be likely to provide a reliable basis for effectively addressing an identified AEC. The challenges associated with using this kind of comparative assessment are discussed further in section 4, which considers the benchmarking arrangements that are provided within the existing Airwave contracts. In line with this, our provisional view is that a charge control would need to be calibrated on the basis of an assessment of Airwave Solutions' costs associated with the provision of the relevant services, and of how those cost might evolve over time.

The risk of a charge control being set too tightly

104 We note Motorola's comments on the risk of a charge control being set too tightly, and that doing so could put at risk necessary investments in the network. In assessing how the proposed charge control should be calibrated, we have sought to balance:

(a) The need to comprehensively address, as far as is practicable, the significant detriment to customers that we have provisionally found would be expected to arise absent intervention as a result of the unilateral market power of Airwave Solutions, and its owner, Motorola; and,

783 The Home Office's Submission and response to the CMA's working paper on Potential Remedies, 31 May 2022, paragraph 42.
784 The Home Office's Submission and response to the CMA's working paper on Potential Remedies, 31 May 2022, paragraph 42.
785 The Home Office's Submission and response to the CMA's working paper on Potential Remedies, 31 May 2022, paragraph 42.
786 The Home Office's Submission and response to the CMA's working paper on Potential Remedies, 31 May 2022, paragraph 42.

(b) The importance of allowing Motorola to be able to expect to earn a normal return from the provision of the relevant services.

105 In order to try to strike an appropriate balance, we have obtained a significant amount of information from Motorola on its views with respect to level of relevant costs over time, and the assumptions which underpin those views. We have taken evidence of Airwave Solutions' outturn costs, and Motorola's own forecasts of relevant costs over time, as our starting point, and made adjustments to Motorola's views of relevant costs only where we consider there to be a strong case for doing so on the balance of available evidence.[787] Our provisional view is that this approach provides a robust basis for guarding against the risk of the proposed charge control being set too tightly (where 'too tightly' here would mean that the charge control would not allow Motorola – if operating efficiently – to be able to expect to earn a normal return from the provision of the relevant services).

106 With respect to Motorola's comment that necessary investments in the network could be put at risk if a charge control were set too tightly, we note that Airwave Solutions would continue to be subject to service standard requirements after the proposed charge control was introduced, and that it would be for Motorola to determine how those service standard requirements were to be met, and at what cost. Nevertheless, as was set out above, we consider Motorola's comments to be consistent with the Home Office's concern with respect to asset stewardship risks. We set out our provisional views on how those risks should be addressed in paragraphs 55 to 60.

Airwave Solutions' profits from 2020 to the start of the charge control

107 We note the Home Office's submission that there should be a reconciliation at the point of any charge control review such that the IRR of the cash flows to Airwave Solutions from 2020 until the expected end of the Airwave Network's operations were aligned with a view of an allowed WACC. However, the focus of market investigations, and the potential remedies they may result in, is forward-looking. In line with this, when assessing charge control calibration questions, our consideration of evidence on past costs and revenues has focused only on how that evidence might inform our views on relevant costs from the start of 2023 onwards.

The residual value of Airwave Network assets

108 As was noted above, the Home Office submitted that the residual value of the Airwave Network assets (after network shutdown) should be taken into account as a positive cash flow when a charge control is being calibrated. Motorola would be able to recoup the residual value of the Airwave Network assets after network shutdown, and therefore the question arises as to how that should be taken into account within the proposed charge control arrangements. While, when initially set, the charge control could reflect a view of what expected residual value might be after network shutdown, the likely residual value appears difficult to predict, particularly in a context where considerable capex levels are planned.

109 Our provisional view is that the residual value of Airwave Network assets should be taken into account in the proposed charge control in two ways:

[787] Our provisional assessment of what adjustments are appropriate and why is set out later in this appendix.

(a) An estimate of the residual value should be used to determine appropriate depreciation allowances. As set out in paragraph 153, our provisional view is that this allowance should be set equal to Motorola's estimate of £[✂] million.

(b) An independent engineering evaluation of the residual value of assets should be required during the year ahead of network shutdown, and the final value of the Regulatory Asset Base (RAB) should be adjusted to reflect the difference between that valuation and initial estimate referred to in (a).

110 The way in which this would affect the operation of the proposed charge control is set out in paragraph 157.

Decommissioning costs

111 We note the Home Office's submission that as decommissioning was expected to be required at the end of the original PFI Agreement, decommissioning costs should be treated as having already been paid for unless Motorola was to provide evidence showing that the estimate had increased because of the extension of the agreement. In line with the approach we adopted in our profitability analysis,[788] our provisional view is that the proposed charge control should not provide an allowance for decommissioning (or associated redundancy) costs other than to the extent that Motorola can demonstrate that there are incremental decommissioning (or associated redundancy) costs related to the extension of the period over which the Airwave Network is operational beyond the end of 2019.

Our provisional assessment of how each of the charge control components should be calibrated

112 In line with our comments above, our provisional view is that the proposed charge control should be calibrated on the basis of an assessment of Airwave Solutions' likely costs associated with the provision of the relevant services. Our provisional view is that appropriate revenue allowances for each year should be determined using the 'building blocks' approach that is widely used by economic regulators. This approach is summarised in Figure K-3, which shows how the different components of the charge control input into the determination of revenue allowances.

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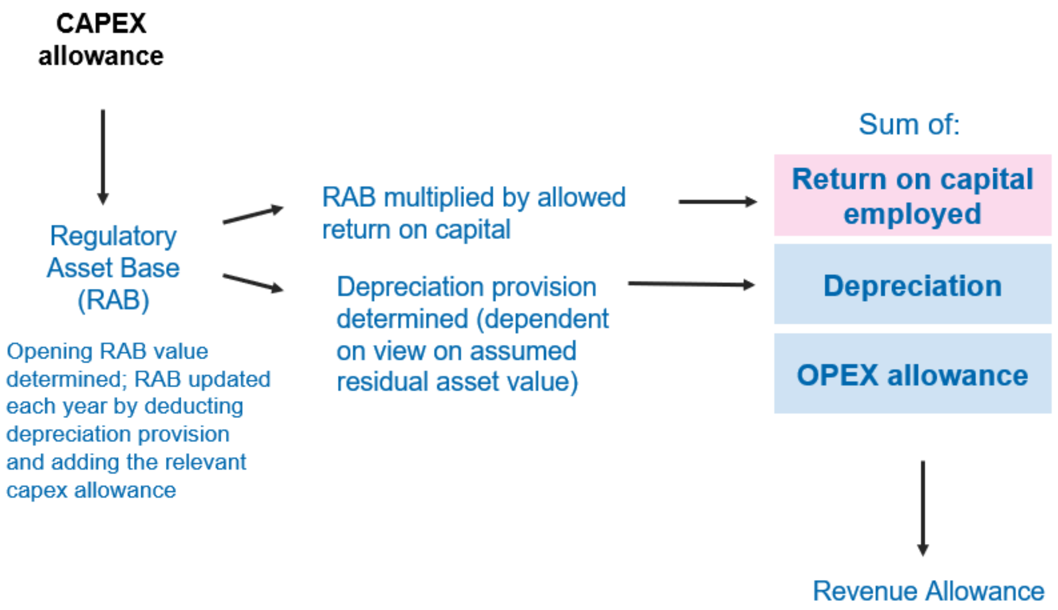
[788] See Appendix G.

Figure K-3: Overview of inputs into determining revenue allowances



113 The following sections provide our provisional assessment of each of the different charge control inputs shown above, before setting out our provisional view on the overall revenue allowances that the proposed charge control should provide for. In particular, the section sets out our provisional assessment of:

- Opex allowances;
- Capex allowances;
- The opening Regulatory Asset Base;
- Depreciation provisions;
- The allowed return on capital.

Opex allowances

114 Our starting point for provisionally determining opex allowances was to consider the most recent available evidence on Airwave Solutions' actual opex levels. We would expect the existing contractual arrangements to have provided incentives for Airwave Solutions' to manage its opex efficiently, but – in line with our profitability analysis in appendix G – note that reported opex levels would have been affected both by the scope of services to which they relate, and by transfer charging arrangements.

Evidence on outturn opex

115 Motorola provided us with a breakdown of Airwave Solutions' expenditure for 2018, 2019 and 2020 consistent with the amounts included in Airwave Solutions' statutory accounts,[789] and preliminary figures for 2021.[790] Table K-2 shows the adjustments we made to this expenditure

[789] Motorola response to CMA RFI dated 16 December 2021, question 9.
[790] Motorola response to CMA RFI dated 16 December 2021, question 20.

data to in order to identify the levels of opex relevant to those services we have provisionally found should be covered by a charge control. In particular:

- The first row shows the sum of Airwave Solutions' 'cost of sales' and 'operating expenses' (including management charges), less depreciation (which we make a separate provision for in the charge control).

- The second row removes an estimate of opex associated with the provision of services that would be outside of the scope of the charge control: Pronto; CCCRS; and Ambulance Bundle 2.[791] We invite views on whether, and if so what, other opex adjustments may be appropriate to align with the scope of the proposed charge control (including to reflect the exclusion of the provision of radio terminals (except where part of a managed service) from the scope of the proposed charge control). We noted in our profitability working paper that while Motorola had provided an estimate of its cost of sales associated Ambulance Bundle 2 services, it had not identified relevant administrative expenses.[792] In our profitability working paper we estimated administrative expenses associated with Ambulance Bundle 2 services as equal to the proportion of Airwave Solutions' total turnover accounted for by Ambulance Bundle 2 services multiplied by total Airwave Solutions' administrative expenses. Motorola told us that Ambulance Bundle 2 was mostly outsourced and therefore administrative costs associated with the provision of this service were minimal, and that taking out administrative costs based on an attribution of revenue significantly overstated the relevant cost.[793] Motorola did not, however, suggest an alternative basis on which to allocate administrative costs, or provide an estimate. The figures in the second row of Table K-2 adopt a more conservative approach to estimating Ambulance Bundle 2 administrative expenses (than that used in our profitability working paper), by deducting management charges (which are considered further below) from total Airwave Solutions' administrative expenses, before attributing an amount to Ambulance Bundle 2 based on the proportion of turnover it accounts for. Our provisional view is that this approach provides a sufficiently robust basis upon which to estimate relevant administrative expenses given available information.

- The third row adjusts the costs associated with maintenance services provided to Airwave Solutions by Motorola, and the level of 'management charges' attributed to Airwave Solutions, in line with our provisional views on transfer charging, which were based on an assessment of Airwave Solutions' costs for 2018-20.[794] Our provisional view is that it is appropriate to apply that transfer charging analysis (which includes an assessment of the costs associated with Motorola providing a parent company guarantee) when calibrating the proposed charge control. We note, however, that the level of management charges identified in Airwave's preliminary profit and loss account for 2021 is around £[✂]m higher than the level identified for 2020, after the transfer charging adjustments currently set out in Appendix E have been made. We asked Motorola to provide a breakdown of Airwave Solutions' management charges from 2021-26, and a full explanation of what they

[791] This aligns with the approach we have taken in our profitability analysis in Section 6, other than that (for the reasons set out in Section 6) we did not exclude Ambulance Bundle 2 services from that analysis.
[792] Profitability modelling and results working paper, 6 May 2022.
[793] Motorola's response to the CMA's working paper on Profitability and the Cost of Capital, 20 May 2022, paragraph 43.
[794] See Appendix H.

comprised and how they had been estimated.[795] We expected Motorola's response to this question to enable us to scrutinise the basis for this increase in the level of management charges (in a context where we already had more granular information related to 2018-20). In practice, the limited narrative response we received to this question did not provide an adequate basis for assessing this increase.[796] In the absence of further substantiation, we have adjusted the 2021 opex figure to remove this increase (by using the 2020 level of management charges).

Table K-2: Opex estimates (including management charges), before and after adjustments, 2018-2021

				£million
	2018	*2019*	*2020*	*2021*
Based on Airwave Solutions' P&L	157	190	202	200
After removal of out of scope services	129	165	177	176
After transfer charging adjustments	129	145	148	142

Source: CMA analysis

116 In line with this analysis, our provisional assessment of charge control opex allowances is based on relevant opex in 2021 being £142m. As was noted above, the 2021 expenditure data on which this estimate was based was preliminary, and we would expect to consider as part of our final decision whether a further adjustment may be appropriate to reflect any differences between this preliminary data and the finalised 2021 figures.

Identifying opex allowances for 2023-29

117 Motorola provided us with forecasts of Airwave Solutions' expenditure requirements from 2022 to 2026, and these forecasts have informed our assessment of appropriate opex allowances over the period 2023-29. We note that all of Motorola's expenditure forecasts were estimated by applying inflation assumptions to its 2021 figures. In particular:

- For all but three expenditure areas, costs were assumed to be 6.7% higher in 2022 than in 2021, and 2% higher in each year to 2026 thereafter.
- Staffing costs were set on the same basis as in the bullet above, except that the level included for 2026 was two times that which would otherwise be implied, with this intended to reflect redundancy costs associated with termination of the network (in line with the current national shutdown date).
- Energy costs were assumed to be around 25% higher in 2022 than in 2021, and 25% higher again in 2023, and then increase by 2% each year to 2026.
- Management charges were assumed to remain at the 2021 level through to 2026 (ie no inflation was assumed).

[795] CMA RFI dated 12 April 2022, Question 14.
[796] Motorola response to CMA RFI dated 12 April 2022.

118 We set out our provisional view on decommissioning costs above. In line with that, our provisional view is that the opex allowances should not include an uplift related to potential redundancy costs on termination of the Airwave Network.

119 We note that economic regulators typically link the provision of expenditure allowances to relevant inflation indices in order to provide a means of taking account of relevant input price pressures over time and avoiding the need to forecast future inflation levels. However, economic regulators also typically consider the scope for ongoing efficiencies to be achieved when setting future allowances, such that costs may reduce over time in real terms as a result of productivity improvements, and that these cost reductions would be expected to be passed on to customers in a well-functioning market. These two considerations form the basis of the 'RPI – X' characterisation of much UK utility regulation over time (where 'X' represents the assumed scope for real terms efficiency improvements). Motorola's forecasts included inflation assumptions (as noted above) but did not include an ongoing efficiency assumption. Our provisional view is that charge control opex allowances should be set in a way that takes account of both input price pressures and opportunities for ongoing efficiency improvements.

Indexation arrangements

120 We note that under the PFI Agreement, revenues increased in line with RPI. However, RPI lost its status as a National Statistic in 2013. The Office of National Statistics (ONS) considers it a very poor measure of general inflation and discourages its use.[797] Our provisional view is that opex allowances under the charge control should be linked to movements in CPIH, which is now the ONS's lead measure of consumer price inflation.[798]

121 We note that recent energy price movements have been significantly greater than movements in CPIH, and Motorola's forecasts take this into account by making two specific uplifts of around 25% to 2021 energy costs to reflect price increases to 2022 and 2023, and use a 2% annual inflation assumption after that. Under this approach, the allowance for energy costs in 2023 would be £[✄]m, £[✄]m higher than the figure identified for 2021 (c£[✄] million). However, our provisional view is that a specific adjustment of this kind to reflect energy cost pressures should not be included in the proposed charge control.

122 In forming this provisional view, we have taken account of the fact that increases in energy costs are already taken into account by CPIH, and that energy cost increases have been the largest upward contributors to recent annual CPIH inflation rate.[799] Given this, applying a separate, higher uplift to energy costs (based on movements in energy prices), and then applying CPIH to other costs risks double counting (since increases in energy costs will have been taken into account both directly – through the specific adjustment – and indirectly through the broader application of CPIH). We note that CPIH rose by 8.2 per cent in the 12 months to June 2022, and that if that level of indexation were applied to the 2021 estimate of relevant Airwave Solutions' relevant opex (after transfer charging adjustments) shown in Table K-2 through to 2023 (ie for two years), the Airwave Solutions' opex allowance would increase by around £25 million, other things equal. In a context where Motorola has already assumed an increase in energy costs of

[797] Office for National Statistics (2018), Shortcomings of the Retail Prices Index as a measure of inflation
[798] Office for National Statistics (2018), Measuring changing prices and costs for consumers and households
[799] See, for example, Office for National Statistics, Consumer price inflation, UK

£[✂] million over this period, we are not currently persuaded that an additional, more specific, approach to taking account of energy cost pressures would be appropriate.

Ongoing efficiency

123 Our provisional view is that scope for ongoing efficiency improvements of 1% per year should be assumed when setting allowances to reflect the potential for productivity improvements to be achieved over time. We note that a figure of around 1% per year has been used by a number of regulators over time, including by Ofgem and Ofwat in recent prices determinations.[800] We note that the extent of the planned upgrades to the Airwave Network may be such as to provide opportunities for material opex efficiency savings, and given this context, we consider that allowing for an ongoing efficiency improvement of 1% per year may be a conservative assumption.

Proposed opex allowances for 2023-29

124 In line with the above comments, our provisional view on appropriate opex allowances for 2023-29 is shown in Table K-3 below, measured in terms of 2021 CPIH prices. The actual level of opex allowance for any year would therefore be determined by applying the relevant increase in CPIH to the figures shown in Table K-3 (which include a 1% per annum ongoing efficiency assumption from 2021 onwards).

Table K-3: Our provisional view on appropriate opex allowances (2021 CPIH prices)

£million, 2021 CPIH prices

	2023	*2024*	*2025*	*2026*	*2027*	*2028*	*2029*
Proposed opex allowance	139	138	137	135	134	133	131

Source: CMA analysis

Capex allowances

125 Our starting point when assessing the appropriate allowances for capex to include within the proposed charge control has been to consider the different Airwave Solutions' capex forecasts Motorola has provided, and how Airwave Solutions' actual levels of capex compare to those forecasts in recent years. We considered evidence that Motorola has submitted regarding its forecasts, and the weight we should attach to that evidence, in the context of our expectation that an efficient operator in a well-functioning market would consider carefully the scope for maintaining the capabilities of the network in less costly ways than might otherwise be appropriate, given the possibility that the duration of the benefits associated with relevant capex may be limited.

126 We have also considered the weight to attach to evidence submitted by Motorola considering the context and purpose of the evidence submitted. For example, we note that Motorola may face limited incentives to identify potentially more efficient capex options when presenting forecasts either to the Home Office as part of its ongoing engagement on the operation of the Airwave Network, or to the CMA as part of this investigation. That is:

[800] CMA (2021), Energy Licence Modification Appeals 2021 Final Determination Volume 2B, paragraph 7.799(d).

- Motorola’s provision of capex forecasts to the Home Office could have some bearing on Home Office perceptions of the value for money associated with the ongoing provision of Airwave Network services at different charge levels. For example, the presentation of feasible lower cost options would tend to exacerbate Home Office concerns over the appropriateness of current charge levels, other things equal.
- We have also considered the weight that should be placed on Motorola’s capex forecasts provided during the course of this investigation. We note that firms may have incentives to overstate, or be unduly conservative when identifying, future cost requirements during charge control setting and / or review processes, as that may increase the likely scope for financial outperformance (and lessen the risk of poor financial performance) after the charge control has been set.
- We have taken these considerations into account when forming our provisional views on the weight that should be given to different capex forecasts, and how those forecasts should influence the determination of appropriate charge control allowances.

127 We set out our full assessment of capex forecasts in the context of capex levels included in our profitability analysis in Appendix G, and we summarise it below. The following begins by setting out our provisional view on how transfer charging issues should be taken into account when assessing capex allowances (drawing on our provisional assessments in Appendix H).

128 We then focus on three main areas in which we have provisionally identified material limitations in the sufficiency of Motorola’s substantiation of its capex requirements, that we have provisionally found to affect the levels of capex it is appropriate to allow for within the proposed charge control:

(a) Motorola’s updated capex forecast that was provided in April 2022.

(b) Motorola’s forecasts of capex associated with Megastream retirement.

(c) Motorola’s assumptions when including a risk allowance in its capex forecasts.

129 We summarise our provisional assessment of these issues below, before setting out our provisional decision on the appropriate overall levels of capex allowances to be included in the charge control. Finally, we set out our provisional assessment of the charge control allowances that should be provided for Motorola-sourced and non-Motorola sourced capex (in line with our provisional view – set out in paragraph 67 – that the proposed charge control should apply separate arrangements to Motorola-sourced and non-Motorola sourced capex).

Transfer charging and the assessment of capex forecasts

130 Our consideration of transfer charges is set out in Appendix H. We noted that the available evidence related to transfer charging does not allow us to assess robustly whether the prices charged to Airwave Solutions for Motorola capital equipment and labour can be considered to be arm’s length,[801] and said that – unlike for the other transfer charging areas we have considered – we are provisionally not making a specific conclusion on what we consider the level of charges (for Motorola-sourced capex inputs) should be.[802] In line with that provisional assessment, the capex forecasts we review below include the gross cost levels that Motorola has identified and

[801] Appendix H, paragraph 110.
[802] Appendix H, paragraph 114.

thus use the mark-ups that Motorola has applied to Motorola-sourced capex inputs. However, as was noted in Appendix E, the average mark-ups charged by Motorola to Airwave Solutions on capital equipment (which average [250-300] [✂]%) are materially higher than the average mark-up charged on sales of such equipment across the Motorola Group as a whole in 2021 (which averaged [150-200] [✂]%).[803] This suggests that the approach of using Motorola's forecasts of gross costs to assess capex requirements should be viewed as a conservative one.

Motorola's April 2022 forecast of Airwave Solutions' capex requirements

131 As we set out in Appendix G, in its June 2022 response to a request for information (in which we asked for a reconciliation of a number of different capex forecasts that had been provided),[804] Motorola identified two capex forecasts as relevant:[805]

(a) A May 2021 forecast of capex requirements to 2029, including an underlying spreadsheet which provided more granular information on how that forecast was derived (referred to below as 'the May 2021 forecast').

(b) A forecast of capex requirements to 2026 provided in April 2022 in response to a request for information (referred to below as 'the April 2022 forecast).

132 In line with our assessment in Appendix G, and with our comments above on factors relevant to the weight we should give different evidence provided by Motorola, we have taken the May 2021 forecast – which was developed for internal purposes in the ordinary course of business and ahead of the opening of this market investigation – as our starting point, and considered the extent to which it should be modified to reflect the adjustments Motorola made which underpinned the April 2022 forecast.

133 Motorola's assessment of actual capex in 2021 (£45 million) was £28 million (around 38 per cent) lower than the level included in the May 2021 forecast. Motorola said that this difference resulted from supply chain shortages of spares it had encountered in 2021, and that it had reprofiled the number of base stations to be upgraded in the years 2022-26 to take account of this.[806] We understand that to mean that Motorola treated the observation of significantly lower capex than it had forecast in 2021 as justifying an increase to the capex levels that had previously (ie in the May 2021 forecast) been estimated as required in 2022-26.

134 In line with our assessment in Appendix G, our provisional view is that the observation of materially lower than forecast capex in 2021 should not be treated as justifying an increase in forecasts of capex in 2023 onwards used to determine appropriate charge control allowances. In

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[803] Appendix H, paragraph 110.
[804] In its response to a December 2021 RFI, Motorola 'confirmed' that there were no capex programme forecasts to 2029. Motorola said that a document that included forecasts to 2029 had been put together in May 2021, in part to help inform discussions with the Home Office, should end-dates other than 2026 be requested (Motorola response to CMA RFI dated 16 December 2021, question 24(d)).
[804] However, Motorola said that after this initial version was put together, all capex plans were then focused on shutting down the Airwave Network in 2026, in line with the national shut down date (Motorola response to CMA RFI dated 16 December 2021, Question 29(d)). When asked – in an April 2022 RFI – to provide all documents that included capex scenarios beyond 2026, Motorola provided a number of forecasts to 2029 (Motorola response to CMA RFI dated 8 April 2022, Question 14). We also identified the use of capex forecasts to 2029 in a number of internal Motorola presentations that included some consideration of different options with respect to capex plans (For example, Internal Motorola presentation dated 18 May 2021).
[805] Motorola response to CMA RFI dated 26 May 2022, Question 8.
[806] Motorola response to CMA RFI dated 8 April 2022, question 5.

forming this provisional view, we note that evidence on actual capex in 2022 would be reflected in charge control allowances (given our provisional view set out in paragraph 152, on how the opening RAB value should be determined). As a result, Motorola's reprofiling of capex that had been forecast to take place in 2021 would be taken into account in the proposed charge control to the extent that it was reflected in actual 2022 capex levels.

Megastream and base station upgrades

135 Motorola said that BT's planned retirement of its Megastream product (which provides communications services using legacy technology) had wide-ranging implications for the Airwave Network, and that the only assured solution to addressing it would be to deliver what Motorola has referred to as 'full IP migration' by:[807]

- Migrating transmission fully to ethernet; and,
- Replacing all remaining 'Generation 1' base stations, as they do not support Ethernet/IP.

136 When the impact on assumed base station upgrades is taken into account, Megastream retirement accounts for around £[✂] million between 2023 and 2029 (that is, more than a third of overall 2023-29 capex included in the May 2021 forecast).

137 In line with our assessment in Appendix G, in particular given Motorola's internal assessments of how Megastream retirement could be addressed, our provisional view is that the forecast of Megastream driven costs to be used when setting charge control allowances should be £[✂] million lower than that included in the May 2021 forecast. This involves allowing for £[✂] million overall for Megastream-driven capex.[808]

Capex risk provision

138 Motorola told us that its forecasts provided a high-level view that gave a rough order of magnitude of investment requirements, such that some items would be missed, overlooked or simply unknown and therefore would not be taken into account.[809] Motorola said that, given this, it was appropriate to allocate a risk budget and that the [✂] per cent provision included in its forecasts was not an unreasonable amount to allocate to projects that had yet to even be scoped.[810]

139 In line with our assessment in Appendix G, while we consider it appropriate to take account of relevant uncertainties when determining capex allowances, we note that Motorola's May 2021 forecast can be understood as having included risk-based adjustments, and consider that a number of factors cast material doubt on the appropriateness of using Motorola's 'capex risk' provision for the determination of charge control allowances.

140 Given this, our provisional view is that Motorola's [✂] per cent risk provision should not be included in the levels of capex to be allowed for in the proposed charge control.

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[807] Motorola response to CMA RFI dated 8 April 2022, question 9.
[808] That, the total Megastream-driven capex of £[✂] million less £[✂] million.
[809] Motorola response to CMA RFI dated 8 April 2022, question 10.
[810] Motorola response to capex CMA RFI dated 8 April 2022, question 10.

Summary of our provisional view on capex allowances

141 Table K-4 provides a summary of our provisional assessment of appropriate capex allowances for the proposed charge control. It shows the adjustments to the May 2021 forecast we have provisionally decided should be made, and the levels of capex allowance that we have provisionally concluded should be allowed for in the proposed charge control.

Table K-4: Proposed capex allowances

£million

	2023	*2024*	*2025*	*2026*	*2027*	*2028*	*2029*	*Total: 2023-29*
Motorola's May 2021 forecast	70	83	76	43	15	12	13	313
Megastream Adjustment	[✄]	[✄]	[✄]	[✄]	[✄]	[✄]	[✄]	[✄]
Removal of Capex risk uplift	[✄]	[✄]	[✄]	[✄]	[✄]	[✄]	[✄]	[✄]
Proposed capex allowance	[✄]	[✄]	[✄]	[✄]	[✄]	[✄]	[✄]	228

Source: CMA analysis

Capex allowances and indexation

142 Our provisional view is that no indexation provisions should be applied to capex allowances. We have understood that Motorola's capex forecasts – as with its opex forecasts – represent its assessment of relevant outturn costs. We note that Motorola told us (in relation to the April 2022 forecast) that its submission represented its current view of capex requirements and assumed no cost increases.[811] Motorola said that global supply chain issues were driving increases in input costs, and that to the extent these cost increases persist, they would inevitably result in higher capex than it had forecast based on cost increases experience in the last ten years.[812] While we recognise that there are factors which could – depending on how they evolve – tend to put upward pressure on capex requirements, there are also factors (including associated with technological improvements) which may put material downward pressure on capex requirements over time. In line with this, we have not included indexation arrangements for capex allowances in the proposed charge control.

Motorola-sourced and externally sourced capex

143 As set out in paragraph 67, our proposed charge control includes some cost sharing in relation to third-party sourced capex, such that if Airwave Solutions' actual level of third-party sourced capex in a given year differs from that allowed for by the proposed charge control, that difference would be shared between Airwave Solutions and the Home Office/users (with 75 per cent borne by Airwave Solutions and 25 per cent by the Home Office/users). In order to be able to apply this, the proposed capex allowances shown in Table K-4 need to split between Motorola-sourced and third-party capex. Our provisional assessment of this split is shown in Table K-5.

[811] Motorola response to CMA RFI dated 8 April 2022, paragraph 28.
[812] Motorola response to CMA RFI dated 8 April 2022, paragraphs 28-29.

Table K-5: Proposed breakdown of capex allowances between third-party equipment capex and other (for cost sharing arrangements)

£million

	2023	*2024*	*2025*	*2026*	*2027*	*2028*	*2029*	*Total: 2023-29*
Proposed capex allowance	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	228
Proposed allowance for third-party equipment capex	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Other capex	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]

Source: CMA analysis

144 The breakdown shown in Table K-5 has been derived based on the identified levels of capex for externally sourced equipment included in the April 2022 forecast. In particular the proposed allowance for third party equipment capex was calculated in the following manner:

(a) The percentage of capex identified as for ‘external equipment’ in the April 2022 forecast was identified for 2023-26.

(b) This was applied to the May 2021 forecast of capex requirements for 2023-26 (excluding the capex risk uplift) to provide an estimate of ‘external equipment’ capex included the proposed capex allowance before the proposed Megastream adjustment shown in Table K-4 is made.

(c) The percentage of base station capex identified as for ‘external equipment’ in the April 2022 forecast was identified for 2023-26.

(d) This was applied to the proposed Megastream adjustment shown in Table K-4 to estimate the level of ‘external equipment’ capex that should be stripped out of the figure identified under (b).[813]

(e) The proposed allowance for third-party equipment capex in 2023-26 was calculated by deducting the amount calculated in (d) from the amount calculated in (b). The allowance for 2027-29 is treated as all associated with third party capex, as it all appears to relate to maintenance capex which, from 2023-26 (in the April 2022 forecast) is shown as all related to external equipment.

(f) The ‘Other capex’ figure was derived by deducting the estimates in (e) from proposed capex allowances presented in Table K-5.

Identifying an appropriate opening Regulatory Asset Base

145 In line with our comments in paragraphs 112 to 113, the proposed charge control would provide for depreciation of, and a return on the value of the Regulatory Asset Base (RAB) each year. The opening value of the RAB can be understood as the value associated with past Airwave Network investments – at the point in time when the charge control takes effect – that Airwave Solutions’ should be able to expect to recover from customers through future charges.

[813] The percentage of forecast base station capex identified as related to external equipment was used here as the adjustment relates to assumed base station upgrade costs.

146 We have provisionally assessed the opening value of the RAB in two parts:

(a) Identifying an appropriate valuation for the assets that were provided for by the PFI Agreement.

(b) Identifying an appropriate valuation for assets that provided for through investments undertaken to allow for the extended use of the Airwave Network (ie beyond the end of 2019).

Assets provided for by the PFI Agreement

147 In line with the provisional assessment set out in Appendix I (and used in our profitability analysis in Appendix G), our provisional view is that assets that were provided for by the PFI Agreement should be valued at their Net Realisable Value, which Motorola estimated to be £[✂] million. This is consistent with treating the recovery of capital expenditure associated with the provision of the network and services to the end of 2019 as having been fully accounted for in the bid for the original contract, other than in relation to the residual value of assets in an alternative use (which is what the £[✂] million figure is an estimate of).

Assets provided to allow for the extended use of the Airwave Network

148 We note that some capex incurred in 2018 and 2019 would have related to the extension of the use of the Airwave Network beyond 2020, and that Airwave Solutions has incurred additional capex in 2020-22. Our provisional view is that the opening RAB should include an amount that reflects relevant levels of capex incurred from 2018 to 2022 inclusive, after making an appropriate adjustment for depreciation. We consider that this approach could allow for the proposed charge control to constrain charging in way that was consistent with providing Airwave Solutions an opportunity to recover investments it has already incurred in order to extend the duration over which the Airwave Network is providing services.

149 Our starting point when considering how this approach could be applied, was to consider the appropriateness of allowing for depreciation on the same basis as Airwave Solutions in its statutory accounts (such that the opening RAB could be understood as including the net book value of the relevant assets provided for through 2018-2022 capex). We note, however, that Airwave Solutions' depreciation policy changed during this period:[814]

(a) From 1 January 2018, Airwave Solutions assumed that the useful life for the majority of Airwave Network would run until the end of 2022 (with the useful life assumed to be shorter than this for some assets that were due for replacement before the end of 2022).

(b) In 2019, Airwave Solutions proposed and adopted a new policy that, for all new network assets purchased 2018 onwards, a useful life should be set as ending on 31 December 2029.

150 Our provisional view is that – when determining the opening level of the RAB – we should assume a depreciation profile consistent with that introduced by Airwave Solutions in 2019, other than in relation to capex that was undertaken in 2018. In relation to this, we note that 2018 capex was undertaken in a context where application of the prevailing depreciation policy would have implied a net book value of zero on 1 January 2023. In line with this, our provisional view is that the opening RAB should not include any allowance for 2018 capex.

[814] Motorola response to CMA RFI dated 16 December 2021, question 25.

151 Airwave Solutions reported capex for 2019-21, and its latest forecast of capex for 2022, are shown in Table K-6, together with our provisional assessment of the opening RAB value that should be included in relation to each year. For each year, we have assumed a depreciation profile based on a useful life until the end of 2029. However, for 2019, we identified capex relevant to the extension period as reported capex less £[✄] million, that being the level of capex that Motorola has identified would be required in 2026 on the assumption of Airwave Network shutdown at the end of that year.

Table K-6: Provisional assessment of contribution to opening RAB from 2019-22 capex

£million

	2019	*2020*	*2021*	*2022 (forecast)*	*Total 2019-22*
Reported/forecast capex	39	44	45	69	197
Assumed relevant capex	[✄]	[✄]	[✄]	[✄]	[✄]
Assumed contribution to RAB at 1 January 2023	[✄]	[✄]	[✄]	[✄]	[✄]

Source: CMA analysis

Our provisional view on the opening RAB level

152 In line with the above, our provisional view is that the opening RAB for the proposed charge control should be £[✄] million.[815] Our provisional view is that this opening value should be updated to reflect the finalised reported level of capex for 2022.

Allowing for depreciation

Depreciation of the opening RAB

153 Our provisional view is that allowances for deprecation of the opening RAB should be determined in the following way:

- No depreciation provision should be included for the £[✄] million provisional estimate of the appropriate value of assets provided for by the PFI Agreement, because – as set out in paragraph 109 – our provisional view is that the residual value of the assets at the end of 2029 should also be assumed to be £[✄] million.
- The deprecation provision in relation to capex undertaken from 2019-22 should be determined in a manner consistent with (ie assuming the same depreciation profiles as) the approach by which the relevant opening RAB values were determined.

154 In line with the above, our provisional view is that the allowances for depreciation of the opening RAB should be as set out in Table K-7, with the opening RAB value associated with capex undertaken from 2019-22 (currently estimated as £[✄] million) depreciated on a straight-line basis over seven years. Our provisional view is that the allowances shown in Table K-7 should be updated to reflect the finalised reported level of capex for 2022.

[815] That is, £[✄] million plus £[✄] million.

Table K-7: Provisional view of allowances for depreciation of opening RAB

£million

	2023	*2024*	*2025*	*2026*	*2027*	*2028*	*2029*
Allowance for depreciation of opening RAB	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]

Source: CMA analysis

Uncertainty over when the Airwave Network will be shut down

155 Uncertainty over when the Airwave Network will be shut down has relevance to the approach it is appropriate to take when determining depreciation allowances. If the Airwave Network were expected to operate on an ongoing basis, then one might expect the costs associated with providing different assets over time to be depreciated over a relatively significant period, based on – for example – the expected useful life of relevant components. In practice, however, the period over which the benefits of recent and new capex will be experienced may be truncated to a significant degree such that it may be materially shorter than the expected life of components would be in a network that continued to operate.[816] This raises questions over how that uncertainty should be taken into account when setting depreciation allowances, and what implications decisions with respect to depreciation allowances should have if the Airwave Network were to be shut down at a different point in time to that assumed when setting depreciation allowances.

156 Our proposed approach to depreciating the opening RAB (set out above), assumes a straight-line approach to 2029. However, if viewed in isolation, applying that approach would mean that Airwave Solutions would only fully recover the accumulated (net) value of its past investments – as measured by its RAB – if the Airwave Network remained operation until the end of 2029 (or later). Applying depreciation in this way, therefore, could result in Airwave Solutions having a material incentive to prolong the operating life of the Airwave Network until at least 2029 in order to secure the remaining depreciation allowances.

157 Our provisional view is that the recovery of the accumulated (net) value of Airwave Solutions' past investments (again, as measured by its RAB) should not be dependent on when the Airwave Network is shut down. In line with this, our provisional view is that the charge control should include final settlement arrangements which provide for Airwave Solutions to recover the net value of its RAB at the time of shutdown. In practice, this would mean that if the Airwave Network is shut down before the end of 2029, then Airwave Solutions should be allowed to recover the following amount through a final set of relevant charges:

- The net value of the RAB at the Airwave Network shut down date; less,
- The Net Realisable Value of Airwave Network assets at the Airwave Network shut down date, as determined by the independent assessment referred to in paragraph 109.

158 This would allow Airwave Solutions to recover the net value of its RAB whenever the Airwave Network was shut down, while recognising that the residual value of Airwave Network assets

[816] For example, if the Airwave Network were to be shutdown at the end of 2029, then the benefits associated with capex incurred during 2029 would be experienced for at most one year, other than where there was scope for the reuse of relevant assets in some other purpose.

should be viewed as contributing to that recovery (and, indeed, could mean that the final set of charges are credits paid the Home Office and users).

Depreciation of new capex

159 In line with the above comments, our provisional view is that the recovery of new capex – once incurred - should not be dependent on when the Airwave Network is shut down (in order to avoid generating incentives for delay).

160 Table K-8 shows implications for charge control depreciation allowances of three potential ways in which this truncation issue might be taken into account:

(a) Depreciating the allowed level of new capex for each year through to the end of 2029: this would be consistent with Airwave Solutions' current depreciation policy.[817]

(b) Expensing the allowed level of new capex in the year that the allowance relates to: that is, treating new capex in charge control as though were opex.

(c) Evenly spreading the recovery of the overall amount of capex allowed for under the charge control between 2023 and 2029.

Table K-8: Potential approaches to allowing for the depreciation of new capex

£million

	2023	*2024*	*2025*	*2026*	*2027*	*2028*	*2029*	*Total 2023-29*
Depreciate new capex to end 2029	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	228
Expense capex allowances in year	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	228
Spread provision for total 2023-29 forecast capex evenly over that period	33	33	33	33	33	33	33	228

Source: CMA Analysis

161 As can be seen, the three approaches would all provide for the same level of overall funding through depreciation allowances over the period 2023-29. The approaches differ in relation to the temporal profile of that funding (although given the provisional view set out in paragraph 157, these differences would not affect the overall scope for Airwave Solutions to recover relevant depreciation allowances if the shut-down date were to occur earlier than the end of 2029).

162 Our provisional view is that the third, intermediate approach – which provides for a flat allowance – should be applied.

163 We do not consider that the first approach would be appropriate, and note that it would be expected to result in overall charges increasing materially over time (other things equal), after an initial reduction in 2023 when the charge control was introduced. Under the second approach, depreciation allowances would reduce materially over time, in line with the profile of proposed capex allowances. We note that the higher proportion of overall funding that is provided in earlier

[817] Motorola response to CMA RFI dated 16 December 2021, question 25.

years could have some benefit to the public sector purchasers of Airwave Network (in net present value terms) by reducing the required level of funding of financing costs to some degree.[818] However, it could result in a significant misalignment between when the Home Office and users fund new capex and when the benefits of that capex allowances are delivered, if the profile of Airwave Solutions' actual capex was to differ from that shown in Table K-8. We note for example, that under this expensing approach, a more deferred capex profile (where capex spend was materially higher in later years than assumed in the setting of allowances) could result in a situation where Airwave Solutions was expected to be cash negative in the period after 2026 (with relevant funding having been provided through charges in earlier years). Our provisional view is that the third approach, of evenly spreading the recovery of the overall level of allowed capex over the period 2023-29, would provide a more balanced outcome that would be less likely to give rise to this kind of temporal misalignment issue in later years of the proposed charge control.

Allowed return on capital

164 Our provisional assessment of the WACC for Airwave Solutions is set out in Appendix J. Our provisional view is that the allowed return on the capital in the proposed charge control should be set equal to this mid-point of our range of pre-tax WACC estimates, based on the assumption that Airwave Solutions is 100 per cent equity financed (in a context where we note that Airwave Solutions currently has no debt). Our WACC assessment identified a range – in CPIH deflated terms – of between 1.1% and 4.7%, with a midpoint of 2.9% on this (100 per cent equity-financed) basis. We have not identified reasons that we consider would justify setting the allowed return on capital either higher or lower than this assessment of the WACC. In order to provide for a real return consistent with this over the course of the proposed charge control, our provisional view is that the RAB should be indexed to movements in CPIH from 2023 onwards.[819] We invite views on whether this approach to estimating the cost of capital is appropriate in the context of a charge control, and, if not, what adjustments should be made in order to ensure an appropriate return is provided, and why it would be appropriate to make those adjustments.

165 Our provisional view is that an additional £[✂] million should be added to the opening RAB, and deducted from the closing RAB, in order to reflect financing costs associated with working capital. This is consistent with the closing working capital provision used in our profitability modelling.[820] Applying our provisional view on the allowed (percentage) return on capital to this level of RAB addition increases the (£million) allowed return figure for each year by around £[✂] million. We invite views on whether this would result in an appropriate provision for the financing costs associated with working capital within the proposed charge control, and, if not, what approach we should adopt in order to set an appropriate provision, and why that approach would be appropriate.

[818] In a context where the relevant cost of finance for public sector purchasers may be materially lower than our provisional view of the allowed return on capital to be used for the charge control.
[819] We note that this approach of applying a deflated WACC to an indexed asset value is commonly used as a means of providing for a return on capital in charge controls.
[820] Based on the working capital figures set out in Appendix G.

Summary of proposed charge control allowances

166 Our provisional views on the determination of appropriate charge control allowances are summarised in Table K-9. The proposed charge control would, for 2023, result in overall allowed revenue from the services covered by the control of around £199 million subject to the CPIH indexation arrangements set out above.

Table K-9: Our provisional view on appropriate charge control allowances

£million

	2023	*2024*	*2025*	*2026*	*2027*	*2028*	*2029*
Opex (2021 CPIH prices)	139	138	137	135	134	133	131
Depreciation of opening RAB*	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Depreciation of new capex*	33	33	33	33	33	33	33
Allowed return*	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Overall allowed revenue	199	197	196	194	192	189	187

Source: CMA Analysis
** Depreciation and return allowances would be adjusted to reflect the RAB being indexed to CPIH from 2023*

167 The proposed calibration of the charge control would address the provisional AEC in two main ways:

(a) The proposed level of allowed revenue under the charge control has been set to mitigate the principal detrimental effect on customers of the AEC we have provisionally identified, namely Airwave Solutions' ability to price above levels we would expect to prevail in a competitive market. As set out above, our assessment has been informed by consideration of Airwave Solutions' reported levels of costs in recent years, and the forecasts of costs that Motorola has provided. We note that Airwave Solutions' forecasts indicate that revenue in 2023 for the services that the proposed charge control would cover would be around £[✂] million (absent intervention).[821] The proposed level of allowed revenue for 2023 – the first year in which the proposed charge control would apply – would be likely to be around £225 million (ie £199 million as shown in Table K-9, with an estimate of the increase in opex likely to result from the application of CPIH increases between 2021 and 2023). That is, the proposed charge control would be likely to result in allowed revenues for 2023 that were around £[✂] million ([>40] [✂]%) lower than revenues that Motorola forecast absent the charge control.

(b) Calibration of the charge control has also been structured in ways that are intended to lessen the extent to which Motorola may face incentives to prolong the operation of the Airwave Network, over and above the dampening of such incentives that would be expected to result from the overall reduction in allowed revenues referred to above. In particular, the final reconciliation arrangements set out in paragraph 157 would mean that the incremental revenues that Airwave Solutions would be allowed to earn, should the Airwave Network continue to operate beyond the end of 2026 (the current national

[821] CMA forecast derived from Motorola response to CMA RFI dated 16 December 2021, question 20 (calculated as forecast turnover for Airwave Solutions less forecast turnover for Pronto, CCCRS and Ambulance Bundle 2).

shutdown date), would be lower than the allowed revenue figures shown in Table K-9 for 2027-29. In particular, the incremental revenue that Airwave Solutions would be allowed to earn would arise only from the opex allowance and from the proposed funding of new capex for those years (which was set out in Table K-4 above).[822] Given this, the scope for additional gains to be earned from continued operation would be expected to be relatively limited (and dependent on Airwave Solutions being able to outperform those allowance levels, given prevailing opex and (maintenance) capex requirements).

Reporting requirements and assurance

168 In this Appendix, we have set out our provisional views on how the proposed charge control should be designed and calibrated in a way that is intended to make clear what the proposed charge control would require in substantive terms.

169 Our provisional view is that Airwave Solutions should be required to report annually to the CMA, and the Home Office, providing all of the information on charge control inputs and calculations necessary to demonstrate compliance with the proposed charge control. We note that this would include providing information necessary to demonstrate:

(a) How the level of allowed revenue under the charge control had been calculated for the relevant year, including how the levels of allowed revenue set out in Table K-9 had been adjusted to reflect:

(I) The specified CPIH indexation arrangements set out in paragraphs 120 and 164; and,

(II) The application of the cost sharing mechanism in relation to external equipment capex set out in paragraph 67.

(b) How the actual revenues earned by Airwave Solutions for the provision of services covered by the proposed charge control compare to the level of allowed revenue identified under (a) for the relevant year.

(c) How any differences between actual and allowed revenues identified under (b) were being adjusted for through changes to charge levels.

Our provisional view is that, in addition, Airwave Solutions should be required to provide annually:

(I) Its statutory accounts, with a detailed breakdown of the levels of opex and capex included in those accounts; and,

(II) A reconciliation between the information provided under (a)(II) (on external equipment capex) and (b) (on actual revenue levels) above, and that included in its statutory accounts (as provided under (d)).

170 Our provisional view is that Airwave Solutions should also be required to provide independent assurance of the reconciliation that would be required under (e) above, in order to verify that its

[822] While the allowed revenue in 2027-29 would also include an allowance for a return on capital, this is not treated as incremental revenue, because under the alternative scenario of Airwave Network shut down in 2026, there would be a return of capital (ie the net RAB) at that time. There would, therefore, be no material incremental impact from the return on capital allowance being recoverable through revenues in 2027-29 unless Airwave Solutions' WACC was materially different from that used to set charge control allowances.

financial submissions in relation to charge control compliance were consistent with the information included in its statutory accounts.

171 Our provisional view is that the reporting and assurance requirements set out above would provide an effective and proportionate way of monitoring compliance with the proposed charge control.