

Anticipated acquisition by Hitachi Rail, Ltd. of Thales SA's Ground Transportation Systems Business

Decision on relevant merger situation and substantial lessening of competition

ME/6971/21

The CMA's decision on reference under section 33(1) of the Enterprise Act 2002 given on 9 December 2022. Full text of the decision published on 17 January 2023.

Please note that [X] indicates figures or text which have been deleted or replaced in ranges at the request of the parties for reasons of commercial confidentiality.

SUMMARY

1. On 4 August 2021 Hitachi Rail, Ltd. (**Hitachi Rail**) agreed to acquire Thales SA's Ground Transportation Systems business (**Thales**) for €1.66 billion (the **Merger**). Hitachi Rail and Thales are together referred to as the **Parties**, and for statements referring to the future, as the **Merged Entity**.
2. The Competition and Markets Authority (**CMA**) believes that it is or may be the case that each of Hitachi Rail and Thales is an enterprise; that these enterprises will cease to be distinct as a result of the Merger; and that the turnover test is met. Accordingly, arrangements are in progress or in contemplation which, if carried into effect, will result in the creation of a relevant merger situation.
3. The Parties overlap in the supply of mainline rail signalling and urban signalling systems.
4. Mainline signalling systems prevent collisions or unsafe manoeuvres on national train networks by determining the position of trains, controlling their direction, and providing authorisation to train drivers to take certain movements. These systems comprise a number of separate sub-systems, including: (i) interlockings, which are the principal safety critical component of mainline rail signalling systems; (ii) automatic train protection (**ATP**) systems,

including both wayside systems (installed alongside the track) and on-board units (**OBUs**) (installed on mainline rolling stock), which ensure that trains comply with the instructions issued by the interlockings and that they travel at appropriate speeds; and (iii) operation and control systems (**OCS**), which are IT solutions designed to ensure the overall management of railway networks.

5. Urban signalling systems are railway signalling systems used for local passenger rail transit, encompassing metro and light rail and tram (**LRT**) networks. These are designed to ensure safety on urban rail networks by preventing collisions and excessive speeds, as well as improving network capacity.

Mainline signalling

6. The supply of mainline signalling in Great Britain is currently undergoing significant change.
7. A market study carried out by the Office of Rail and Road (**ORR**), which concluded in 2021, found that the introduction of digital technology is expected to drive one of the most significant modernisation programmes in the nearly 200-year history of Britain's railway infrastructure. ORR noted that the shift from legacy to digital standardised signalling systems has the potential to revolutionise the way the railway operates, delivering transformative improvements to increase capacity, lower unit costs, and reduce disruption. ORR also noted that investment in signalling systems is expected to increase significantly in the near future, with a projected five to six-fold increase in the volume of renewal works, as Network Rail, the principal customer of mainline signalling systems in the UK, looks to replace expiring legacy assets with digital alternatives.
8. At the same time, ORR found that the supply of mainline signalling in Great Britain suffered from a lack of competition. ORR noted that the market is essentially limited to only two incumbent suppliers – Siemens and Alstom – who have represented an increasing share of Network Rail's major signalling spend in recent years. ORR also identified high barriers to entry and expansion, including in the way that Network Rail has procured signalling projects in the past, make it harder for alternative suppliers, such as Hitachi Rail and Thales, to compete on equal terms.
9. ORR made a number of recommendations intended to increase competition from alternative suppliers, which Network Rail is due implement in the design of the tendering process for its next major signalling procurement, the Train Control Systems Framework (the **TCSF**).

10. The TCSF will be the procurement framework through which Network Rail procures a range of major signalling projects for a ten-year period commencing in 2024 and will include both legacy and digital signalling projects. Network Rail intends to appoint five framework suppliers (in contrast to its prior approach of only appointing three), and to include a range of measures to help lower barriers to entry, including by providing each framework supplier with a guaranteed minimum workbank. As digital signalling is based on European standardised and interoperable technology, a wider range of competitors, including suppliers already active in digital signalling elsewhere in Europe, are expected to be competitive for the digital aspects of the framework.
11. In keeping with the CMA's established approach of assessing the commercial realities of transactions, the CMA has carried out a forward-looking assessment to the markets at issue, taking into account a range of evidence (and not just evidence of historical market performance). In this regard, the CMA's investigation has focused on considering whether the Merger would reduce competition in relation to the TCSF and the specific mainline signalling projects that will be procured through it.
12. While both Parties currently have a limited presence in UK signalling markets, the CMA found that both are established players in Europe with strong signalling capabilities, and that, absent the Merger, both would independently bid for, and be close competitors, for the TCSF. Within this context, the CMA found that both Parties would be well placed to become significant suppliers and compete closely in relation to two specific types of signalling projects that will fall under the TCSF:
 - (a) the joint supply of digital interlockings and ATP wayside equipment conforming to the European Train Control Systems (**ETCS**) standard (**'ETCS ATP wayside re-signalling projects'**); and
 - (b) OCS projects.
13. The CMA found that, post-Merger, the market incumbents, Siemens and Alstom, are both likely to win a place on the TCSF and compete strongly in relation to the supply of ETCS ATP wayside re-signalling projects and OCS projects. The CMA also found that a limited number of other European suppliers may be capable of competing for the TCSF. But the CMA ultimately found that these other suppliers are unlikely to be as strong competitors as either of the Parties and that the constraint they provide, both in relation to ETCS ATP wayside re-signalling projects and OCS projects, would be limited.

14. The CMA, therefore, believes that the Merger gives rise to a realistic prospect of a substantial lessening of competition (**SLC**) as a result of horizontal unilateral effects in relation to the supply of (i) ETCS ATP wayside re-signalling projects in the UK; and (ii) OCS projects in the UK.
15. The CMA also considered but ultimately found that the Merger does not give rise to a realistic prospect of an SLC as a result of horizontal unilateral effects in the supply of a number of other mainline signalling projects, including: (i) the standalone supply of interlocking projects; (ii) the standalone supply of ETCS ATP wayside projects (**ETCS ATP wayside overlay projects**); (iii) the supply of ETCS OBU projects; and (iv) the supply of the mainline signalling products Network Rail intends to develop through the 'Optimised Train Track Operations' project (the **OTTO project**). The CMA also found that the Merger does not give rise to a realistic prospect of an SLC as a result of vertical effects in the supply of ETCS OBUs to mainline rolling stock manufacturers.

Urban signalling

16. In relation to urban signalling, the CMA's investigation focused on competition between the Parties in the supply of urban signalling projects for metros in the UK relying on communication-based train control (**CBTC**) technology (an urban signalling technology relying on continuous radio-based communication between the train and the tracks to precisely identify, at all times, the location of a train on the tracks).
17. Again, the CMA has taken a forward-looking assessment to the impact of the Merger in this market taking into account a range of evidence (and not just evidence of historical market performance).
18. The CMA found that the Parties are close competitors in relation to CBTC signalling projects for metros in the UK. Thales is the largest provider of CBTC signalling projects for Transport for London (**TfL**) services, with very few rivals. The CMA found that it is likely to continue to compete strongly in future, particularly as future UK demand is likely to be driven by demand in London. While Hitachi Rail has been a weaker competitor to date in London, the CMA found that it is an established player globally and has the capabilities to be a strong and close competitor to Thales in the UK in future as it continues to develop its experience and global portfolio of references.
19. Post-Merger, while both Siemens and Alstom are likely to remain credible competitors for CBTC signalling projects in the UK, the CMA considers it unlikely that any other competitor would constrain the Merged Entity.

20. The CMA, therefore, believes that the Merger gives rise to a realistic prospect of an SLC as a result of horizontal unilateral effects in the supply of CBTC signalling projects for metros in the UK.
21. The CMA also considered but ultimately found that the Merger does not give rise to a realistic prospect of an SLC as a result of conglomerate effects in the bundled supply of CBTC signalling projects and urban rolling stock.
22. The CMA is therefore considering whether to accept undertakings under section 73 of the Enterprise Act 2002 (the **Act**). The Parties have until 16 December 2022 to offer an undertaking to the CMA that might be accepted by the CMA. If no such undertaking is offered, then the CMA will refer the Merger pursuant to sections 33(1) and 34ZA(2) of the Act.

ASSESSMENT

PARTIES

23. Hitachi Rail is a provider of transport solutions such as rolling stock, rail signalling systems and related services and maintenance both on a worldwide and UK basis.¹ Hitachi Rail is a wholly owned subsidiary of Hitachi, Ltd (**Hitachi Group**), the ultimate parent entity of a multi-national conglomerate headquartered in Tokyo and listed on the Tokyo and Nagoya Stock Exchanges.
24. Hitachi Group's turnover in the financial year 2021 was approximately [X] billion worldwide and approximately [X] million in the UK.
25. Thales is the Ground Transportation Systems business of Thales SA, active in the supply of rail signalling solutions and ancillary activities, such as integrated communication and supervision solutions,² and revenue collection systems in the transport sector on a worldwide and UK basis. Thales SA is headquartered in Paris and listed on the Euronext Paris.
26. Thales' turnover in the financial year 2021 was approximately [X] worldwide and approximately [X] in the UK.

TRANSACTION AND RATIONALE

27. On 3 August 2021 Hitachi Rail entered into an option agreement with Thales SA to acquire Thales for €1.66 billion.³ Hitachi Rail and Thales SA subsequently executed a Sale and Purchase Agreement on 10 February 2022.⁴
28. The Parties informed the CMA that the Merger is also the subject of review by competition authorities in the European Union, [X]⁵.
29. Hitachi Rail submitted that the rationale for the Merger is to:

¹ Hitachi is a UK private limited company.

² This focuses on solutions which aim to provide operational efficiency and to ensure passenger safety and comfort in stations and on board trains.

³ <https://www.hitachi.com/New/cnews/month/2021/08/210804.pdf>.

⁴ Final Merger Notice submitted to the CMA on 13 October 2022 (**FMN**), Sections 1-10, paragraph 2.1, and Annex Q2.001. Ahead of completion, Thales SA will carve out Thales from the business it is retaining and transfer all legal entities dedicated to Thales to NewCo. Hitachi Rail will then acquire 100% of the share capital and voting rights of NewCo.

⁵ FMN (Chapter 1), paragraph 2.41.

(a) [REDACTED];

(b) enable Hitachi Rail to benefit from economies of scale, improved procurement processes, optimized engineering capabilities and enhanced production process, for the benefit of its customers;

(c) [REDACTED]; and

(d) provide Hitachi Rail with an opportunity to expand its signalling portfolio into growing markets and technologies through digital solutions (Mobility as a Service), thereby creating new opportunities for customers.⁶

30. Hitachi Rail further submitted that Thales would become part of an 'integrated rail player' (with both signalling and rolling stock capability), which would foster its value delivery for customers.⁷

31. The Parties' internal documents are broadly consistent with this rationale. For instance, ⁸⁹ [REDACTED].¹⁰

PROCEDURE

32. The Merger was considered at a Case Review Meeting.¹¹

JURISDICTION

33. Each of Hitachi Rail and Thales is an enterprise within the meaning of section 129 of the Act. As a result of the Merger, these enterprises will cease to be distinct for the purposes of sections 23(1)(a) and 26 of the Act.

34. In 2021 Thales generated revenue of approximately [REDACTED] in the UK. Accordingly, the UK turnover of Thales exceeds £70 million, so the turnover test in section 23(1)(b) of the Act is satisfied.

⁶ FMN (Sections 1-10), paragraphs 2.33-2.39.

⁷ FMN (Chapter 1), paragraph 2.40.

⁸ Annex H.Q9.008, [REDACTED], 11 June 2021, submitted by Hitachi in response to the FMN, slide 16.

⁹ For the purposes of this Decision, Europe includes the EEA, the UK and Switzerland.

¹⁰ Annex T.Q9.008, [REDACTED], submitted by Thales in response to the FMN, slide 29.

¹¹ See [Mergers: Guidance on the CMA's jurisdiction and procedure \(CMA2revised\)](#), December 2020, from page 46.

35. The CMA therefore believes that it is or may be the case that arrangements are in progress or in contemplation which, if carried into effect, will result in the creation of a relevant merger situation.
36. The initial period for consideration of the Merger under section 34ZA(3) of the Act started on 17 October 2022 and the statutory 40 working day deadline for a decision is therefore 9 December 2022.

COUNTERFACTUAL

37. The CMA assesses a merger's impact relative to the situation that would prevail absent the merger (ie the counterfactual). For anticipated mergers the CMA generally adopts the prevailing conditions of competition as the counterfactual against which to assess the impact of the merger. However, the CMA will assess the merger against an alternative counterfactual where, based on the evidence available to it, it believes that, in the absence of the merger, the prospect of these conditions continuing is not realistic, or there is a realistic prospect of a counterfactual that is more competitive than these conditions.¹²
38. In this case, the CMA has not found evidence supporting an alternative counterfactual, nor have the Parties or third parties put forward arguments in support of one. The CMA therefore believes the prevailing conditions of competition to be the relevant counterfactual.

BACKGROUND

39. The Parties are active in a number of areas within both mainline signalling and urban signalling.

Mainline signalling

40. Mainline signalling systems prevent collisions or unsafe manoeuvres on national train networks by determining the position of trains, controlling their direction, and providing authorisation to train drivers to take certain movements.¹³

¹² See [Merger Assessment Guidelines \(CMA129\)](#), March 2021, from paragraph 3.12.

¹³ Office of Rail and Road (**ORR**), Signalling market study, Final Report, 09 November 2021 (**ORR Market Study**), paragraph 3.3. The ORR Market Study is available at: <https://www.orr.gov.uk/monitoring-regulation/rail/competition/market-monitoring/market-study-supply-signalling-systems-november-2020>. See paragraphs 57 to 62 which detail the findings of the ORR Market Study.

Mainline signalling subsystems

41. Mainline signalling is comprised of several subsystems, which may be purchased together as a bundle or separately. These subsystems include:

- (a) **Interlockings**, which are the principal safety critical component of mainline rail signalling systems. Interlockings are lineside systems (ie installed on the tracks)¹⁴ which prevent trains from carrying out unsafe movements by only permitting them to proceed past a signal once routes are deemed to be safe.¹⁵ British Railways developed Solid State Interlockings (**SSI**) for use in mainline railways in Great Britain¹⁶ in the mid-1980s which represent the first generation of electronic interlockings introduced in the UK. Following the privatisation of British Railways, the right to develop and deploy SSI have since passed to Siemens and Alstom and their predecessor companies.
- (b) **Train protection systems (TPS)**, which ensure that trains comply with the instructions issued by the interlockings and that they travel at appropriate speeds. TPS include both wayside systems and OBUs (installed on the rolling stock).¹⁷ The different types of systems within TPS are:
 - (c) train protection (**TP**) solutions, which comprise of automatic warning systems (**AWS**) and train protection & warning systems (**TPWS**); and
 - (d) ATP, which comprise of both legacy ATP and ETCS ATP (please see further in paragraphs 77 to 86 below).¹⁸

¹⁴ Lineside, trackside, and wayside relate to the area adjacent to a railway track and have been used interchangeably in this Decision.

¹⁵ ORR Market Study, paragraph 3.5.

¹⁶ The CMA has carried out its investigation in relation to the UK and the Parties have provided tender and shares of supply data on a UK-basis. The CMA notes however the ORR Market Study relates to Great Britain only and has taken into account the differences between Great Britain and the UK, where appropriate, in its assessment.

¹⁷ FMN (Chapter 1), paragraphs 12.14 and 12.15.

¹⁸ FMN (Chapter 1), paragraphs 12.14.1 and 12.14.2; ORR Market Study, Annex A, which defines AWS as 'a train protection system that gives the driver an audiovisual indication of the status of an upcoming signal', and TPWS 'a train protection system that automatically applies the brakes on a train that is approaching a danger (red) signal too fast or has passed a signal at danger without authority'. TP is the type of train protection system that is most widely used in the UK (90%). The TP solutions comprise AWS and TPWS and provide a warning to the train driver but do not directly intervene in the operation of the train (FMN (Chapter 1), paragraph 12.14.1). ATP is another type of train protection system. The ATP systems are more sophisticated than TP systems as they can, for instance, moderate train speed, if the driver fails to react. ATP systems can be legacy ATP systems or ETCS ATP systems (FMN (Chapter 1), paragraph 12.14.2).

(e) OCS, which are IT solutions designed to ensure the overall management of railway networks. OCS are comprised of monitoring and command components for signalling subsystems. The OCS receive information across a network of interlockings and relay this to a central control centre.¹⁹

42. The UK has national operational and technical requirements with which all signalling systems installed on UK mainline railways must comply. Each signalling subsystem requires certification and authorisation in the UK. Further, interoperability between the subsystems and with the rolling stock must be ensured.²⁰
43. Mainline signalling subsystem projects are generally procured via tenders,²¹ ²² although some subsystems may also be procured through private negotiation.²³ Tenders for mainline signalling subsystems are large and relatively infrequent. Success in relevant past tenders (eg tenders using the same technology) can be used by suppliers to compete for future tenders, with completed projects acting as references by which suppliers may demonstrate their competency for an upcoming project.²⁴
44. In the UK, the largest procurer of mainline signalling, in particular mainline signalling subsystems that are not installed on rolling stock, is Network Rail.²⁵ Network Rail concludes framework agreements with a limited number of mainline signalling suppliers under which it allocates contracts, usually following a call for tenders. Network Rail has to date always chosen three framework suppliers for major signalling projects: the two companies holding SSI technology (ie Siemens and Alstom) and a third player.²⁶ Other key customers of these subsystems in the UK include High Speed Two, Ltd²⁷

¹⁹ FMN (Chapter 1), paragraphs 12.19 and 12.20.

²⁰ FMN (Chapter 1), paragraph 12.23.

²¹ Mainline signalling projects are comprehensive solutions involving engineering, project management, procurement of the necessary equipment, installation, testing and, in most cases, maintenance. By contrast, signalling products are signalling components used in railway signalling projects. See M.8677 *Siemens/Alstom*, 6 February 2019 (**Siemens/Alstom**) paragraph 619.

²² ORR Market Study, paragraph 4.3.

²³ FMN (Chapter 1), paragraphs 15.12.1 and 15.12.2.

²⁴ FMN (Chapter 1), paragraph 15.33.2.

²⁵ ORR Market Study, paragraph 4.2.

²⁶ ORR Market Study, paragraph 3.6.

²⁷ HS2 is the company responsible for developing and promoting the UK's new high-speed rail network linking London with key regional cities (FMN (Chapter 1), paragraph 15.8.2).

(**HS2**) and High Speed One Ltd²⁸ (**HS1**). The key upcoming tender for HS2 is discussed in paragraph 153 below.

45. By contrast, mainline signalling subsystems that are installed on rolling stock, namely OBUs, are purchased in the UK by rolling stock manufacturers, rolling stock leasing companies (**ROSCOs**), and train operating companies (**TOCs**).²⁹ OBU projects are purchased for either (i) installation on new mainline rolling stock and (ii) retrofitting on mainline rolling stock already in use where the original OBU's lifecycle has expired and needs replacing.³⁰
46. The supply of mainline signalling in Great Britain is currently undergoing significant change. The UK, like many other countries, is currently in the process of transitioning from legacy mainline signalling systems to digital, standardised, mainline signalling systems.
47. Legacy mainline signalling systems are the mainline signalling systems that conform to national operating rules and technical requirements and were not developed to conform to any standards adopted outside of a country.³¹ Legacy systems are therefore not interoperable across national borders. In the UK, the SSI technology is the relevant legacy interlocking.³²
48. Although many of the current legacy mainline signalling systems already use digital technology, digital signalling or the 'Digital Railway'³³ refers specifically to the modern signalling systems that lessen the need for fixed lineside infrastructure. The Digital Railway has the potential to deliver significant benefits such as increased capacity on the network and reduced costs.
49. Unlike legacy mainline signalling systems, digital mainline signalling projects are designed to be interoperable across national borders. The key standardisation initiatives in this regard are:

- (a) The European Initiative to Linking Interlocking Systems (**EULYNX**), a European initiative aiming to reduce the cost and installation time of signalling equipment by virtue of standardisation, encompassing 13 European Infrastructure Managers, including Network Rail.³⁴ The

²⁸ HS1 holds the 30-year concession through to 31 December 2040 to operate, maintain and renew the 109-kilometre high-speed rail line connecting London's St Pancras International station to Kent, and international passenger destinations in Europe – Paris, Brussels, and Amsterdam – via the Channel Tunnel (FMN (Chapter 1), paragraph 15.8.1).

²⁹ FMN (Chapter 1), paragraph 15.10.

³⁰ FMN (Chapter 1), paragraph 15.11.

³¹ FMN (Chapter 1), paragraph 12.26.

³² ORR Market Study, paragraph 3.6.

³³ ORR Market Study, page 7.

³⁴ See EULYNX [website](#); ORR Market Study, Annex A.

EULYNX project will have the greatest effect in standardising the interfaces in relation to interlockings.³⁵

(b) ETCS, a component of the European Rail Traffic Management System (**ERTMS**), is a standardised ATP system which aims to replace national ATP systems.³⁶

50. In addition to conforming to standards (either national standards in the case of legacy signalling, or EU standards in the case of digital signalling) all mainline signalling must be authorised (or homologated) by independent national authorities. In the UK, authorisation is provided by ORR.³⁷ Homologation is not a prerequisite to participating in a bid, and it can be carried out once contracts are awarded.³⁸
51. The Department for Transport (**DfT**) and the Department for Business, Energy & Industrial Strategy (**BEIS**) published the 'Rail Sector Deal' in December 2018. One of its outputs was the long-term deployment plan to set out the migration to digital assets as of 2024.³⁹ The migration is expected to take place over a 30-year period. According to ORR, 'the transition to digital technology will drive one of the most significant modernisation programmes in the near 200-year history of Britain's railway infrastructure'.⁴⁰ 65% of external signalling assets in the UK are projected to expire within the next 15 years, which could potentially lead to a five to six-fold increase in the volume of signalling renewals work as Network Rail replaces its conventional systems with digital technology.⁴¹

Mainline signalling products developed through the OTTO project

52. Network Rail has recently launched the OTTO project in order to develop wayside and OBU signalling products based on 'enhanced' legacy train protection technology. The CMA understands that the project is intended to develop signalling products that could act as a 'stepping stone' between legacy and ETCS wayside and on-board signalling, given the length of time the transition to ETCS may take (more than 40 years to complete based on current signalling renewal plans) and its cost (which may make ETCS

³⁵ FMN (Chapter 1), paragraph 12.39.

³⁶ ORR Market Study, paragraph 3.12.

³⁷ FMN (Chapter 1), paragraph 12.23.

³⁸ FMN, paragraph 21.3.

³⁹ ORR Market Study, page 7; Note of call with DfT on 15 September 2022.

⁴⁰ ORR Market Study, page 5.

⁴¹ ORR Market Study, page 6.

prohibitive on all but primary routes).^{42, 43} The OTTO project remains at a feasibility study stage and there is uncertainty over the precise timing and nature of the project's outputs.⁴⁴ Nonetheless, the CMA understands that once the specifications for the OTTO products are finalised, Network Rail intends to launch a tender for the supply of the OTTO products.⁴⁵

Current UK suppliers of mainline signalling

53. Mainline signalling subsystems are provided by (i) original equipment manufacturers (**OEMs**) and (ii) integrators.
- (a) OEMs are suppliers of mainline rail signalling projects who use their own signalling products.⁴⁶ OEMs in the UK include Siemens, Alstom, Resonate,⁴⁷ and the Parties.⁴⁸
- (b) Integrators are suppliers who use technology owned by third-party OEMs to provide design and integration services for mainline signalling projects.⁴⁹ Integrators in the UK include suppliers such as Atkins, Linbrooke, VolkerRail, Amey, Babcock, and Colas Rail.⁵⁰ The integrators' role in the UK is further discussed in paragraphs 213 to 226 below.
54. Siemens and Alstom are the largest suppliers of mainline signalling systems in the UK. As set out in paragraph 89 Siemens and Alstom each hold the rights to the SSI technology.⁵¹ According to ORR, the companies that do not hold SSI technology have had a negligible impact on the UK market for mainline signalling to date,⁵² with 98% of the (post-1990) current installed base of interlockings in the UK having been manufactured by Siemens,

⁴² Note of call with ORR on 12 July 2022. The enhanced legacy products are likely to be less expensive than ETCS because the underlying technology (ie Radio Based Limited Supervision) mainly requires the installation of some sensors on the rolling stock and minimal additional trackside assets.

⁴³ Parties' response to CMA RFI of 6 September 2022, Question 8; Parties' response to the Issues Letter of 24 November 2022, paragraph 10.4.

⁴⁴ ORR's submission to the CMA of 25 November 2022.

⁴⁵ The CMA understands that the OTTO project is separate from the TCSF.

⁴⁶ ORR Market Study, paragraph 4.3.

⁴⁷ According to its [website](#), Resonate (previously DeltaRail) is a technology company specialising in rail and connected transport solutions. As discussed in paragraph 297 below, Resonate is only active in the supply of one mainline signalling subsystem in the UK: OCS. Resonate now owns the Integrated Electronic Control Centre (IECC) technology originally developed by British Rail. The IECC is a control system consisting of a computer workstation to aid signallers in setting routes. The current control system deployed by Resonate is known as IECC Scalable.

⁴⁸ FMN (Chapter 1), paragraphs 15.16.1-15.16.5.

⁴⁹ ORR Market Study, paragraph 4.3.

⁵⁰ FMN (Chapter 1), paragraphs 15.17.1-15.17.6.

⁵¹ ORR Market Study, paragraph 3.6.

⁵² ORR Market Study, paragraph 3.8.

Alstom or one of their predecessor companies (see paragraph 328 below).⁵³ Siemens and Alstom both have a very large presence in every mainline signalling subsystem.

55. Hitachi Rail, Thales and Resonate are the only other OEMs currently supplying mainline signalling systems in the UK. Hitachi Rail is active across all relevant subsystems. Thales currently supplies OCS projects in the UK but is active across all relevant subsystems in Europe. Resonate is active only in the supply of OCS projects in the UK. Resonate is not active outside the UK.
56. In addition to these OEMs, various integrators such as Atkins, Linbrooke, and VolkerRail are currently active in the supply of at least one of the mainline signalling subsystems in the UK in which the Parties overlap, or in interlockings. There are other integrators present in the UK such as Amey, Babcock, and Colas Rail that have historically competed for minor signalling works. These integrators have not been active in the supply of major signalling renewal or ETCS works.⁵⁴

ORR Market Study

57. The mainline railways signalling market in Great Britain is regulated by the independent regulator ORR. ORR's strategy and duties involve regulating the rail industry's health and safety performance, holding Network Rail and other rail infrastructure networks to account and ensuring that the rail industry is competitive and fair.⁵⁵
58. In November 2020, ORR opened a market study into the supply of rail signalling systems in Great Britain to ensure the signalling supply chain is fair and competitive.⁵⁶ The study built on previous work into signalling, notably ORR's engagement with the European Commission about the proposed merger of Siemens/Alstom (which was ultimately abandoned). The study focused on the supply chain for the delivery of significant 'major' signalling projects; looked at the strength of competition for tenders and incentives to compete in the market; considered whether there are any barriers to innovation, or market entry and the introduction of new technology; and looked closely at the ability of the supply chain to build up capacity for the rollout of the digital railway.

⁵³ ORR Market Study, page 7.

⁵⁴ The CMA notes that as of 2003 Colas Rail and Amey have not been selected as framework suppliers. Babcock has been only awarded one lot (ie Scotland) in CP6 within the S&T Framework. ORR Market Study, [Annex C](#).

⁵⁵ [ORR website](#).

⁵⁶ [ORR website](#).

59. In November 2021, ORR published the Final Report into the supply of signalling systems that assessed the strength of competition for tenders, and incentives to compete in the market, with a focus on whether there are any barriers to innovation or new entrants entering with new technology solutions. It identified ways in which competition, and hence value for money, was being stifled. ORR found that the combined market share of the two incumbent signalling suppliers, Siemens and Alstom, has increased over recent years and that there was a significant increase in the cost of signalling. ORR found that smaller firms were not able to compete on equal terms. Various factors, including the way that Network Rail procures its signalling, have been making it difficult for competitors to grow in the market.
60. The ORR Market Study made recommendations aimed at opening up the railway signalling market and encouraging suppliers to compete on cost, quality, and innovation.
61. In February 2022, Network Rail responded to the ORR Market Study by committing to making changes to its procurement processes. These changes are aimed at improving incentives for Network Rail's suppliers by sharing the costs of bidding and technology development and by providing contractors with more certainty over their future workbank.⁵⁷ More details about the details of the structure for the future Network Rail tenders are set out in paragraphs 158 to 161.
62. In July 2022, ORR published an update with its assessment of progress to date against its recommendations. ORR found that progress had been good but encouraged Network Rail to continue to deliver improvements.⁵⁸

Urban signalling

63. Urban signalling systems are railway signalling systems used for local passenger rail transit, encompassing metro⁵⁹ and light rail and tram (**LRT**) networks. These are designed to ensure safety on urban rail networks by preventing collisions and excessive speed as well as improving network

⁵⁷ [ORR website](#).

⁵⁸ [ORR website](#).

⁵⁹ Metros represent a type of urban rolling stock distinct from LRT. They are automated or non-automated electric vehicles operating within a city centre on segregated tracks, typically underground (*Alstom/Bombardier*, paragraph 83). For the purposes of the Decision, the London metro system comprises 13 lines, ie the DLR, Jubilee, Northern, Victoria, Elizabeth / Crossrail, Hammersmith & City, Circle, District, Metropolitan, Central, Piccadilly, Bakerloo, and Waterloo & City lines.

capacity.⁶⁰ As with mainline signalling, urban signalling systems usually comprise several subsystems such as lineside and on-board systems.

64. As a rule, there are no interoperability requirements between urban signalling systems between different city networks or between lines within city networks, as trains typically run on self-contained lines. This means that signalling systems do not usually need to interoperate between lines. There are cities, however, where several lines share segments of the tracks, at one or several stations. This is the case in London, for instance.⁶¹
65. Urban signalling systems are based on either conventional or CBTC technologies:
- (a) Conventional urban rail signalling systems were developed and employed based on a fixed block system. The track is divided into consecutive blocks and sensors detect whether a block is occupied by a train. A block may only be occupied by one vehicle any given time and the system only recognises that a block is occupied but does not know where the vehicle is within the block.
 - (b) CBTC systems⁶² are based on so-called 'moving blocks', which are determined based on the actual position of the trains and the required braking distance, plus a safety buffer. CBTC systems rely on continuous radio-based communication between the train and the tracks to precisely identify, at all times, the location of a train on the tracks. In the UK the CBTC systems are used only for metros.⁶³
66. Urban rail signalling system projects are procured relatively infrequently in the UK,⁶⁴ and customers typically organise tenders to do so.⁶⁵ Customers consider project references on a global basis and test the capability and urban signalling solution of a supplier throughout the procurement phase. The

⁶⁰ Urban rail signalling systems ensure lines are run at peak efficiency.

⁶¹ Ensuring interoperability from a signalling standpoint when several lines share the same segments is not a challenge for TfL. See note of call with a third party.

⁶² CBTC is a technological evolution of transmission-based train control (**TBTC**), using more modern communications technology in place of cabling to improve reliability and performance, as well as reduce maintenance costs. Most large signalling suppliers can provide radio based CBTC, moving away from TBTC technologies. See note of call with a third party. For the purposes of this decision, the Parties' submissions and data in relation to CBTC signalling also refer to and include TBTC signalling.

⁶³ Note of call with a third party.

⁶⁴ The CMA understands there have been eight CBTC and TBTC signalling tenders organised in the UK in the last 10 years.

⁶⁵ Urban rail signalling is primarily a project-based business. Projects normally include specific engineering, development and project management, manufacturing and/or procurement of equipment, installation and testing, and sometimes maintenance services. *Siemens/Alstom*, paragraph 592.

customers of urban rail signalling systems in the UK are public transport authorities. The largest purchaser in the UK for urban rail signalling systems is TfL, and the largest CBTC project purchased by TfL within the past 10 years was the Four Lines Modernisation (**4LM**) project through which the Circle, District, Hammersmith & City and Metropolitan lines are being updated to use CBTC signalling.⁶⁶

67. In the UK there are three metro networks: the London metro (including Underground, Overground and DLR), Glasgow and Tyne and Wear.
- (a) In London, all lines are already CBTC or are expected to be upgraded to CBTC when funding allows.⁶⁷
 - (b) In Glasgow, signalling is currently being upgraded to CBTC.
 - (c) The Tyne and Wear metro system uses conventional mainline technology (rather than CBTC technology).⁶⁸

FRAME OF REFERENCE

68. According to the CMA's Merger Assessment Guidelines, market definition involves identifying the most significant competitive alternatives available to customers of the merger firms and includes the sources of competition to the merger firms that are the immediate determinants of the effects of the merger. While market definition can be an important part of the overall merger assessment process, the CMA's experience is that in most mergers, the evidence gathered as part of the competitive assessment, which will assess the potentially significant constraints on the merger firms' behaviour, captures the competitive dynamics more fully than formal market definition. Consequently, while the appropriate approach will reflect the circumstances in each case, the CMA anticipates that in future, merger assessments will place more emphasis on the competitive assessment as opposed to static market definition.⁶⁹
69. While market definition can sometimes be a useful tool, it is not an end in itself. The outcome of any market definition exercise does not determine the outcome of the CMA's analysis of the competitive effects of the merger in any mechanistic way. In assessing whether a merger may give rise to an SLC, the

⁶⁶ [Four Lines Modernisation - Transport for London \(tfl.gov.uk\)](https://www.tfl.gov.uk).

⁶⁷ The Bakerloo, Central, Waterloo & City and Piccadilly Lines have yet to be upgraded. Please see [DEEP TUBE PROGRAMME IN DOUBT \(modernrailways.com\)](https://www.modernrailways.com).

⁶⁸ Tyne & Wear response to CMA RFI of 24 November 2022.

⁶⁹ Mergers Assessment Guidelines, paragraph 9.2.

CMA may take into account constraints outside the relevant market, segmentation within the relevant market, or other ways in which some constraints are more important than others.⁷⁰

70. The Parties overlap in the supply of mainline rail and urban signalling projects.

71. The CMA's investigation has focused on the following overlaps in particular:

(a) In relation to mainline signalling: the supply of interlocking projects, ETCS ATP wayside projects, OCS projects, ETCS OBU projects, as well as the mainline signalling products developed through the OTTO project.^{71, 72, 73}

(b) In relation to urban signalling: the supply of CBTC metro signalling projects and the supply of conventional signalling projects for metros.⁷⁴

⁷⁰ Mergers Assessment Guidelines, paragraph 9.4.

⁷¹ The Parties also overlap in the supply of ticketing and fare collection systems (**TFCS**) and supply of communication and supervision systems (**CSS**). TFCS involve systems and platforms relating to the purchase, validation, and inspection of tickets. CSS involve services relating to the management of train stations and passenger information, encompassing telecommunications, passenger information, video and security, and supervision systems. The Parties submitted that they are small players in relation to both TCSF and CSS. The CMA's market investigation confirmed that there is a wide competitor set active in the supply of both systems in the UK, and no third party raised concerns about the impact of the Merger in relation to their supply. In relation to CSS in particular, third parties noted that the competitor set extends beyond the railway signalling sector, with many listing dedicated telecommunications companies as active suppliers in the UK. On the basis of the evidence received, the CMA does not consider that competition concerns would arise in respect of the supply of either TFCS or CSS as a result of the Merger, and neither are discussed further in this Decision.

⁷² Thales is also a supplier of TPWS OBUs (a type of legacy ATP on-board unit) in the UK, which are an input used by rolling stock manufacturers, including Hitachi Rail. The CMA therefore considered whether post-Merger Hitachi Rail would have the ability and incentive to foreclose rivals' access to Thales' TPWS OBUs. The CMA understands that TPWS OBUs are undifferentiated products and that there are currently three providers in the UK: Thales, Mors Smitt, and Unipart, with Thales having a [20-30%] share of supply for the period 2012-2021. On the basis of the evidence received, the CMA considered that Hitachi Rail would not have the ability to engage in a foreclosure strategy in relation to the supply of TPWS OBUs to rival rolling stock manufacturers. This vertical relationship is not discussed further in this Decision.

⁷³ Thales is also a supplier of axle counters in the UK, which may be used as an input by signalling suppliers for conventional and digital signalling projects. The CMA understands that Thales is one of only two suppliers of axle counters in the UK (with Frauscher being the second) and that in some cases Network Rail may specifically require a signalling supplier to use Thales' axle counters. The CMA considered whether post-Merger signalling suppliers could be foreclosed from accessing Thales' axle counters. The CMA understands that Thales made only de minimis sales of axle counters to signalling suppliers over the last five years, [§]. Also, the CMA considers that Network Rail could frustrate any such foreclosure concerns post-Merger by purchasing Thales' axle counters directly on behalf of a rival signalling supplier. On the basis of the evidence received, the CMA does not consider the Merger would raise competition concerns in relation to the supply of axle counters, and this is not therefore discussed further in this Decision.

⁷⁴ The Parties also overlap in the supply of urban rail signalling for LRT. The Parties submitted they have a small presence in this segment. Third parties indicated that there are sufficient alternatives to the Parties in this segment. No third party has raised concerns in relation to the supply of LRT in the

72. In line with the Parties' submissions and the previous findings by the European Commission, the CMA considers the frames of reference within the supply of mainline signalling are separate from those within urban signalling.⁷⁵ The European Commission found that there is no demand-side substitutability between mainline and urban signalling projects, since the projects are used by different customers that have different requirements and the projects use different technologies and apply different standards.⁷⁶ Below, the CMA first considers the product scope within mainline signalling before considering urban signalling.

Product scope: mainline signalling

73. In previous decisions, the European Commission has identified the three following subsystems within the mainline signalling projects: (i) interlockings; (ii) ATP; and (iii) OCS.⁷⁷ The Parties submitted that, given the existence of legacy TPS in the UK, they consider that legacy TPS projects also constitute a separate market.⁷⁸ In line with the previous approach of the European Commission and the Parties' submissions, the CMA considers that interlockings, OCS, and ATP projects each form separate frames of reference.

74. The CMA has also considered whether it is appropriate to further segment the market for ATP projects, in response to the Parties' submissions and the European Commission's previous approach.^{79, 80} The European Commission distinguished between:

(a) ATP wayside projects and OBU projects;

(b) Within each of ATP wayside and ATP OBU projects, between legacy and ETCS projects; and

UK. On the basis of the evidence received, the CMA does not consider that competition concerns would arise in respect of the supply of urban rail signalling for LRT as a result of the Merger, and this is therefore not discussed further in this Decision.

⁷⁵ FMN (Chapter 1), paragraphs 13.2.1 and 13.5.

⁷⁶ *Siemens/Alstom*, paragraphs 604-614; *M. 9779 Alstom/Bombardier* 31 July 2022 (*Alstom/Bombardier*), paragraphs 744-750.

⁷⁷ FMN (Chapter 1), paragraph 13.10.

⁷⁸ The CMA has not identified any competition concerns in relation to legacy TPS projects and therefore this has not been considered further in this decision.

⁷⁹ *Siemens/Alstom*, paragraph 699; *Alstom/Bombardier*, paragraph 810.

⁸⁰ The European Commission also considered further segmentations: (i) OBUs by type of installation; (ii) ETCS level; (iii) ATP projects by project size; and (iv) between greenfield and brownfield projects. However, the European Commission did not find evidence to support these further segmentations.

(c) Within ETCS ATP wayside projects, between re-signalling (ie bundles of ETCS ATP wayside and interlockings) and overlay projects.

75. The CMA has also considered whether it is appropriate to further segment the market for interlockings into (i) digital; and (ii) conventional interlockings.
76. Finally, the CMA has also considered whether it is appropriate to further segment OCS between (i) signalling control systems (**SCS**), which are deployed on top of interlockings; and (ii) traffic management systems (**TMS**).

ATP projects

ATP wayside and OBU projects

77. The Parties submitted that ATP wayside and OBU projects are not substitutable from a demand- or supply-side perspective. This is in line with the European Commission's findings that each subsystem performs a different function⁸¹ and is purchased by different customer (infrastructure managers for ATP wayside and rolling stock manufacturers or train operating companies for OBUs).⁸²
78. On this basis, in line with the European Commission's previous approach and the Parties' submissions, the CMA considers that ATP wayside is a separate frame of reference to ATP OBU projects.

Legacy and ETCS projects

79. The Parties submitted that both ATP wayside and ATP OBU projects should be segmented between legacy and ETCS projects, due to the absence of interoperability and supply side substitution between the two.⁸³ This is in line with the European Commission's previous decisions that found that legacy systems had been developed independently at a national level, conforming to national standards whereas ETCS systems conform to European standards and are able to solve interoperability issues. ETCS systems offer functionalities such as continuous communication with the train, supervision of braking curves, and in-cab signalling which are unavailable in legacy systems that are more dependent on wayside equipment. Approval procedures for legacy and ETCS systems are also different: ETCS systems require approval

⁸¹ ATP wayside systems receive information from the interlocking and communicate this information to the passing trains whereas the OBU receives this information and transmits it to the train driver.

⁸² FMN, paragraph 13.16.

⁸³ FMN, paragraph 13.17.

by a European Notified Body responsible for the certification of ERTMS whereas legacy systems are approved through national processes.⁸⁴

80. Third-party evidence supports the view that legacy and ETCS projects are unlikely to be demand-side substitutes, as customers would be unlikely to switch demand away from ETCS to legacy systems in response to a small but significant price increase because of the technological and overarching long-run cost advantages of digitalisation.
81. On this basis, in line with the European Commission's previous approach and the Parties' submissions, the CMA considers ATP wayside and ATP OBU projects should be segmented between legacy and ETCS projects.

Re-signalling and overlay projects

82. The European Commission has previously found that ATP wayside projects should be further segmented between overlay (standalone ATP wayside projects) and re-signalling projects (the bundle supply of ETCS ATP wayside and interlockings). In particular, the European Commission noted that competitive conditions for overlay and re-signalling projects are generally similar with the same set of suppliers bidding for and winning both types of projects, but that the main differentiation is the significantly greater complexity associated with overlay projects in relation to interfacing to existing installed equipment.⁸⁵
83. The Parties do not agree with the European Commission's approach and submitted the complexity that might result from the interface between the ETCS ATP system and the interlocking in the context of an overlay project is not always relevant as network operators can require standard ATP-interlockings interfaces or require that access to the interface specification be given to the ETCS ATP system supplier; that most major ETCS ATP wayside suppliers pursue both types of projects; and that the distinction is even less relevant in the UK, where Network Rail intends to replace (rather than overlay) most signalling assets as they come up for renewal. Nevertheless, the Parties consider that the exact product market definition can be left open as the Merger does not give rise to concerns regardless of the exact frame of reference.
84. The CMA notes that the Parties do not dispute that overlay projects are more complex than re-signalling projects. While Network Rail may intend to replace (rather than overlay) most signalling assets as they come up for renewal,

⁸⁴ *Siemens/Alstom*, paragraphs 664-666; *Alstom/Bombardier*, paragraphs 774-776.

⁸⁵ *Siemens/Alstom*, paragraphs 689-694; *Alstom/Bombardier*, paragraphs 791-795.

there has remained distinct demand for overlay projects in the UK over the last 10 years, with two UK overlay projects identified in the Parties' tender data.⁸⁶

85. The CMA has also received evidence that the bundling of mainline signalling systems in the UK is not limited to re-signalling systems, but that Network Rail has sought to procure interlockings and OCS systems together from the same supplier as they come up for renewal, and to also adopt the same approach in relation to interlockings, ATP wayside, and OCS if they come up for renewal at the same time.⁸⁷
86. The CMA notes the approach taken by the European Commission in previous decisions. The CMA has not received strong evidence on whether there should be separate frames of reference for bundled contracts. On this basis, the CMA considers re-signalling projects as a separate frame of reference.

Interlockings

87. The European Commission has considered that there is no need to further segment interlockings by type of technology used (non-electronic vs computer-based technology) or by project size.⁸⁸
88. The Parties initially submitted they agree with the European Commission's approach that segmentation by the type of technology use or by project size is not warranted.⁸⁹
89. In response to the CMA's Issues Letter, however, the Parties noted a distinction between legacy (or conventional) interlockings and digital interlockings.⁹⁰ The Parties submitted that legacy interlockings in the UK are primarily based on Siemens' and Alstom's SSI technology. The Parties submitted that 98% of the current installed base of interlockings in the UK has been manufactured by Siemens and Alstom or their predecessor companies. Other companies have also introduced non-SSI interlockings in the UK, including Hitachi and Atkins, although the Parties note they have had a negligible impact on the UK mainline rail signalling sector to date.⁹¹

⁸⁶ Annex Q14.002 (V5), Updated Bidding Data Shares of supply and CPLs (10246491266.1), submitted in response to the FMN.

⁸⁷ Note of call with a third party.

⁸⁸ *Siemens/Alstom*, paragraphs 689-694; *Alstom/Bombardier*, paragraphs 791-795.

⁸⁹ FMN (Chapter 1), paragraphs 13.36-13.37.

⁹⁰ Parties' response to the Issues Letter, paragraph.5.2.

⁹¹ Parties' response to the Issues Letter, paragraph.5.2; see further ORR Market Study, paragraphs 3.5-3.8.

90. By contrast, the Parties submitted that digital interlockings are required in relation to ETCS ATP wayside re-signalling projects. According to the Parties, it may take a long time for the installed base of legacy interlockings to be replaced with digital interlockings, the volume of procurement for legacy interlockings is expected to decrease over time.⁹²
91. Network Rail submitted that ETCS wayside re-signalling projects will require the use of digital-compatible interlockings, rather than legacy interlockings.⁹³ The CMA also understands that Network Rail is unlikely to procure digital interlockings on a standalone basis, given the limited installed base on ETCS wayside systems in the UK at present.
92. Accordingly, while the CMA has not received conclusive evidence that the product market for interlockings should be segmented, in the competitive assessment, the CMA's assessment of standalone interlocking projects focuses on legacy interlockings, whereas digital interlockings are considered in the context of ETCS ATP wayside re-signalling projects.

OCS projects

93. The European Commission has considered that there is no need to further segment OCS projects by the OCS level (operational, control level, dispositive, or management level) or by project size.⁹⁴
94. The Parties initially submitted they agree with the European Commission's approach that further segmentation based on the different types or levels of OCS projects is not warranted.⁹⁵
95. In response to the Issues Letter, the Parties submitted that OCS projects comprise two components: (i) SCS, which are deployed on top of interlockings (and referred to as 'local control'); and (ii) TMS, a system architecture that integrates several local signalling control components and presents the route to the signalling operator through a single interface (referred to as 'central control').⁹⁶
96. The Parties also submitted that there are two types of TMS: (i) 'isolated TMS', a decision support tool which identifies potential issues and offers solutions that must be executed by a signalling controller; and (ii) 'integrated TMS',

⁹² Parties' response to the Issues Letter, paragraph 5.6.

⁹³ Note of call with Network Rail on 29 September 2022.

⁹⁴ *Alstom/Bombardier*, paragraphs 796-799.

⁹⁵ FMN (Chapter 1), paragraph 13.41.

⁹⁶ Parties' response to the Issues Letter dated 24 November, paragraph 8.2.

which interacts directly with the SCS, with planning and optimisation decisions automatically taken by the TMS.⁹⁷

97. The CMA understands the distinction between TMS and SCS relate to different levels of OCS. Consistent with the approach previously followed by the European Commission, the CMA does not consider there is conclusive evidence to support segmenting the product frame of reference for OCS, although relevant differences are considered in the CMA's competitive assessment below.

Mainline signalling products developed through the OTTO project

98. As set out in the Background section, the OTTO project is intended to develop wayside and OBU signalling products based on enhanced legacy technology, and is intended to act as a stepping stone between the legacy and ETCS technologies.
99. While the OTTO project is only at a feasibility stage and the precise timing and nature of the project's outputs are uncertain, the CMA understands that the mainline signalling products to be developed through the OTTO project seek to address a distinct set of requirements specified by Network Rail and will likely demonstrate different characteristics to the UK's legacy wayside and OBU systems or those used in relation to ETCS. In this regard, it is expected that the OTTO products will mainly require the installation of some sensors on the rolling stock and minimal additional trackside assets.⁹⁸
100. Accordingly, the CMA understands that the differences between the OTTO products on the one hand and legacy and ETCS systems on the other are likely to be sufficiently significant such that the OTTO products would not be demand-side substitutes for either legacy or ETCS products.
101. The CMA therefore considers that the OTTO products are likely to collectively comprise a distinct product frame of reference. The CMA has not considered whether the OTTO products can be further sub-segmented, given the significant uncertainty in relation to the nature of the products (and, for the reasons explained in the competitive assessment, competition concerns would not arise on any plausible basis).⁹⁹

⁹⁷ Parties' response to the Issues Letter dated 24 November, paragraph 8.3.

⁹⁸ FMN (Chapter 1), paragraph 12.58.1.

⁹⁹ ORR's submission to the CMA of 25 November 2022.

CMA's view on mainline signalling product scope

102. In view of the above, the CMA has assessed the impact of the Merger in relation to the following product frames of reference for mainline signalling:

- (a) ETCS ATP wayside re-signalling projects;
- (b) OCS projects;
- (c) Interlocking projects;
- (d) ETCS ATP wayside overlay projects;
- (e) Mainline signalling products developed through the OTTO project; and
- (f) ETCS ATP OBU projects.

Geographic scope: mainline signalling

ETCS ATP wayside re-signalling projects and ETCS ATP wayside overlay projects

103. The European Commission has previously considered that the relevant geographic markets for ETCS ATP wayside re-signalling projects and ETCS ATP wayside overlay projects is, on balance, EEA-wide in scope.¹⁰⁰

104. In particular, the European Commission acknowledged factors pointing to national geographic markets. In the case of re-signalling projects, while they require fewer interfaces to existing systems than overlay projects, a supplier still needs to homologate and customise their interlocking to comply with applicable national standards. In the case of overlay projects, suppliers must develop a (national specific) interface to the installed interlockings and homologate their ETCS wayside system. In the case of re-signalling projects, while they require fewer interfaces to existing systems than overlay projects, a supplier still needs to homologate and customise their interlocking to comply with applicable national standards.

105. However, the European Commission considered that the adoption of EU-wide authorisation procedures and standards, and in particular of ERTMS, were developing homogeneous conditions for competition between mainline signalling suppliers within Europe, and that, from a supply side perspective,

¹⁰⁰ *Siemens/Alstom*, paragraphs 767-827; *Alstom/Bombardier*, paragraphs 834-839.

the same ETCS platforms developed by the respective suppliers were used across Europe after adaptation.

106. In line with the European Commission's assessment, the Parties submitted that the geographic markets for ETCS ATP wayside re-signalling projects and ETCS ATP wayside overlay projects should be considered to be EEA-wide (including the UK).¹⁰¹
107. The CMA considers that a number of factors point more strongly towards national markets for both re-signalling and overlay projects. While EU-wide authorisation procedures and standards may be in place, ETCS ATP wayside systems still require adaptation and homologation on a national basis. More specifically, in the case of re-signalling projects, the CMA notes that it may be inconsistent to consider their geographic market to be wider than national when one of their constituent elements (interlockings) belong to a national market. In the case of overlay projects, the reason why they are considered to have a product scope distinct from re-signalling projects is due to the complexity in interfacing to nationally specific installed interlockings. The CMA has taken into account, where appropriate, any potential constraint exerted by suppliers outside of the UK as part of its competitive assessment.
108. On this basis set out above, the CMA considers that, on balance, the geographic frame of reference both for ETCS ATP wayside re-signalling and ETCS ATP wayside overlay projects is national.

OCS projects

109. In *Alstom/Bombardier*, the European Commission was unable to conclude whether the geographic market for OCS projects was EEA-wide or national.¹⁰² On the one hand, the European Commission noted that suppliers tend to use the same Baseline OCS system in each European country, and that a certain number of competitors are active across Member States (including the UK). On the other hand, the European Commission noted that OCS systems require adaption in each national market (including in connection with interlockings, the geographic market for which is national), competitor market shares differ substantially between countries, and Europe-wide standardisation initiatives were still at an early stage.
110. The Parties submitted that the market for OCS systems is Europe-wide for the following reasons:

¹⁰¹ FMN (Chapter 1), paragraphs 13.28-13.34.

¹⁰² *Alstom/Bombardier*, paragraphs 843-850.

- (a) an ever-increasing trend towards standardisation;
- (b) the need for interoperability with installed interlockings is not a barrier to entry, since network operators can require standard OCS-interlocking interfaces or require that access to the interface specification be given to the OCS supplier; and
- (c) while OCS systems need to be specifically adapted to national requirements, customer requirements only vary within a standard range of typical functions of OCS.¹⁰³

111. The CMA notes that OCS systems require adaptation and homologation on a national basis. While a network operator could in theory require or ensure access to OCS-interlocking interfaces, the CMA understands that Network Rail's general preference is to procure OCS and interlockings from the same supplier when they come up for renewal.¹⁰⁴ While cross-national standardisation efforts may be under way, the CMA understands that this is less advanced than in the case of other mainline signalling standards, such as in relation to ETCS subsystems. The CMA has taken into account, where appropriate, any potential constraint exerted by suppliers outside of the UK as part of its competitive assessment.
112. On this basis, the CMA considers for the purposes of its assessment in this case that the relevant frame of reference for OCS projects is national.

Interlocking projects

113. The European Commission has previously defined the relevant geographic market for interlocking projects as national.¹⁰⁵ In *Siemens/Alstom*, the European Commission considered that while some factors pointed to an EEA-wide (including the UK) geographic market, such as the use of similar platforms across countries, entrants bidding and winning and the presence of the same suppliers across a large number of EEA countries, other factors pointed to a national geographic scope, such as a more important presence of local suppliers in some EEA countries, the absence of EEA-wide standardisation with the exception of the EULYNX initiative and a higher share of national adaptation costs relative to project value. In *Alstom/Bombardier*, the European Commission referred to unique demand-side considerations at a national level, such as installed base, accreditation, the need for a significant local workforce and premises, and different

¹⁰³ FMN (Chapter 1), paragraphs 13.42-13.44.

¹⁰⁴ Note of call with a third party.

¹⁰⁵ *Siemens/Alstom*, paragraphs 741-766; *Alstom/Bombardier*, paragraphs 832-833.

technical/engineering requirements; the need to conform to national systems and follow national authorisation processes; and that the degree of digitalisation differs between countries.

114. The Parties agree with the European Commission's assessment that the market for interlocking projects is national.¹⁰⁶
115. On this basis, the CMA considers that the geographic frame of reference for interlocking projects (both digital and conventional) is national.

ETCS ATP OBU projects

116. The European Commission has previously defined the relevant geographic market for ETCS ATP OBU projects as EEA-wide (including the UK), in view of European standards and pan-European safety rules and given ETCS OBU products are interoperable at the European level.¹⁰⁷
117. The Parties agree with the European Commission's approach that the geographic market for ETCS OBU projects is EEA-wide.¹⁰⁸
118. The CMA understands that ETCS OBUs require adaptation and homologation on a national basis. The CMA has taken into account, where appropriate, any potential constraint exerted by suppliers outside of the UK as part of its competitive assessment.
119. On this basis, the CMA considers that the geographic frame of reference for ETCS OBUs is national.

Mainline signalling products developed through the OTTO project

120. As noted above, the Parties have not made submissions relating to the correct frame of reference for mainline signalling products developed through the OTTO project to date. There is also no relevant precedent.
121. The CMA understands this is a project managed by Network Rail that is specific to the UK. The CMA has therefore assessed the impact of the Merger in relation to the mainline signalling products developed through the OTTO project in Great Britain. The CMA has taken into account, where appropriate, any potential constraint exerted by suppliers outside of the UK as part of its competitive assessment.

¹⁰⁶ FMN (Chapter 1), paragraph 13.38.

¹⁰⁷ *Siemens/Alstom*, paragraphs 718-737; *Alstom/Bombardier*, paragraphs 827-828.

¹⁰⁸ FMN (Chapter 1), paragraphs 13.28-13.34.

122. On this basis, the CMA considers that the appropriate geographic frame of reference for mainline signalling products developed through the OTTO project is national.

CMA's view on mainline signalling frames of reference

123. In view of the above, the CMA has assessed the impact of the Merger in the following mainline signalling frames of reference:

- (a) the supply of ETCS ATP wayside re-signalling projects in the UK;
- (b) the supply of OCS projects in the UK;
- (c) the supply of interlocking projects in the UK;
- (d) the supply of ETCS ATP wayside overlay projects in the UK;
- (e) the supply of mainline signalling products developed through the OTTO project in the UK; and
- (f) the supply of ETCS OBU projects in the UK.

Product scope: urban signalling

124. As discussed above in paragraph 72, the CMA considers that the frames of reference within urban signalling projects are separate to the frames of reference within mainline signalling projects. In the sections below, the CMA considers several further possible market distinctions within urban signalling projects: between urban signalling projects for metros and urban signalling projects for LRT, and between CBTC and conventional signalling for metros.¹⁰⁹

Urban signalling projects for metros and LRT

125. In *Alstom/Bombardier* the European Commission considered that a segmentation between urban signalling projects for metros and urban signalling projects for LRT was justified on the basis that metro lines typically require special infrastructure and a more complex level of automation; employ different principles and technologies; and are characterised by higher levels of automation, lower dependence on the driver, higher level of security at higher

¹⁰⁹ As noted above in footnote 65, the CMA considers that urban signalling, unlike mainline signalling, is mainly 'project-based', which therefore excludes the need to define separate markets for urban signalling products. This is also consistent with the approach previously adopted by the European Commission in *Alstom/Bombardier* (paragraph 1122).

speeds and continuous train control.¹¹⁰ Nevertheless, the European Commission left the exact delineation of the market open as the merger did not give rise to competition concerns under any possible market definition.

126. The Parties submitted that metro and LRT signalling projects are distinct, with metro signalling projects generally being of greater value and more complex to operate.¹¹¹ From a supply side perspective, according to the Parties, it is also not straightforward for suppliers to switch from the manufacture of LRT signalling to metro signalling systems (or vice versa), given the complexity and sophisticated technology and know-how associated with metro signalling.
127. In line with the Parties' submissions and the previous findings by the European Commission, the CMA considers that urban signalling projects for metros and urban signalling projects for LRT are separate frames of reference.

Conventional and CBTC signalling projects for metros

128. In *Alstom/Bombardier* the European Commission found that the market for CBTC signalling projects for metros was distinct from that for conventional signalling for metros due to factors such as CBTC's additional functionalities, improved energy efficiency, increased security, and higher cost. Nevertheless, the European Commission left the exact delineation of the metro signalling markets open as the merger did not give rise to competition concerns under any possible market definition.¹¹²
129. The Parties submitted that CBTC signalling projects and conventional signalling projects are distinct, with customers specifying either CBTC or conventional signalling for a given project and the two systems exhibiting different characteristics.¹¹³
130. In line with the Parties' submissions and the previous findings by the European Commission, the CMA considers that CBTC and conventional urban signalling projects are separate frames of reference.
131. In relation to conventional signalling projects for metros, the Parties submitted that the market for conventional signalling projects for metros is 'dormant', as there have not been any tenders over the last 10 years. The Parties submitted that Tyne and Wear uses conventional mainline signalling technology, rather

¹¹⁰ *Alstom/Bombardier*, paragraphs 1139-1141.

¹¹¹ FMN, Chapter 2, paragraphs 13.8-13.9.

¹¹² *Alstom/Bombardier*, paragraphs 1146-1147.

¹¹³ FMN, Chapter 2, paragraph 13.11.

than conventional urban signalling technology and Tyne and Wear confirmed this was accurate.^{114, 115} As set out at paragraph 67 above, the only other metro systems in the UK (London and Glasgow) use CBTC signalling, rather than conventional signalling for metros.

132. The CMA therefore considers that there are currently no metro systems that use conventional signalling in the UK and there will be no demand for conventional signalling projects in the UK.
133. On this basis, the CMA has not concluded on the product frame of reference for conventional signalling projects for metros and has not conducted a competitive assessment.

CMA's view on urban signalling product scope

134. In view of the above, the CMA has assessed the impact of the Merger in the supply of CBTC signalling projects for metros.

Geographic scope: urban signalling

CBTC signalling projects for metros

135. In *Alstom/Bombardier*, the European Commission's market investigation was inconclusive as to whether the geographic market for CBTC signalling projects for metros was EEA-wide (including the UK), or national, or city-wide, and ultimately left the exact delineation of the market open, as the merger did not give rise to concerns under any possible market definition.
136. The Parties submitted that the geographic market for CBTC signalling projects is Europe-wide.¹¹⁶ In support of a Europe-wide geographic market, the Parties referred to the following:

- (a) there are no interoperability issues between CBTC networks at a national or inter-city level, because CBTC projects typically concern closed loop systems, making it unnecessary to design systems that comply with national or other operating standards and allowing suppliers to apply their CBTC solutions across all European countries;

¹¹⁴ Parties' response to the Issues Letter of 24 November 2022, paragraphs 12.1, 12.3, 12.4.

¹¹⁵ Tyne & Wear response to CMA RFI of 24 November 2022.

¹¹⁶ FMN (Chapter 2), paragraph 1.

- (b) safety and quality requirements are typically broadly consistent across European countries as there is no need to comply with national homologation systems as in mainline signalling;
- (c) the general acceptance by European customers of references from CBTC projects in other European countries, and other relevant global projects;
- (d) increasing standardisation in CBTC, with the IEE setting out several key or minimum functionalities for the design and functional allocation of CBTC systems;
- (e) safety certification on a project-by-project basis; and
- (f) while CBTC solutions need to be adapted for any given project depending on the customer's requirements and the specificities of the network, suppliers within Europe are able to compete for projects across Europe.

137. The Parties submitted that, contrary to the findings of the Issues Letter, there is no basis for finding a national market. There are only two CBTC metro systems in the UK: London and Glasgow, and the conditions of competition for these two systems are 'drastically different'.¹¹⁷ The Parties submitted that the London metro system has specific time and operational constraints that render the delivery of CBTC signalling projects particularly 'complex'.¹¹⁸ To provide CBTC signalling projects for London, suppliers require a deep technical and logistical delivery challenges that many suppliers of CBTC signalling projects simply do not have. By contrast, the Parties submitted that the Glasgow subway consists of a simple line and is far more straightforward and closer to other networks in Europe in terms of project delivery than London.

138. The CMA agrees with the Parties that the competitive conditions for the London metro system are different to the Glasgow subway, given the complexity of the system and technical and logistical expertise required to provide CBTC signalling projects in London.

139. However, the Parties' submission does not assist in determining the appropriate geographic frame of reference. It supports the view that the relevant product market is contract-specific requirements of the metro system and the focus of the CMA's competitive assessment with regards to this

¹¹⁷ Parties' response to the Issues Letter of 24 November 2022, paragraph 11.1.

¹¹⁸ Parties' response to the Issues Letter of 24 November 2022, paragraph 11.2.

Merger should be on the competition for CBTC signalling contracts in London and Glasgow.

140. To the question of geographic scope, the starting point is where the Parties overlap in the supply of CBTC signalling projects for metros. In this case, the narrowest overlap is the UK.¹¹⁹ On this basis, the CMA considers that the relevant geographic frame of reference for CBTC signalling projects for metros is the UK.

CMA's view on urban signalling frames of reference

141. In view of the above, the CMA has assessed the impact of the Merger in the supply of CBTC signalling projects for metros in the UK.

COMPETITIVE ASSESSMENT

Mainline signalling

142. The CMA has considered whether the Merger gives rise to horizontal unilateral effects in the supply of mainline signalling projects and the mainline signalling products developed within the OTTO project.
143. The CMA has also assessed whether the Merger gives rise to input foreclosure in relation to ETCS OBU projects.

Horizontal unilateral effects in the supply of mainline signalling

144. Horizontal unilateral effects can arise in a horizontal merger when one firm merges with a competitor that previously provided a competitive constraint, allowing the merged entity to profitably raise prices or degrade non-price aspects of its competitive offering (such as quality, range, service, and innovation) on its own and without need to coordinate with rivals.¹²⁰ The CMA will generally take a forward-looking approach to the assessment of any theories of harm, considering the effects of the merger both now and in the future.¹²¹
145. As set out in the CMA's Merger Assessment Guidelines, 'where the CMA finds evidence that competition mainly takes place among few firms, any two would normally be sufficiently close competitors that the elimination of

¹¹⁹ Currently, Thales currently supplies CBTC signalling projects for metros in London; and Hitachi Rail in Glasgow.

¹²⁰ [Merger Assessment Guidelines](#), paragraph 4.1.

¹²¹ [Merger Assessment Guidelines](#), paragraph 2.14.

competition between them would raise competition concerns, subject to evidence to the contrary.’¹²² Furthermore, the ‘smaller the number of significant players, the stronger the prima facie expectation that any two firms are close competitors. In such a scenario, the CMA will require persuasive evidence that the merger firms are not close competitors in order to allay any competition concerns.

146. The CMA has considered whether it is or may be the case that the Merger may be expected to result in an SLC as a result of horizontal unilateral effects within mainline rail signalling in the supply of:
- (a) ETCS ATP wayside re-signalling projects in the UK;
 - (b) OCS projects in the UK;
 - (c) Interlocking projects in the UK;
 - (d) ETCS ATP wayside overlay projects in the UK;
 - (e) ETCS OBU projects in the UK; and
 - (f) mainline signalling products developed through the OTTO project.

The nature of competition and the CMA’s analysis

147. In the UK, mainline signalling projects for interlockings, ETCS ATP wayside (both re-signalling and overlay) and OCS (the first four frames of reference noted above) are primarily procured by Network Rail. Since 2004, most of Network Rail’s signalling projects have been legacy projects and have been procured through framework agreements. Suppliers are generally only eligible to supply such mainline signalling projects to Network Rail if they first win a place on a framework agreement, with the most important framework being Network Rail’s major signalling framework.^{123, 124}
148. As explained in more detail in paragraphs 158 to 161 below, Network Rail is introducing changes to the design of its upcoming framework agreements that will cover the next two control periods (CP7 and CP8), in light of the ORR Market Study and UK’s move towards digitalisation of its mainline signalling infrastructure. The outcomes of competition for Network Rail’s upcoming TCSF will therefore be important in assessing the impact of the Merger within the individual relevant markets, as the TCSF will be the only contractual

¹²² [Merger Assessment Guidelines](#), paragraph 4.10.

¹²³ The CMA has focused its assessment on Network Rail’s ‘major signalling’ frameworks, [3<].

¹²⁴ FMN (Chapter 1), paragraphs 15.40-15.42.

mechanism to win major signalling projects, ie only suppliers on the TCSF will be awarded contracts for interlocking, ETCS ATP wayside and OCS projects in the UK over the next two control periods (CP7 and CP8). Suppliers not on the TCSF are excluded and therefore will not be able to compete for these projects. Given this, the CMA has considered the nature of competition for the upcoming TCSF to inform its competitive assessment of the individual relevant markets.

149. The rest of the CMA's competitive assessment is structured as follows:
- (a) a short summary of the major mainline signalling procurements that have taken place in the UK in the past 10 years; and the key findings and recommendations of the ORR Market Study on mainline signalling, as both provide important context for understanding competitive conditions for the TCSF and for the relevant markets;
 - (b) the design of and competition for Network Rail's TCSF; and
 - (c) the competitive assessment for the relevant product markets.
150. In keeping with the CMA's established approach of assessing the commercial realities of transactions, the CMA has carried out a forward-looking assessment to the markets at issue, taking into account a range of evidence (and not just evidence of historical market performance). In this regard, the CMA's investigation has focused on considering whether the Merger would reduce competition in relation to the TCSF and the specific mainline signalling projects that will be procured through it.
151. Where the CMA considered that past competitive interactions provide insight into current and future competitive conditions, for example, indicators of technical expertise and experience, the CMA examined the relevant bidding data, market shares, references, including within Europe. Digital signalling in the UK is, to date, not far progressed, and there are therefore limited numbers of observations in the UK bidding analysis, which limits the strength of the conclusions that may be drawn from the analysis within the relevant frames of reference. The limited number of tenders also implies that there have been limited opportunities for the Parties to increase their presence in the UK. Given this, the CMA has considered other evidence including third-party views and the Parties' internal documents in assessing the closeness of competition between the Parties and the competitive constraints from other suppliers.

- *Key mainline signalling procurements in the past 10 years*

152. Within the past 10 years, the major procurements made by Network Rail have included:

(a) Network Rail's major signalling framework for CP5 (known as the Major Signalling Renewals and Enhancements Framework or 'MaSREF'), which ran from 2014 to 2019. MaSREF was divided into nine geographic lots, with the majority of lots being awarded to a primary and secondary supplier. Only three suppliers were awarded lots as primary suppliers: Invensys (a predecessor of Siemens), which won four lots as a primary supplier and three as a secondary; Signalling Solutions Limited (now wholly owned by Alstom), which won three lots as a primary supplier and five as a secondary supplier; and Atkins, which was awarded two lots as a primary supplier.¹²⁵

(b) The signalling for the East Coast Development Programme (**ECDP**), procured in 2018 (during CP5). The signalling for the ECDP was procured through the Train Control Partner (**TCP**) framework, which was valued at £900 million, and was the first major project under Network Rail's digital delivery programme.¹²⁶ Network Rail invited four suppliers to bid: an Alstom-led consortium comprising Alstom and Jacobs; a Hitachi Rail-led consortium comprising Hitachi Rail, Ansaldo, Ove Arup and Amey; an Atkins led consortium comprising Atkins and Thales; and Siemens. The project was ultimately awarded to Siemens.¹²⁷

(c) Network Rail's Major Signalling Framework for CP6, which runs from 2019-2024 and is divided into five geographic lots. The only successful bidders for the framework were OEMs, with Alstom and Siemens winning two lots each (which were also the most valuable lots), while Hitachi Rail-Linbrooke won the fifth (and least valuable) lot.¹²⁸

153. In addition to these Network Rail procurement exercises, HS2 is currently tendering for the supply of its mainline rail signalling through its CCS and TM contracts. Six companies applied for pre-qualification for the current tender,¹²⁹

¹²⁵ ORR Market Study, paragraph 4.19.

¹²⁶ ORR Market Study, paragraph 5.32.

¹²⁷ ORR Market Study, footnote 61.

¹²⁸ [ORR Market Study Update May 2021, Annex C](#). Alstom's lots had an anticipated value at the time of the tender of £854m, and Siemens' at £411m, Hitachi Rail-Linbrooke's lot was valued at £0m.

¹²⁹ HS2 response to the CMA RFI of 25 August 2022.

but only four suppliers passed the pre-qualification stage: Siemens, Alstom, Hitachi Rail, and Thales (in a consortium with Costain).¹³⁰ [§<].¹³¹

- *The ORR Market Study*

154. The ORR Market Study concluded that there were reasonable grounds to suspect that features of the mainline signalling markets in Great Britain prevent, restrict or distort competition, and therefore that the statutory test to make a reference to the CMA for an in-depth investigation was met. In particular, ORR found that:¹³²

- (a) To date Network Rail has always chosen only three major signalling framework suppliers: the two companies holding SSI technology (Alstom and Siemens) and a third player. Siemens and Alstom are the only two main players for major signalling projects in Great Britain, and in recent years have accounted for an increasing share of Network Rail's major signalling spend, with their combined share having increased from c. 70% in 1999-2004 to a projected c. 90% in 2019-2024.
- (b) Mainline signalling markets suffer from barriers to entry and expansion, including the use of frameworks with no guaranteed workbanks,¹³³ tenders mandating the use of particular products owned and controlled by the incumbent suppliers, and the need to interface with the installed base. Alternative suppliers told ORR that they find it particularly difficult to establish a business case to compete for frameworks or develop technology without a long term/certain pipeline of work in which to recoup investment.
- (c) Based on an analysis of Network Rail's spend on signalling, average prices incurred are consistently lower when projects are competitively tendered as opposed to directly awarded to framework holders. This suggests that more competition and more viable players for both frameworks and individual tenders drive better value for money.
- (d) The Digital Railway and the introduction of new signalling technologies, such as ETCS, has the potential to address some barriers to entry through promoting interoperability.

¹³⁰ See eg <https://www.railwaypro.com/wp/shortlisted-unveiled-for-hs2-signalling-contract/>.

¹³¹ Parties' response to CMA RFI of 6 September 2022.

¹³² ORR Market Study, pages 7-10.

¹³³ Guaranteed workbanks refers to guaranteed volumes of work that suppliers can expect to supply if they are successful in winning a place on the framework.

155. ORR decided to pursue a number of demand-side remedies. ORR set these out in the form of a series of recommendations predominantly for Network Rail aimed at mitigating the barriers to entry and expansion identified. The primary recommendations were for Network Rail to:¹³⁴

- (a) take a pro-competitive approach to procurement which would encourage entry, for example by engaging with the largest possible pool of suppliers for top tier work;
- (b) encourage open interfaces, by ‘requiring cooperation and compelling suppliers to work with each other’;
- (c) work to achieve a balance between long term competition and reliance on existing technology, for instance, by developing ‘proposals to reform its performance monitoring regime of the regions to encourage the cultivation of new suppliers and technologies’; and
- (d) make alterations to the funding of mainline signalling projects, to provide greater certainty to suppliers regarding future signalling volumes. In particular, ORR recommended that Network Rail consider implementing a minimum value of work for each winning supplier and establish a centralised research and development fund for new entrants to draw on when working on innovative new projects.

- *Network Rail’s upcoming TCSF*

156. Network Rail is currently in the process of designing the procurement process for the framework that will come into place after CP6 is concluded: the TCSF. In line with the ongoing transition from legacy to digital mainline signalling in the UK, both legacy and digital mainline signalling projects will be purchased through the TCSF. The TCSF is being designed to promote competition in response to recommendations from the ORR Market Study.

157. ORR submitted that Network Rail’s plans for CP7 and beyond include a commitment to broaden its supplier base. Under such a model, ORR noted that the expectation that good quality bids submitted by smaller players would play an important role in disciplining the bids of larger players.¹³⁵

¹³⁴ ORR Market Study, paragraphs 10.6, 10.30, 10.39, 10.51, 10.62 and 10.66.

¹³⁵ ORR’s submission to the CMA of 1 November 2022.

- *Design of the TCSF*

158. Network Rail has committed to incorporate some of the recommendations from the ORR Market Study into the design of the forthcoming major signalling framework, the TCSF, for CP7 and CP8 (ie 2024-2034).¹³⁶ While the design of the framework is still to be finalised, Network Rail's TCSF is currently expected to include the following features:¹³⁷

- (a) Network Rail intends to appoint five framework suppliers (in contrast to its approach in prior major signalling frameworks which has seen only three suppliers being appointed), and each supplier will have national coverage (rather than segmenting the UK on a geographic basis with a single supplier appointed for each region, as was done in CP6).
- (b) To help facilitate non-incumbent suppliers to enter and expand, each supplier will receive a minimum volume commitment of work, and the framework will also cover a 10-year rather than a five-year period (corresponding to CP7 and CP8).
- (c) A Network Rail document presented to stakeholders in July 2022 indicated that:
- (d) minimum volume commitments would represent 40% of the entire workbank for the framework.¹³⁸ The size of the minimum volume each supplier receives will depend on their ranking in the tender, with the highest-ranking bidder receiving 14%, the second 11%, the third 7%, the fourth 5% and the fifth 3%.
- (e) the remaining 60% of the volumes included in the TCSF are expected to be contestable with: 20% of the workbank intended to be available across framework suppliers following assessment of their performance every two years;¹³⁹ and the remaining 40% of the workbank¹⁴⁰ intended to be allocated to the highest ranked supplier (based on scoring suppliers against a number of defined criteria) with the ranking process occurring at least six months prior to the delivery of the project in

¹³⁶ [Network Rail response to ORR market study into the supply of signalling systems, 10 February 2022.](#)

¹³⁷ Note of call with a third party.

¹³⁸ Network Rail, Train Control Systems Framework, Supplier Pre-Launch Event, 20 July 2022.

¹³⁹ The 20% is available across the five suppliers to increase the minimum commitment by up to 4% per supplier based on their performance (so the minimum commitment to the fifth ranked supplier could move to a 7% minimum commitment if they perform well).

¹⁴⁰ The remaining 40% is provided as a headroom to support Network Rail being able to meet its minimum commitments to all suppliers and to allocate the works in an efficient manner.

question. Where this scoring process is inconclusive, Network Rail may allocate the project via a mini-competition.

(f) Network Rail will make a financial commitment to technology development, with the ETCS development phase being partially funded by Network Rail. In particular, the document states that Network Rail will make a 50% contribution on actual costs incurred by suppliers during ETCS technology development up to a capped value of £4m per supplier. The CMA notes that these financial contributions, being dedicated to ETCS development, will apply only to digital signalling included in the TCSF (and not to legacy signalling).

159. Network Rail explained that, as the UK migrates from its current legacy mainline rail signalling systems to ETCS, it expects a greater range of suppliers to be competitive. This is because the ETCS technology is interoperable and interchangeable, and there is currently a larger number of suppliers of ETCS mainline railway signalling (on a European basis) than the number of suppliers which supply the UK's current legacy signalling.¹⁴¹
160. The Parties submitted that Network Rail envisages five framework suppliers and that this was announced after the Merger was publicly announced. On this basis (and taking into account that the selection of suppliers under the TCSF is scheduled to take place after the Parties' targeted date for the completion of the Merger), the Parties appear to suggest that Network Rail must consider that there will remain five credible bidders post-Merger.¹⁴² The CMA has considered competitors for the TCSF in paragraphs 168 to 226 below.
161. As set out in paragraph 150, competition for the TCSF has a direct impact on the CMA's competitive assessment of the relevant markets being considered. In carrying out the competitive assessment, the CMA has adopted a forward-looking assessment that reflects the likely competitive conditions for individual projects procured within the scope of the TCSF over its 10-year duration. While the CMA considers that the TCSF will generally enhance the ability of some suppliers to enter the product markets that fall within the scope of its investigation, it has also taken into account the specific capabilities of individual suppliers within each of these product markets. On this basis, the CMA considers that the number of framework suppliers that Network Rail

¹⁴¹ Note of call with Network Rail on 15 July 2022.

¹⁴² See Parties' response to the Issues Letter, paragraph 3.2 that notes 'The TCS Framework envisages five framework suppliers and was announced after the Proposed Transaction was publicly announced.'

currently envisages selecting under the TCSF, in isolation, provides limited insight into the impact on competition brought about by the Merger.

- *Competition for Network Rail's TCSF*

162. In considering which suppliers are most likely to bid for and possibly win one of the five places on Network Rail's TCSF, the CMA has considered a range of evidence, including consideration of prior bidders to Network Rail's major signalling frameworks and similar projects across Europe, the Parties' submissions, third-party evidence, and internal documents. The CMA has also taken into account that Network Rail typically seeks to procure mainline signalling subsystems, including interlockings, OCS, and ETCS ATP wayside subsystems jointly from the same supplier as they come up for renewal.¹⁴³

- *Hitachi and Thales*

- *Parties' intention to bid for the TCSF*

163. The Parties submitted that they [REDACTED].¹⁴⁴

164. ¹⁴⁵[REDACTED].

165. [REDACTED].

166. ^{146 147}[REDACTED].¹⁴⁸

167. [REDACTED].¹⁴⁹ [REDACTED].¹⁵⁰

- *The Parties as competitors for the TCSF*

168. The Parties submitted that as Network Rail digitalises its mainline signalling, there is increased ability for new or smaller players to enter, including suppliers based outside the UK. As regards their own abilities to compete, the Parties submitted that they are only two of a number of players that could

¹⁴³ Note of call with a third party.

¹⁴⁴ Issues Meeting slides, page 10.

¹⁴⁵ Parties' response to CMA RFI of 21 October 2022

¹⁴⁶ Annex T.Q1.005, [REDACTED], submitted by Thales in response to the CMA s109 notice of 8 September 2022, slide 22

¹⁴⁷ Annex T.Q1.005, [REDACTED], submitted by Thales in response to the CMA s109 notice of 8 September 2022.

¹⁴⁸ Annex T.Q1.006, [REDACTED], submitted by Thales in response to the CMA s109 notice of 8 September 2022, slide 20.

¹⁴⁹ Annex H.Q12.001, [REDACTED], submitted by Hitachi Rail in response to the CMA's RFI of 6 September 2022, [REDACTED].

¹⁵⁰ Annex T.Q12.001, [REDACTED], submitted by Thales in response to the CMA RFI of 6 September 2022.

enter in response to digitalisation.¹⁵¹ There is a range of credible bidders that could submit a tender for the TCSF and therefore the Merger would not result in a loss of competition.

169. The Parties submitted that [redacted].¹⁵²
170. The Parties submitted that three capabilities are required for a strong signalling offering: access to technology and design; local capabilities, knowledge and resources; and an installed base of interlockings.¹⁵³ The Parties further submitted that they [redacted].¹⁵⁴ The CMA [redacted] has conducted its analysis on the basis that the Parties could each, absent the Merger, partner with a local integrator to compete for the TCSF.
171. The Parties submitted internal documents that detail [redacted].
172. [redacted].¹⁵⁵ [redacted].
173. [redacted].¹⁵⁶ [redacted].¹⁵⁷ [redacted].¹⁵⁸ In response to the Issues Letter, the Parties clarified that the CMA's analysis ignores the fact that Thales also refers to [redacted] as 'main competitors'.¹⁵⁹ The CMA believes Thales' internal document needs to be interpreted in the round, including in light of other internal documents [redacted]¹⁶⁰ [redacted] (see paragraphs 213 to 226 below).
174. Further, an internal document from Thales dated [redacted] shows that it previously monitored Hitachi Rail in relation to Network Rail's CP6 Major Signalling Framework, noting that Hitachi Rail has [redacted].¹⁶¹ As detailed above, Hitachi Rail subsequently won a lot on the CP6 contract discussed, thereby gaining UK references.

¹⁵¹ Parties' response to the Issues Letter of 24 November 2022, paragraph 2.9.

¹⁵² Parties' response to CMA RFI of 22 September 2022.

¹⁵³ Parties' response to the Issues Letter of 24 November 2022, paragraph 2.4.

¹⁵⁴ Parties' response to the Issues Letter of 24 November 2022, paragraph 2.9.3.

¹⁵⁵ Annex T.Q1.005, [redacted], submitted by Thales in response to the CMA s109 notice of 8 September 2022, slide 13.

¹⁵⁶ Annex T.Q1.006, [redacted], submitted by Thales in response to the CMA s109 notice of 8 September 2022, slides 20 and 24.

¹⁵⁷ Annex T.Q1.005, [redacted], 7 September 2022, submitted by Thales in response to the CMA s109 notice of 8 September 2022, slide 13.

¹⁵⁸ Annex T.Q1.005, [redacted], 7 September 2022, submitted by Thales in response to the CMA s109 notice of 8 September 2022, slide 14.

¹⁵⁹ Parties' response to the Issues Letter of 24 November 2022, Annex IL1, Further Information Thales' Internal Documents, paragraph 5.

¹⁶⁰ Annex T.Q1.005, [redacted], submitted by Thales in response to the CMA s109 notice of 8 September 2022, slide 22.

¹⁶¹ Annex T.M.Q16.002 — [redacted], submitted by Thales in response to the FMN, slide 26.

175. The CMA has not received internal documents from Hitachi Rail that contain analysis of competitive conditions specifically for the TCSF. Generally, the internal documents submitted by Hitachi Rail that relate to other UK mainline signalling tenders have identified Thales as a competitor, along with Siemens and Alstom. [REDACTED].¹⁶² [REDACTED].¹⁶³ [REDACTED].¹⁶⁴ [REDACTED].
176. Hitachi Rail also submitted internal documents which consider competitors globally across individual geographic markets. One such document identifies Thales as a signalling competitor, noting [REDACTED].¹⁶⁵
177. ORR submitted that the Parties are two of the four largest players (Siemens, Alstom, and the Parties) who between them collectively supply the majority of European signalling services. According to ORR's understanding, at a European level, all four of these OEMs are largely self-sufficient in terms of owning all the key products that form the physical building blocks of signalling systems.¹⁶⁶
178. ORR submitted that Hitachi Rail and Thales would be the third and fourth strongest competitors respectively for the TCSF. ORR submitted that, amongst OEMs, Hitachi Rail and Thales would be the third and fourth strongest competitors respectively for the TCSF and as such impose a competitive constraint both on each other to win these lots and on the larger players to win the second lot.¹⁶⁷
179. Competitors responding to the CMA's phase 1 investigation consistently identified Hitachi Rail and Thales as the third and fourth strongest competitors respectively for the TCSF. The CMA asked competitors to identify potential competitors for Network Rail's TCSF both in relation to legacy and digital

¹⁶² Annex H.109.Q3.013, [REDACTED], submitted by Hitachi in response to the CMA s109 of 8 September 2022, slide 8.

¹⁶³ Annex [REDACTED], submitted by Hitachi Rail in response to the CMA s109 of 8 September 2022, slide 24; Annex [REDACTED], submitted by Hitachi Rail in response to the CMA s109 of 8 September 2022, slides 4, 6 and 16.

¹⁶⁴ ETCS Level 2 is a radio-based system which relies on GSM-R to provide continuous transmission of information to the train. Information from the interlocking is encoded via a Radio Block Centre (RBC) and sent to the train. Some wayside components are utilised such as eurobalises in combination with radio signals. ETCS Level 2 is distinct from ETCS Level 1 which cannot provide a continuous stream of information on the position of a train. Similarly, ETCS Level 3 is an ETCS system which relies on radio signals only, without the use of wayside equipment. Annex M.Q12.001, Mainline Signalling - ETCS Levels – Confidential, 12 October 2022, submitted by the Parties in response to the FMN.

¹⁶⁵ Annex H.109.Q5.002, [REDACTED], submitted by Hitachi Rail in response to the CMA s109 notice of 8 September 2022, slides 18 and 20.

¹⁶⁶ ORR's submission to the CMA of 1 November 2022.

¹⁶⁷ ORR's submission to the CMA of 5 December 2022.

signalling works and to score them between 1 and 5 (where 1 is a very weak potential entrant and 5 is a very strong potential entrant). Notably:

(a) With regard to the legacy signalling projects in the TCSF,¹⁶⁸ all respondents mentioned Hitachi Rail as a potential bidder, with Hitachi Rail receiving the third highest average score of 3.5 out of 5. Thales was also mentioned as a potential bidder by the majority of respondents and received the joint fourth highest score with an average of 3 out of 5.

(b) With regard to digital signalling projects in the TCSF,¹⁶⁹ all respondents identified Hitachi Rail as a potential bidder, and Hitachi Rail received the third highest average score of 3.2 out of 5. Thales was also mentioned as a potential bidder by most respondents and received the fourth highest average score of 2.8 out of 5.

180. The CMA notes that the Parties each also have the highest number of references (excluding the market incumbents, Siemens and Alstom) for relevant projects of each subsystem completed in Europe. The CMA considers this demonstrative of the Parties' considerable experience supplying signalling projects outside of the UK. The number of references held by the Parties, as well as the European OEMs considered at paragraphs 183 to 212, is summarised in below.

Table 1: European OEMs' capabilities and references in 2012-2021

OEM	OCS		Wayside Re-signalling		Wayside Overlay		Interlockings	
	No. of references	Country	No. of references	Country	No. of references	Country	No. of references	Country
Hitachi Rail	[0-10]	[X]	[10-20]	[X]	[0-10]	[X]	[30-40]	[X]
Thales	[20-30]	[X]	[50-60]	[X]	[20-30]	[X]	[220-230]	[X]
AZD Praha	[0-10]	Czech Republic	[0-10]	Poland, Slovakia	[0-10]	Czech Republic, Slovakia	[0-10]	Czech Republic, Poland
CAF	[0-10]	Spain	[0-10]	Spain, Slovenia, Bulgaria	[0-10]	Spain	[20-30]	Spain
CRRC	[0-10]	n/a	[0-10]	n/a	[0-10]	n/a	[0-10]	n/a

¹⁶⁸ Third-party responses to CMA Mainline Signalling Questionnaire.

¹⁶⁹ Third-party responses to the CMA Mainline Signalling Questionnaire.

CRSC	[0-10]	n/a	[0-10]	n/a	[0-10]	n/a	[0-10]	n/a
ECM	[0-10]	n/a	[0-10]	Slovakia	[0-10]	n/a	[0-10]	Italy
Enyse	[0-10]	n/a	[0-10]	n/a	[0-10]	n/a	[30-40]	Spain
HollySys	[0-10]	n/a	[0-10]	n/a	[0-10]	n/a	[0-10]	n/a
Indra	[0-10]	Lithuania, Estonia, Spain	[0-10]	Spain	[0-10]	n/a	[0-10]	n/a
Kombud	[0-10]	n/a	[0-10]	n/a	[0-10]	n/a	[0-10]	Poland
Mermec	[0-10]	n/a	[0-10]	Poland	[0-10]	n/a	[0-10]	n/a
Mersen	[0-10]	n/a	[0-10]	n/a	[0-10]	n/a	[0-10]	n/a
Mipro	[0-10]	Finland	[0-10]	n/a	[0-10]	Finland	[0-10]	Estonia, Finland
Pesa	[0-10]	n/a	[0-10]	n/a	[0-10]	n/a	[0-10]	n/a
Pintsch	[0-10]	n/a	[0-10]	n/a	[0-10]	n/a	[0-10]	Germany
Scheidt & Bachmann	[0-10]	n/a	[0-10]	n/a	[0-10]	n/a	[0-10]	Austria, Germany
Stadler	[0-10]	n/a	[0-10]	Poland	[0-10]	n/a	[0-10]	n/a
Terna	[0-10]	n/a	[0-10]	Bulgaria	[0-10]	n/a	[0-10]	n/a
Wabtec	[0-10]	n/a	[0-10]	n/a	[0-10]	n/a	[0-10]	n/a

Source: Parties' response to CMA RFI of 22 November 2022, Annex Q.4

181. Based on the evidence above, the CMA considers that the Parties will likely bid for and be close competitors for the TCSF. The Parties' internal documents indicate that they monitor each other and consider each other as rivals [8<]. ORR considers that the Parties will compete closely for the TCSF. Competitors active in signalling rate the Parties as third and fourth strongest suppliers of mainline signalling in the UK. The CMA has taken this into account in its competition assessment for each individual mainline signalling subsystem that will be procured under the TCSF.
- *Other competitors for the TCSF*
182. In this section, the CMA considers which other suppliers will likely compete for places on the TCSF. These are considered in the following order:
- (a) Siemens and Alstom;
 - (b) Resonate;
 - (c) other European OEMs; and
 - (d) integrators.
- *Siemens and Alstom*
183. Siemens and Alstom have historically been the most successful mainline signalling suppliers in the UK, having won places on Network Rail's framework contracts in both CP5 and CP6. Siemens and Alstom are the only OEMs that have experience in the UK across all subsystems. As Network Rail typically purchases all subsystems as a bundle, this indicates that Siemens and Alstom will be strong competitors for the TCSF. Through their previous success in winning contracts from Network Rail, Siemens and Alstom have established a strong local presence in the UK, which serves to differentiate them from the Parties and the other European OEMs.
184. The Parties submitted that 'Siemens and Alstom dominate the UK mainline signalling sector' and that these suppliers are the only UK suppliers with the access to technology and design; and the local capabilities and knowledge that is required to offer a strong signalling offering.¹⁷⁰ The Parties also submitted that Siemens and Alstom have the large majority of the current installed base of interlockings which confers a significant competitive advantage, in particular with respect to conventional signalling. In the Parties' view, Siemens and Alstom will remain the major players, in particular in markets that are required to interface with conventional interlockings.¹⁷¹

¹⁷⁰ Parties' response to the Issues Letter of 24 November 2022, paragraph 2.4.

¹⁷¹ Parties' response to the Issues Letter of 24 November 2022, paragraph 2.7.

185. Siemens and Alstom are consistently identified as strong competitors in the Parties' internal documents. The document cited in paragraph 172 above submitted by Thales setting out [REDACTED].¹⁷²
186. [REDACTED].¹⁷³ [REDACTED].¹⁷⁴
187. Hitachi Rail's internal documents also consistently recognise Siemens and Alstom as key competitors for mainline signalling projects in the UK generally [REDACTED].¹⁷⁵
188. The Hitachi Rail internal document cited in paragraph 176 also considers Siemens and Alstom when assessing competitors globally [REDACTED]¹⁷⁶ [REDACTED].¹⁷⁷
189. In relation to the TCSF, ORR submitted that Siemens and Alstom would be the strongest bidders for the two largest lots.¹⁷⁸
190. Competitors similarly indicated that Siemens and Alstom would be the strongest competitors for the TCSF, both for legacy and digital signalling works.¹⁷⁹ With respect to the legacy works that will be included in the TCSF, all competitors responding to the CMA's phase 1 investigation mentioned Siemens and Alstom as strong potential suppliers, with Siemens and Alstom each receiving the joint highest average score of 4.4 out of 5 (where 1 is a very weak competitor and 5 is a very strong competitor).¹⁸⁰ Likewise, for the digital works included in the TCSF, all respondents mentioned Siemens and Alstom as strong potential suppliers, with Siemens and Alstom each receiving the joint highest average score of 4.4 out of 5.
191. Based on the evidence above, the CMA considers Siemens and Alstom will be strong competitors for the TCSF.

– *Resonate*

192. Resonate is a UK OEM, active only in the supply of OCS. Resonate's role in the supply of OCS is discussed further in paragraphs 297 to 301 below.
193. The CMA considers that, as Resonate has capability in only a single mainline signalling subsystem, it will be very limited in its ability to compete for the TCSF.

¹⁷² Annex T.Q1.005, [REDACTED], submitted by Thales in response to the CMA s109 notice of 8 September 2022, slide 13.

¹⁷³ Annex T.Q1.006, [REDACTED], submitted by Thales in response to the CMA s109 notice of 8 September 2022, slides 20 and 24.

¹⁷⁴ Annex T.M.Q16.002, [REDACTED], submitted by Thales in response to the FMN, slide 26.

¹⁷⁵ Annex H.109.Q3.013, [REDACTED], submitted by Hitachi in response to the CMA s109 of 8 September 2022, slide 8.

¹⁷⁶ Bombardier was acquired by Alstom in 2020.

¹⁷⁷ Annex H.109.Q5.002, [REDACTED], submitted by Hitachi Rail in response to the CMA s109 notice of 8 September 2022, slides 18 and 20.

¹⁷⁸ ORR's submission to the CMA of 5 December 2022.

¹⁷⁹ Third-party responses to CMA Mainline Signalling Questionnaire.

¹⁸⁰ Throughout the Decision when considering competitors' scorings, the CMA has excluded from its calculations any self-assessments submitted by competitors, where relevant.

This is because, as noted at paragraph 176 above, Network Rail's preference is to acquire multiple signalling subsystems from the same supplier as they come up for renewal.

194. This is likely to explain why no respondents to the CMA's market investigation have identified Resonate as a credible competitor for the TCSF. [redacted].¹⁸¹ [redacted].

195. As such, the CMA considers that Resonate will not be a credible competitor for the TCSF.

– *Other European OEMs*

196. The Parties submitted that they are two of a range of players that could feasibly enter the UK mainline signalling market in response to digitalisation. [redacted].¹⁸² In this regard, the Parties submitted that the European OEMs (i) are expected to have ETCS capabilities, with solutions deployed in other European countries; (ii) will need to adapt a digital interlocking to UK specifications; and (iii) will need local resources and capabilities, which could be accomplished by partnering with an integrator.¹⁸³

197. The CMA notes these submissions and has conducted its analysis on the basis that the European OEMs considered below would likely partner with an integrator, were they to compete for the TCSF.

198. However, ORR submitted there are currently no other OEM suppliers active in the UK and that entry would be 'very challenging' for any OEM outside of Siemens, Alstom, Hitachi Rail, and Thales, whose credentials put them in a strong position to bid successfully for the TCSF.¹⁸⁴ ORR noted that it is not aware of any other established OEMs who have both the full range of signalling products and a European track record comparable to that of the four larger OEMs.¹⁸⁵

199. In assessing the competitive strength of the European OEMs listed below, the CMA has considered within its assessment the number of references held by these suppliers in the relevant subsystems, as detailed in above.

– *CAF*

200. CAF has not won any UK mainline signalling project contracts, excluding its activity in the supply of ETCS OBU projects (please see further paragraph 366 below).¹⁸⁶ Furthermore, CAF has fewer references in each relevant subsystem on a European

¹⁸¹ Annex T.Q1.005, [redacted], submitted by Thales in response to the CMA's s109 notice of 8 September 2022, slide 13.

¹⁸² Parties' response to the Issues Letter of 24 November 2022, paragraph 1.3.3.

¹⁸³ Parties' response to the Issues Letter of 24 November 2022, paragraph 2.9.

¹⁸⁴ Note of call with ORR dated 9 August 2022; and the ORR's submission to the CMA of 1 November 2022.

¹⁸⁵ ORR's submission to the CMA of 5 December 2022.

¹⁸⁶ ETCS OBU subsystems are not procured by Network Rail.

level than both Parties.¹⁸⁷ For instance, in OCS, CAF has two references, while Hitachi Rail and Thales have [0-10] and [20-30] references respectively. With regard to interlockings, CAF has 21 references in Spain, whilst Hitachi Rail and Thales have [30-40] and [220-230] references across Europe respectively.

201. Some Thales internal documents identified CAF as a competitor. [REDACTED].¹⁸⁸ [REDACTED].¹⁸⁹ [REDACTED].¹⁹⁰ [REDACTED].
202. ORR submitted that CAF is a weaker competitor in the UK relative to Thales. When comparing Thales and CAF, ORR noted the scale of Thales' global signalling operations (and related potential advantages in terms of product portfolio), its history of bidding in the UK, and the possible synergies with its UK metro signalling workforce.¹⁹¹
203. Few third parties identified CAF as a potential competitor for the TCSF, with one third party suggesting that CAF could successfully reach the invitation to tender (ITT) stage if partnered with an integrator.¹⁹²
204. Only a few competitors listed CAF as a competitor for legacy works and scored it with an average of 2.5 out of 5 (where 1 is a very weak competitor and 5 is a very strong competitor), placing CAF as the joint sixth strongest competitor.¹⁹³ One competitor considered CAF could credibly compete for the digital works included in the TCSF and it scored CAF with 3 out of 5, placing it as the fourth strongest competitor.¹⁹⁴

– *Indra*

205. Indra has not won any UK mainline signalling project contracts. Furthermore, Indra has far fewer references in each relevant subsystem on a European level than both Parties.¹⁹⁵
206. While Indra was noted to be a competitor [REDACTED] in the Thales' internal document cited in paragraph 173, [REDACTED].¹⁹⁶

¹⁸⁷ Parties' response to CMA RFI of 22 November 2022, Annex Q.4.

¹⁸⁸ Annex T.Q1.006, [REDACTED], submitted by Thales in response to the CMA s109 notice of 8 September 2022, slides 20 and 24.

¹⁸⁹ Annex T.Q1.005, [REDACTED], submitted by Thales in response to the CMA s109 notice of 8 September 2022, slide 13.

¹⁹⁰ Annex H.109.Q5.002, [REDACTED], submitted by Hitachi Rail in response to the CMA s109 notice of 8 September 2022, slides 19 and 21.

¹⁹¹ ORR's submission to the CMA of 5 December 2022.

¹⁹² Note of call with a third party.

¹⁹³ Third-party responses to CMA Mainline Signalling Questionnaire.

¹⁹⁴ Third-party response to CMA Mainline Signalling Questionnaire.

¹⁹⁵ Parties' response to CMA RFI of 22 November 2022, Annex Q.4.

¹⁹⁶ Annex T.Q1.006, [REDACTED], submitted by Thales in response to the CMA s109 notice of 8 September 2022, slides 20 and 24.

207. Indra was mentioned as a potential competitor for the TCSF by a few third parties, and similarly to CAF, one third party noted that Indra would likely successfully reach the ITT stage. However, the same third party expressed that it was sceptical whether Indra could successfully enter the UK.¹⁹⁷ Consistent with this, only one other third party identified Indra as a potential competitor and scored it with 1 out of 5 (where 1 is a very weak competitor and 5 is a very strong competitor) both in relation to digital works and conventional works.¹⁹⁸

– *Other OEMs (AZD Praha, Mermec, Progress Rail, Stadler)*

208. AZD Praha has not won any UK signalling project contracts and has far fewer references in the relevant mainline signalling subsystems than either Party. AZD Praha was not referred to as a competitor [X] in the Parties' internal documents. AZD Praha was mentioned as a competitor for the digital works included in the TCSF by only one competitor that responded to the CMA's phase 1 investigation, receiving an average score of 1 out of 5.¹⁹⁹ No competitors mentioned AZD Praha as a competitor for the legacy works included in the TCSF.

209. Mermec has not won any UK signalling project contracts and has far fewer references in the relevant mainline signalling subsystems than either Party. Mermec was not referred to as a competitor [X] in the Parties' internal documents. Only one competitor that responded to the CMA's phase 1 investigation mentioned Mermec as a competitor for legacy works included in the TCSF, receiving an average score of 3 out of 5.²⁰⁰ Mermec was mentioned as a competitor for the digital works included in the TCSF by two competitors, receiving an average score of 2 out of 5.²⁰¹

210. Progress Rail has not won any UK signalling project contracts and has far fewer references in the relevant mainline signalling subsystems than either Party. Progress Rail was not referred to as a competitor [X] in the Parties' internal documents. Progress Rail was mentioned as a competitor for the digital works included in the TCSF by a single competitor that responded to the CMA's phase 1 investigation, receiving an average score of 1 out of 5.²⁰² No competitors mentioned Progress Rail as a competitor for the legacy works included in the TCSF.

211. Stadler has not won any UK signalling project contracts and has far fewer references in the relevant mainline signalling subsystems than either Party. Stadler was not referred to as a competitor [X] in the Parties' internal documents, nor did

¹⁹⁷ Note of call with a third party.

¹⁹⁸ Third-party response to CMA's Mainline Signalling Questionnaire.

¹⁹⁹ Third-party response to CMA Mainline Signalling Questionnaire.

²⁰⁰ Third-party response to CMA Mainline Signalling Questionnaire.

²⁰¹ Third-party responses to CMA Mainline Signalling Questionnaire.

²⁰² Third-party response to CMA Mainline Signalling Questionnaire.

any competitors responding to the CMA's phase 1 investigation mention Stadler as a competitor for the TCSF.

212. No other European OEMs were referenced in third-party responses or in the Parties' internal documents.

– *Integrators*

213. As noted in paragraph 53 above, integrators do not develop their own technology and typically partner with OEMs to access technology in order to compete for mainline signalling contracts.

214. The Parties submitted that integrators are strong competitors in their own right, noting Atkins' success in CP5 and integrators' success in Network Rail's Signalling and Telecoms Framework lots.

215. The Parties submitted that integrators are also important partners, [redacted].²⁰³ [redacted]. According to the Parties, this is because integrators have strong local 'boots on the ground' capabilities, route knowledge, longstanding relationships with Network Rail, and familiarity with UK signalling principles.

216. One third party explained that integrators cannot compete for the TCSF independently, as they lack the capability to deliver major signalling renewal or ETCS works.²⁰⁴ Additionally, ORR stated that integrators might not be credible competitors for the TCSF, given that integrators do not have their own technology.²⁰⁵

– *Atkins*

217. Atkins was successful in Network Rail's CP5 procurement process, in which it won contracts for the supply of legacy mainline signalling as a standalone supplier (ie not in partnership with an OEM). The ORR Market Study sets out that Atkins enjoyed considerable success in obtaining work in major signalling frameworks as an integrator because it had access to the SSI interlocking technology owned by Westinghouse/Invensys (now Siemens) and GEC/Alstom.²⁰⁶ Atkins was unsuccessful in the more recent CP6 Major Signalling Framework.²⁰⁷ The CMA understands this is because Siemens and Alstom became less inclined to allow Atkins to install their signalling technology and would install it themselves.²⁰⁸ With

²⁰³ Parties' response to the Issues Letter of 24 November 2022, paragraph 2.12.

²⁰⁴ Note of call with a third party.

²⁰⁵ ORR submission to the CMA of 1 November 2022.

²⁰⁶ ORR Market Study, paragraph 6.8.

²⁰⁷ Note of call with a third party.

²⁰⁸ Note of the call with third party.

respect to the TCSF, Atkins does not have access to ETCS technology and is not active across all subsystems, as it has not supplied OCS to date.²⁰⁹

218. The Parties submitted that Atkins' success in CP5 is demonstrative of integrators competing in their own right, ie outside of partnerships with OEMs. The Parties noted that Atkins has [REDACTED].²¹⁰
219. The Parties' internal documents identify Atkins as a competitor for mainline signalling projects. The Thales' internal document referenced in paragraph 173, identifies Atkins as a 'main competitor' [REDACTED].²¹¹ [REDACTED].²¹² [REDACTED].²¹³ As explained in paragraph 217, Atkins was ultimately unsuccessful in winning a lot on the CP6 Major Signalling Framework. One other Thales' internal document that outlines the competitive environment for signalling and train control in the UK identifies Atkins [REDACTED].²¹⁴
220. The Hitachi Rail internal document cited in paragraph 170 analysing competitive conditions [REDACTED] identifies Atkins [REDACTED].²¹⁵
221. Competitors that responded to the CMA's phase 1 investigation questionnaire identified Atkins as a competitor for the TCSF for both legacy and digital works. The majority of competitors mentioned Atkins as a competitor for legacy works included in the TCSF, with an average score of 2.5 out of 5.²¹⁶ In relation to the digital works included in the TCSF, only half of competitors mentioned Atkins as a potential competitor, with Atkins receiving an average score of 2.7 out of 5.²¹⁷
222. With regard to Atkins, the CMA considers that this supplier has successfully supplied mainline signalling projects in the UK in the past, and therefore likely has material local capabilities eg in the form of past relationships with Network Rail. Atkins' past successes may also explain the competitor responses identifying Atkins as a potential competitor for the TCSF. However, the CMA notes that these past projects related to legacy works, rather than digital works. Given Atkins' lack of ETCS capability, the CMA considers its ability to compete independently, in particular for digital signalling works included in the TCSF, will be limited.

²⁰⁹ Atkins' response to CMA RFI of 14 November 2022.

²¹⁰ The Parties' response to the Issues Letter of 24 November 2022, paragraph 2.12.

²¹¹ Annex T.Q1.006, [REDACTED], submitted by Thales in response to the CMA s109 notice of 8 September 2022, slides 20 and 24.

²¹² Annex T.Q1.005, [REDACTED], submitted by Thales in response to the CMA s109 notice of 8 September 2022, slide 13.

²¹³ Annex T.M.Q16.002, [REDACTED], submitted by Thales in response to the FMN, slide 26.

²¹⁴ Annex T.Q1.005, [REDACTED], submitted by Thales in response to the CMA s109 notice of 8 September 2022, slides 13 and 14.

²¹⁵ Annex H.109.Q3.013, [REDACTED], submitted by Hitachi in response to the CMA s109 of 8 September 2022, slide 8.

²¹⁶ Third party responses to CMA Mainline Signalling Questionnaire.

²¹⁷ Third party responses to CMA Mainline Signalling Questionnaire.

- *Other integrators: Amey, VolkerRail, Linbrooke, Balfour-Beatty, Babcock*

223. The Parties submitted that integrators have won a place on Network Rail’s frameworks during CP6. Linbrooke in a consortium with Hitachi won the Wales & Western lot on the Major Signalling Framework while VolkerRail, Colas, Babcock, Linbrooke, and Atkins each won the North West & Central, Western, Scotland, London North East & East Midlands and Anglia, South East & Wessex, respectively on the Signalling & Telecoms Framework.²¹⁸
224. With the exception of Atkins (referred to in paragraphs 217 to 222 above), integrators were not identified as competitors [redacted] by the Parties in their internal documents. [redacted]²¹⁹ [redacted].²²⁰
225. Competitors that responded to the CMA’s phase 1 investigation mentioned eight other integrators in addition to Atkins as potential competitors for the TCSF. Amey, VolkerRail, Hima-Sella, Babcock, Colas, Balfour-Beatty, Giffen and Linbrooke received at most two mentions as competitors for legacy works and all received an average score of less than 2 out of 5.²²¹ Hima-Sella and Amey were the only integrators (other than Atkins) that were identified as potential competitors for digital works within the TCSF but both were rated as ‘very weak’ receiving the lowest score of 1 out of 5.²²²
226. The CMA considers that integrators, competing independently outside of any partnership with an OEM, will be weak competitors for the TCSF, particularly for digital work.

Conclusion on competition for the Train Control Systems Framework

227. As explained in paragraphs 158 to 161 above, the TCSF is expected to have five separate lots; and each supplier, if successful, will only be awarded one lot. This framework structure increases the pool of suppliers that can compete for mainline signalling projects over the next two control periods. Network Rail’s sponsor of product approval and partial funding for product adaptation costs will help to reduce barriers to entry and expansion. This means that even if some suppliers (such as Siemens and Alstom) are strong and have incumbency advantages, there will be an opportunity for smaller suppliers without an incumbency advantage to participate in the TCSF and win one lot in the framework. This will ensure a guaranteed workbank

²¹⁸ FMN (Chapter 1), paragraph 14.4.

²¹⁹ Annex H.109.Q3.013, [redacted], submitted by Hitachi in response to the CMA s109 of 8 September 2022, slide 8.

²²⁰ Annex H.109.Q2.019, [redacted], submitted by Hitachi in response to the CMA s109 of 8 September 2022, slides 2-5.

²²¹ Third-party responses to CMA Mainline Signalling Questionnaire.

²²² Third-party response to CMA Mainline Signalling Questionnaire.

for that supplier and will also give that supplier a foothold in the UK market and relevant experience in the future.

228. Based on the evidence above, the CMA considers that, absent the Merger, the Parties would independently bid for, and be close competitors for, the TCSF. The Parties' internal documents indicate that they monitor each other and consider each other as important rivals [X] for mainline signalling projects in the UK. ORR considers that the Parties will compete closely for the TCSF. Competitors active in signalling rate the Parties as third and fourth strongest suppliers of mainline signalling in the UK.
229. Siemens and Alstom are strong competitors for the TCSF, for both conventional and digital works. Siemens and Alstom are considered to benefit from incumbency advantages, primarily with respect to legacy mainline signalling.
230. In terms of the other European OEMs, the CMA considers that CAF and Indra may be capable of competing for the TCSF but will not be as strong competitors as the Parties. The evidence above does not indicate that any other European OEM is likely to compete for the TCSF. The evidence also indicates that integrators, acting as independent competitors, will not be capable of competing credibly for the TCSF.
231. Given this, the CMA considers that the Merged Entity will face only limited competitive constraints from other suppliers as regards to competing for a lot on the TCSF.
232. As explained in paragraph 32, the outcomes of competition for the TCSF have a direct impact on competition within the relevant product markets. The CMA has therefore taken the conclusions drawn from evidence on how the Parties and other suppliers will compete for the TCSF into account alongside market-specific evidence when it considers the effect of the Merger on competition for the individual product markets.

TOH 1: Horizontal unilateral effects in the supply of ETCS ATP wayside re-signalling projects

233. As set out in the Product Frame of Reference (see paragraphs 77 to 86) the supply of ETCS ATP wayside re-signalling projects refers to the supply of a bundle of interlocking and ETCS ATP wayside projects. On the basis of the available evidence,²²³ the CMA understands that the interlocking provided as part of this bundle must be a digital interlocking, which is distinct from legacy interlockings (legacy interlockings are discussed further in paragraphs 311 to 318 below).

²²³ Parties' response to the CMA's Issues Letter dated 24 November 2022, paragraph 6.5. Note of call with Network Rail on 29 September 2022.

234. The CMA has considered in its assessment:

- (a) closeness of competition between the Parties; and
- (b) competitive constraints imposed by alternative suppliers.

Closeness of competition

- *Parties' submissions*

235. In response to the Issues Letter, and consistent with the European Commission's prior decisions set out in the Frame of Reference section above (see paragraphs 82 to 84), the Parties submitted that because ETCS wayside re-signalling projects involve replacing the existing interlockings along with the ETCS wayside solutions, the supply of these projects does not lead to the same difficulties deriving from interfacing with existing signalling that are experienced by new entrants in other mainline signalling segments.²²⁴

236. As regards to their existing capabilities in ETCS ATP wayside re-signalling projects, [REDACTED], though Hitachi-Linbrooke [REDACTED]. Both Parties have digital interlockings deployed in other countries. [REDACTED].²²⁵

237. The Parties also submitted [REDACTED]. As a result, the Parties submitted that they [REDACTED].²²⁶

238. The Parties submitted that Hitachi Rail is not a strong player in the market for ETCS ATP wayside projects in Europe.²²⁷ The Parties also submitted they are not close competitors in Europe.²²⁸

239. The Parties further submitted that in the UK they are both weak players and that they are also not close competitors.²²⁹ [REDACTED]: [REDACTED]. According to the Parties, [REDACTED].²³⁰ [REDACTED]. The Parties also submitted that Thales' CBTC presence cannot be leveraged for use in mainline signalling projects.²³¹

- *CMA's assessment*

240. The CMA notes the Parties' submissions that [REDACTED]. Similarly to the approach taken in paragraphs 260 to 270 below relating to other European OEMs, the CMA has conducted its assessment of closeness of competition between the Parties on this basis.

²²⁴ Parties' response to the Issues Letter of 24 November 2022, paragraph 6.3.

²²⁵ Parties' response to the Issues Letter of 24 November 2022, paragraphs 6.5-6.7.

²²⁶ Parties' response to the Issues Letter of 24 November 2022, paragraph 6.9.

²²⁷ FMN (Chapter 1), paragraph 9.

²²⁸ FMN (Chapter 1), paragraph 14.20.

²²⁹ Parties' response to the Issues Letter of 24 November 2022, paragraphs 6.11-6.12.

²³⁰ Parties' response to the Issues Letter of 24 November 2022, paragraphs 6.11-6.12.

²³¹ Parties' response to the Issues Letter of 24 November 2022, paragraph 6.10.

241. As set out in paragraph 227, a wider range of suppliers are expected to compete for the supply of ETCS mainline signalling, as compared to UK legacy mainline signalling.²³² While products deployed by suppliers in other countries will require approval in the UK, the CMA considers the transition to digital signalling will support entry and expansion by previously smaller players. As set out in paragraphs 158 to 161, this is likely to be supported by the structure of the TCSF.
242. Given that ETCS ATP wayside has a common specification that is interoperable and interchangeable, the CMA considers that examining potential UK suppliers' experience outside of the UK is a relevant means of assessing potential competitors' strength.
243. Both Parties have developed the relevant products and have considerable experience supplying ETCS ATP Wayside re-signalling projects in Europe. Notably:
- (a) Thales has [50-60] references in Europe, across 12 countries, in relation to the supply of ETCS ATP wayside re-signalling projects.²³³ In Europe, Thales has a [20-30]% share in the supply of ETCS ATP wayside re-signalling projects over 2012-2021.²³⁴
 - (b) Hitachi Rail has [10-20] references in Europe, across three countries, in relation to the supply of ETCS ATP wayside re-signalling projects.²³⁵ In Europe, Hitachi Rail has a [10-20]% share in the supply of ETCS ATP wayside re-signalling projects over 2012-2021.²³⁶
244. As discussed further in paragraph 256 below, market shares considered on a European basis also show that the Parties are two of only a small number of suppliers currently active in the supply of ETCS ATP wayside re-signalling projects.
245. Moreover, bidding data considered on a European basis indicates that the Parties have bid against each other for ETCS ATP wayside re-signalling projects, with a meeting rate of [10-20]% considering all tenders in Europe between 2012 and 2021, rising to [30-40]% when the metric is value-weighted.²³⁷ Moreover, considering all European tenders between 2012 and 2021, Thales has [X] participation rate and winning [X], at [X] and [X] respectively. Hitachi Rail has a [X] participation and winning rate on this basis, at [X] and [X] respectively. The Parties are two of only five suppliers that have bid for ETCS re-signalling projects in Europe.

²³² Note of the call with a third-party.

²³³ Parties' response to the CMA RFI of 22 November 2022, Annex Q.4.

²³⁴ Annex Q14.002 (V5), Updated Bidding Data Shares of supply and CPLs (10246491266.1), submitted in response to the FMN.

²³⁵ Parties' response to the CMA RFI of 22 November 2022, Annex Q.4.

²³⁶ Annex Q14.002 (V5), Updated Bidding Data Shares of supply and CPLs (10246491266.1), submitted in response to the FMN.

²³⁷ Annex Q14.002 (V5), Updated Bidding Data Shares of supply and CPLs (10246491266.1), submitted in response to the FMN.

246. [X]. The CMA considers that the highly limited number of ETCS ATP wayside re-signalling tenders conducted to date in the UK is indicative of the early stage the UK is currently at in terms of its transition from legacy mainline signalling to digital mainline signalling. Given the limited number of tenders to date and the significance of the TCSF, the CMA does not consider historic UK shares provide strong evidence as to how closely the Parties will compete in future.
247. As noted in paragraph 256, Hitachi Rail has supplied ETCS ATP wayside overlay projects in the UK and is therefore active in the UK in the supply of one of the two constituent parts of a ETCS ATP wayside re-signalling project.
248. As detailed at paragraphs 177 to 181, third parties including ORR have indicated that the Parties will both be credible bidders for the TCSF, under which they will be required to supply ETCS ATP wayside re-signalling projects (among other mainline signalling subsystems). Competitors responding to the CMA's phase 1 investigation were also asked to identify and score (between 1 and 5, where 1 is a very weak competitor and 5 is a very strong competitor) competitors in the supply of ETCS ATP wayside systems, and separately, interlockings.²³⁸ As regards the responses in relation to ETCS ATP wayside systems, competitors identified the Parties as two out of a total of four current competitors active in the supply of ETCS ATP wayside projects in the UK, with all respondents recognising Hitachi Rail as a current competitor, giving Hitachi Rail the fourth highest average score of 3.2. Thales was also mentioned as a current competitor by half of respondents and received the joint second highest average score of 4. Two competitors also stated that the Parties would expand their positions in this market, while two other competitors noted that the Merger would reduce competition as regards the supply of ETCS ATP wayside projects in the UK.²³⁹
249. Additionally, as set out in paragraphs 171 to 176, the Parties' internal documents demonstrate that they monitor each other in relation to the supply of mainline signalling projects in the UK generally.
250. Finally, as set out in paragraph 10 above, it is currently intended for the TCSF to include minimum workbank commitments, among other features, to support suppliers' ability to enter and expand in the UK. The CMA considers that the Parties' likely success in winning lots on the TCSF will enable both Parties to expand in the supply of ETCS ATP wayside re-signalling in the UK in future.

²³⁸ Respondents did not identify whether their comments on interlocking projects related to conventional or digital interlocking projects. However, as noted at paragraph 91 above, the CMA understands only digital interlockings to be relevant to ETCS ATP wayside re-signalling projects. Given this ambiguity, the CMA has not considered the responses relating to interlockings here.

²³⁹ Third-party responses to CMA Mainline signalling questionnaire.

251. For the reasons set out above, the CMA considers that the Parties are and will increasingly become close competitors in the supply of ETCS ATP wayside re-signalling projects in the UK.

Competitive constraints from alternative suppliers

252. The CMA has assessed the competitive constraint that would be exerted by other competitors on the Merged Entity post-Merger.

- *Parties' submissions*

253. In response to the Issues Letter, the Parties submitted that there will be a sufficient number of credible players post-Merger in the supply of ETCS wayside re-signalling projects in the UK, as interfacing requirements do not impose the same barriers to entry as in other mainline signalling subsystems (see further in paragraph 326). The Parties submitted that a number of European OEMs, including AZD Praha, CAF, Mermec, Progress Rail (ECM), Mipro, and Stadler [redacted]. In particular, the Parties submitted that each of these suppliers has a digital interlocking and ETCS ATP wayside product deployed in another country, but not in the UK.²⁴⁰

254. The Parties further submitted that while they are each early adopters of ETCS, as they helped to design the specifications, the suppliers cited in paragraph 253 are more recent entrants [redacted]. The Parties submitted that they expect these suppliers will be both qualified for and interested in competing for new ETCS opportunities.²⁴¹

- *CMA's assessment*

- *Siemens and Alstom*

255. Siemens and Alstom have considerable presence and experience in the supply of ETCS ATP wayside re-signalling projects in Europe. Considering all European tenders between 2012 and 2021, Siemens has the largest share at [30-40]%, with Alstom having the second largest share at [20-30]%.²⁴² Siemens and Alstom also have the joint second highest winning rate when considering European tenders between 2012 and 2021 at [redacted]. Siemens also has the second highest participation rate on this basis, at [redacted], with Alstom having the third highest at [redacted].

256. Siemens also has relevant UK experience in the supply of ETCS ATP wayside re-signalling projects. Notably, Siemens is the only player active in the supply of ETCS ATP wayside re-signalling projects in the UK to date, including through its supply of the East Coast Development Programme (see paragraph 152). Alstom is not currently active in the supply of ETCS ATP wayside re-signalling projects in the UK,

²⁴⁰ Parties' response to the Issues Letter of 24 November 2022, paragraphs 6.4-6.7.

²⁴¹ Parties' response to the Issues Letter of 24 November 2022, paragraph 6.8.

²⁴² Annex Q14.002 (V5), Updated Bidding Data Shares of supply and CPLs (10246491266.1), submitted in response to the FMN.

however, like Hitachi Rail, it is active in the supply of ETCS ATP wayside overlay projects, with a share of [90-100]%.²⁴³ While ETCS ATP wayside overlay projects are discussed separately at paragraphs 319 below, the CMA considers this past experience is demonstrative of these suppliers' competence in one component system of the bundled systems comprised within ETCS ATP wayside re-signalling projects.

257. Additionally, as noted in paragraph 189, ORR considers Siemens and Alstom to be the strongest competitors for the TCSF, through which suppliers will be required to supply ETCS ATP wayside re-signalling projects.
258. Competitors responding to the CMA's phase 1 investigation also submitted that Siemens and Alstom are strong competitors in the supply of ETCS ATP wayside projects. All respondents mentioned both Siemens and Alstom as current competitors, with Siemens receiving the highest average score of 4.4 and Alstom the joint second highest (with Hitachi Rail) of 4.0.²⁴⁴
259. Similarly, as set out in paragraphs 171 to 176, the Parties' internal documents concerning competition in relation to mainline signalling projects in the UK (which encompasses ETCS ATP wayside re-signalling projects), indicate that the Parties primarily compete against Siemens and Alstom, in addition to each other.

Other European OEMs

260. The CMA has considered each of the European OEMs (AZD Praha, CAF, Indra, Mermec, Progress Rail (ECM), Mipro and Stadler) referenced in the Parties' submissions.
261. As set out at paragraph 184 above, the Parties submitted that three capabilities are required for a strong signalling offering: access to technology and design; local capabilities, knowledge and resources; and an installed base of interlockings.^{245, 246} As set out from paragraph 156 above, the CMA considers that European OEMs lack local capabilities in the UK and therefore any European OEMs seeking to supply mainline signalling projects in the UK would likely partner with an integrator in order to supplement this weakness. Given that all of the European OEMs discussed below lack the required local capabilities to compete for re-signalling contracts in the UK and would each partner with an integrator to gain such capabilities were they to compete in the UK, the CMA has not assessed these

²⁴³ When all UK tenders over the period 2012-2021 are considered. Annex C.Q12.002 – CMA RFI 3 Q25 – TFCS projects – Confidential (10241646201.1), 30 September 2022, submitted by the Parties in response to the FMN.

²⁴⁴ Third-party responses to CMA Mainline signalling questionnaire.

²⁴⁵ Parties' response to the Issues Letter dated 24 November 2022, paragraph 2.4.

²⁴⁶ As set out at paragraph 89 above, Siemens and Alstom supply the majority of the installed base of interlockings in the UK accounting for c.98% of the installed base.

suppliers in relation to their local capabilities (ie the lack of these local capabilities). The CMA has instead considered these suppliers' technical capabilities below.

262. CAF has a relatively low share of [0-10]% in the supply of ETCS ATP wayside re-signalling projects, considering all European tenders between 2012 and 2021.²⁴⁷ CAF also has a more limited number of ETCS ATP wayside re-signalling references in Europe, with six in total in three countries.²⁴⁸ As noted above at paragraph 203, third parties indicated that CAF will likely compete for the TCSF, though it will be a relatively weaker competitor than both Parties. However, competitors responding to the CMA's phase 1 investigation did not identify CAF as a current or potential UK competitor in the supply of ETCS ATP wayside projects. Additionally, as described at paragraph 201, [redacted] in the Parties' internal documents, [redacted].
263. Indra was identified as a potential competitor for the TCSF by both the Parties and third parties,²⁴⁹ though as set out in paragraph 207, the CMA considers Indra to be a weaker competitor than both Parties. If Indra were to be successful in winning a slot on the TCSF, it would compete to supply ETCS ATP wayside re-signalling projects. Considering Indra's presence in the supply of ETCS ATP wayside re-signalling projects, the CMA notes that Indra has a share of [0-10]% calculated on the basis of all European tenders between 2012-2021.²⁵⁰ Indra only has two relevant references in Europe, both in Spain.²⁵¹ Indra was also identified as a potential competitor in the supply of ETCS ATP wayside projects by only one competitor responding to the CMA's phase 1 investigation.²⁵² Indra was also mentioned in some of the Parties' internal documents as a competitor for UK mainline signalling projects, [redacted].
264. Stadler is not present in the shares of supply submitted by the Parties.²⁵³ Information relating to suppliers' European references submitted by the Parties notes that Stadler has only one reference, acquired through the Stadler-Mermec joint venture (Mermec is discussed further in paragraph 266 below).²⁵⁴ Stadler was not identified by third parties as a relevant competitor for the TCSF in the analysis set out in paragraph 211 above. Further, no competitors responding to the CMA's phase 1 investigation mentioned Stadler as a current or potential competitor in the supply of ETCS ATP wayside projects in the UK. Stadler is also not identified as a

²⁴⁷ When all European tenders over the period 2012-2021 are considered. Annex Q14.002 (V5), Updated Bidding Data Shares of supply and CPLs (10246491266.1), submitted in response to the FMN.

²⁴⁸ Parties' response to CMA RFI of 22 November 2022, Annex Q.4.

²⁴⁹ Parties' response to the CMA's Issues Letter dated 24 November 2022, paragraph 3.6.

Note of the call with a third-party. Third-party response to CMA's Mainline Signalling Questionnaire.

²⁵⁰ When all European tenders over the period 2012-2021 are considered. Annex Q14.002 (V5), Updated Bidding Data Shares of supply and CPLs (10246491266.1), submitted in response to the FMN.

²⁵¹ Parties' response to CMA RFI of 22 November 2022, Annex Q.4.

²⁵² Third-party response to CMA Mainline Signalling Questionnaire.

²⁵³ When all European tenders over the period 2012-2021 are considered. Annex Q14.002 (V5), Updated Bidding Data Shares of supply and CPLs (10246491266.1), submitted in response to the FMN.

²⁵⁴ Parties' response to CMA RFI of 22 November 2022, Annex Q.4.

competitor in the Parties' internal documents considering the supply of mainline signalling projects in the UK (see paragraphs 171 to 176).

265. AZD Praha has only a [0-10]% share in the supply of ETCS ATP wayside re-signalling projects, considering all European tenders between 2012-2021.²⁵⁵ Information relating to suppliers' European references submitted by the Parties notes that AZD Praha has only two references.²⁵⁶ As set out in paragraph 208, AZD Praha was not generally identified as a relevant competitor for the TCSF, and only a single competitor responding to the CMA's phase 1 investigation mentioned AZD Praha as a potential competitor in the supply of ETCS ATP wayside projects in the UK.²⁵⁷ Moreover, AZD Praha is not identified as a competitor in the Parties' internal documents considering the supply of mainline signalling projects in the UK (please see paragraphs 171 to 176).
266. Mermec is not present in the shares of supply submitted by the Parties²⁵⁸ and it only has one relevant reference in Europe (achieved through the Stadler-Mermec joint venture).²⁵⁹ Mermec was not generally identified as a relevant competitor for the TCSF. Two of the competitors responding to the CMA's phase 1 investigation mentioned Mermec as a potential competitor in the supply of ETCS ATP wayside projects in the UK.²⁶⁰ Mermec is not mentioned as a competitor in the Parties' internal documents considering the supply of mainline signalling projects in the UK (see paragraphs 171 to 176).
267. Progress Rail (ECM) has a [0-10]% share in the supply of ETCS ATP wayside re-signalling projects, considering all European tenders between 2012-2021.²⁶¹ The Parties' submissions note that Progress Rail (ECM) has only one relevant European reference.²⁶² Moreover, Progress Rail was not generally identified as a competitor for the TCSF, and only a single competitor responding to the CMA's phase 1 investigation mentioned Progress Rail as a potential competitor in the supply of ETCS ATP wayside projects in the UK.²⁶³ Progress Rail is not recognised as a competitor in the Parties' internal documents considering the supply of mainline signalling projects in the UK (please see paragraphs 171 to 176).

²⁵⁵ When all European tenders over the period 2012-2021 are considered. Annex Q14.002 (V5), Updated Bidding Data Shares of supply and CPLs (10246491266.1), submitted in response to the FMN.

²⁵⁶ Parties' response to CMA RFI of 22 November 2022, Annex Q.4.

²⁵⁷ Third-party response to CMA Mainline Signalling Questionnaire.

²⁵⁸ When all European tenders over the period 2012-2021 are considered. Annex Q14.002 (V5), Updated Bidding Data Shares of supply and CPLs (10246491266.1), submitted in response to the FMN.

²⁵⁹ Parties' response to CMA RFI of 22 November 2022, Annex Q.4.

²⁶⁰ Third-party responses to CMA Mainline Signalling Questionnaire.

²⁶¹ When all European tenders over the period 2012-2021 are considered. Annex Q14.002 (V5), Updated Bidding Data Shares of supply and CPLs (10246491266.1), submitted in response to the FMN.

²⁶² Parties' response to CMA RFI of 22 November 2022, Annex Q.4.

²⁶³ Third-party response to CMA Mainline Signalling Questionnaire.

268. Mipro is not present in the shares of supply submitted by the Parties,²⁶⁴ and is not noted to have any relevant European references.²⁶⁵ Mipro was not generally identified as a competitor for the TCSF, was not mentioned as a competitor in the supply of ETCS ATP wayside projects by competitors responding to the CMA's phase 1 investigation, and was also not mentioned as a potential competitor in the Parties' internal documents considering the supply of mainline signalling projects in the UK.
269. As set out above, each of the European OEMs considered in this section has far fewer relevant European references than either Party. The CMA notes the Parties' submissions, detailed in paragraph 253 above, that these more recent entrants in the supply of ETCS systems [X]. However, the CMA has not gathered any evidence substantiating this submission, either in the form of third-party submissions or the Parties' internal documents. Contrary to these submissions, the evidence gathered by the CMA instead indicates that each of these OEMs will be a weaker competitive constraint than the Parties will be on each other absent the Merger.
270. Therefore, [X], the CMA does not consider that the other European OEMs cited in the Parties' submissions are in a similar position to the Parties as regards their competitive capabilities in the supply of ETCS ATP wayside re-signalling projects in the UK. While [X] these OEMs may be able to partner with an integrator to overcome limited local capabilities, these OEMs have far more limited experience than either Party. Based on this analysis, the CMA considers that both of these two potential suppliers would exert a weaker competitive constraint than each Party would independently, absent the Merger.
- *Integrators*
271. As set out in paragraph 226, the CMA does not consider that integrators will be strong competitors for the TCSF independently, ie without partnering with an OEM. The CMA similarly considers that integrators will not be strong competitors for ETCS ATP wayside re-signalling projects independently, given they cannot independently supply the relevant technology. No integrator holds any share, nor have any integrators bid for a relevant UK contract independently.²⁶⁶ Moreover, Atkins and Amey were the only integrators recognised by competitors responding to the CMA's phase 1 investigation. Atkins and Amey were each recognised as potential competitors by only a single respondent and rated only 2 and 1 respectively (scores were given between 1 and 5, where 1 is a very weak competitor and 5 is a very strong competitor). The CMA considers this suggests

²⁶⁴ When all European tenders over the period 2012-2021 are considered. Annex Q14.002 (V5), Updated Bidding Data Shares of supply and CPLs (10246491266.1), submitted in response to the FMN.

²⁶⁵ Parties' response to CMA RFI of 22 November 2022, Annex Q.4.

²⁶⁶ When all European tenders over the period 2012-2021 are considered. Annex Q14.002 (V5), Updated Bidding Data Shares of supply and CPLs (10246491266.1), submitted in response to the FMN.

that integrators as standalone suppliers are unlikely to compete more strongly in future.

- *Conclusion*

272. In view of the above evidence, while the Parties do not currently supply ETCS ATP re-signalling projects in the UK, they are established suppliers in Europe with strong capabilities. As a result of the TCSF, both Parties are well placed to be significant suppliers of ETCS ATP wayside re-signalling projects in the UK and to increasingly compete closely in relation to such projects in future.

273. Post-Merger, the CMA considers that the Parties are likely to be constrained by only a limited number of competitors. Siemens and Alstom are both likely to win a place on the TCSF and compete strongly in relation to the supply of ETCS ATP wayside re-signalling projects in the UK. However, the other European OEMs active in the supply of such projects would provide only a limited constraint, which would be unlikely to offset the loss of competition between the Parties resulting from the Merger. The CMA also does not consider that integrators would be credible standalone suppliers of ETCS ATP wayside re-signalling projects in the UK.

274. For the above reasons, the CMA considers that there is a realistic prospect that the Merger will lead to a substantial lessening of competition in the supply of ETCS ATP wayside re-signalling projects in the UK.

TOH 2: Horizontal unilateral effects in the supply of Operation and Control Systems (OCS) projects

275. As set out in the Product Frame of Reference (see paragraphs 93 to 97 above), the CMA understands that there are multiple types of OCS comprising of TMS (both integrated and isolated) and SCS.

276. The CMA has considered in its assessment:

(a) closeness of competition between the Parties; and

(b) competitive constraints imposed by alternative suppliers.

Closeness of competition

- *Parties' submissions*

277. The Parties submitted that they are not close competitors in the supply of OCS projects in Europe or in the UK. The Parties noted that in Europe they competed against each other in only [X] in the last five years and in the UK only in [X]out of

seven tenders in the period 2012-2021.²⁶⁷ The Parties also submitted that their shares are modest in the UK: Hitachi had a [10-20]% share and Thales an [0-10]% share for the period 2012-2021. For the period 2017-2021, Hitachi had a [0-10]% share and Thales [X].²⁶⁸

278. In response to the Issues Letter, the Parties submitted that Network Rail's preference to move towards 'integrated TMS' means that [X].²⁶⁹ In particular:

(a) As noted at paragraph 95 above, the Parties submitted that OCS projects comprise two components: (i) SCS, which are deployed on top of interlockings (and referred to as 'local control'); and (ii) TMS, a system architecture that integrates several local signalling control components and presents the route to the signalling operator through a single interface (referred to as 'central control').

(b) The Parties also submitted that there are two types of TMS: (i) 'isolated TMS', a decision support tool which identifies potential issues and offers solutions that must be executed by a signalling controller; and (ii) 'integrated TMS', which interacts directly with the SCS, with planning and optimisation decisions automatically taken by the TMS.

(c) The Parties submitted that they would be [X] (given that integrated TMS needs to interact directly with the SCS) and interlockings (given that SCS must interface with the installed interlocking).

(d) In support of this submission, Thales referred to [X].

- *CMA's assessment*

279. The CMA notes the Parties' submission that, based on their own data, their shares of supply for OCS projects in the UK have been modest, particularly in the case of Thales. The CMA also understands that while Hitachi Rail has SCS deployed in the UK alongside its own interlockings, [X].

280. Nevertheless, the Parties' share of supply data indicates that both Parties have won OCS projects in the UK and that they are two of only five suppliers to have done so. Furthermore, while the Parties submit that they have only met in [X] out of [X] tenders in the UK over 2012-2021, [X].

281. Moreover, as discussed above in paragraph 85, Network Rail's procurement of major signalling projects, including for OCS projects has primarily been through

²⁶⁷ FMN (Executive Summary), paragraph 20; Parties' response to the Issues Letter of 24 November 2022, paragraph 8.17.

²⁶⁸ The Parties' shares of supply referred to in this section are based on value and include all tenders (ie both contestable and non-contestable tenders) as submitted by the Parties in Annex Q14.002 (V5) to the FMN.

²⁶⁹ Parties' response to the Issues Letter of 24 November 2022, paragraphs 8.2-8.7 and Annex IL 3.

long-term framework agreements. Thales did not supply either of Network Rail's last two major signalling frameworks and Hitachi Rail only supplied in relation to CP6, [redacted]. This may account for the Parties' low historic shares of supply in the UK.

282. However, looking forward, as discussed above in paragraph 181, the CMA considers that both Parties are likely to win a place on Network Rail's next major signalling framework, the TCSF. This is likely to enable both Parties, absent the Merger, to become more significant suppliers for mainline signalling subsystems in the UK in future, including for OCS projects, and to increase the extent of competition between the Parties. Given Network Rail's preference to replace signalling subsystems at the same time from the same supplier as they come up for renewal, the Parties' strengths in ETCS ATP re-signalling projects, as discussed in paragraphs 233 to 274 above, can also be expected to aid their position in relation to OCS projects.
283. This view is also supported by the fact that both Parties are established providers of OCS projects across Europe, with strong capabilities (particularly in the case of Thales), which can be expected to aid their ability to expand in the UK. Thales has a [20-30]% share of supply for 2012-2021 across Europe, making it the joint largest player (alongside Siemens) and has a total of [20-30] references for OCS projects across seven European countries. Hitachi Rail has a lower share of supply across Europe, at [0-10]% for 2012-2021, but it is still the sixth largest player, while it also has a total of [0-10] references for OCS projects in two countries (UK and Italy).²⁷⁰
284. Furthermore, most competitors responding to the CMA's phase 1 investigation identified both Parties as credible competitors for OCS projects in the UK. Approximately half of competitors also indicated that both Thales and Hitachi Rail would likely expand in the provision of OCS projects in the UK in future,²⁷¹ with one respondent noting this would likely occur as a result of the TCSF.²⁷²
285. Finally, the CMA attaches limited weight to the Parties' submission that Network Rail's preference to move towards integrated TMS [redacted]. While the Parties may currently have a limited presence in relation to SCS and interlockings in the UK ([redacted]), this can be expected to change significantly if the Parties become framework suppliers on the TCSF. If the Parties become significant suppliers of SCS and interlockings in the UK in future, this in turn will also enable them to compete for integrated TMS.
286. For the reasons set out above, the CMA considers that the Parties are already close competitors and will increasingly become closer (and more significant suppliers within the market) for OCS projects in the UK.

²⁷⁰ Parties' response to CMA RFI of 22 November 2022, Annex Q.4.

²⁷¹ Third-party responses to CMA Mainline signalling questionnaire.

²⁷² Third-party responses to CMA Mainline signalling questionnaire.

Competitive constraints from alternative suppliers

- *Parties' submissions*

287. The Parties submitted that Siemens, Alstom, and Resonate are strong competitors in the UK, with significant shares of supply, and that their volumes of SCS have steadily increased over time, with Resonate accounting for almost all SCS commissioned in 2020.²⁷³ The Parties also noted that Siemens and Resonate are the only suppliers in the UK that supply integrated TMS (although they note that Alstom also has the capabilities to provide integrated TMS).

288. The Parties submitted that Resonate is a strong supplier of OCS projects also because it benefits from a historical incumbency advantage in that it owns, through acquisition, British Railways' SCS technology (IECC) which can interact with Siemens' and Alstom's SSI interlockings.²⁷⁴

289. The Parties further submitted that there are numerous players that could deliver SCS solutions in the UK, such as AZD Praha, Indra, Mipro and CAF, either directly or through a partnership or sub-contracting with an integrator.²⁷⁵

- *CMA's assessment*

290. The CMA has assessed the competitive constraint that would be exerted by other competitors on the Merged Entity post-Merger.

- *Siemens and Alstom*

291. According to the Parties' data, Siemens is the largest supplier of OCS projects in the UK, with a [50-60]% share of supply for 2012-2021. ORR's data also indicates that Siemens has the second highest number of control systems commissioned in the UK.²⁷⁶ Siemens is also the joint largest supplier (alongside Thales) of OCS projects across Europe.

292. Siemens was consistently recognised as a strong supplier of OCS projects in the UK by all respondents to the CMA's phase 1 investigation and was scored with an average of 4.4 out of 5 (where 1 is a very weak competitor and 5 is a very strong competitor).²⁷⁷ This is also consistent with the Parties' internal documents (see paragraphs 171 to 176 above).

²⁷³ FMN (Chapter 1), paragraph 14.58; Parties' response to the Issues Letter of 24 November 2022, paragraph 8.6.

²⁷⁴ Parties' response to the Issues Letter of 24 November 2022, paragraph 8.9.

²⁷⁵ Parties' response to the Issues Letter of 24 November 2022, paragraphs 8.8 and 8.7.1.

²⁷⁶ Parties' response to the Issues Letter of 24 November 2022, paragraph 8.6.

²⁷⁷ Third-party responses to CMA Mainline signalling questionnaire.

293. The CMA therefore considers that Siemens will continue to be a strong competitor for OCS projects in the UK and will likely exert a strong competitive constraint on the Parties post-Merger.
294. Alstom only has a [0-10]% share of supply in the UK for 2012-2021 according to the Parties' data, which is lower than the shares of Hitachi Rail and Thales. However, the CMA has reason to doubt the reliability of this data, given that, according to ORR data, Alstom has the third highest share of control systems commissioned in the UK (after Siemens and Resonate), and that Alstom has consistently won places on Network Rail's previous major signalling frameworks. Alstom is also the second largest supplier of OCS projects across Europe, with a [10-20]% share of supply for 2012-2021.²⁷⁸
295. Alstom was also recognised as a strong supplier by almost all respondents to the CMA's investigation and was scored with an average of 4.3 out of 5 (where 1 is a very weak competitor and 5 is a very strong competitor).²⁷⁹ This is consistent with the Parties' internal documents (see paragraphs 171 to 176 above).
296. The CMA therefore considers that Alstom, though a less strong competitor compared to Siemens, is likely to still exert a significant constraint on the Parties post-Merger.
- *Resonate*
297. Resonate has a [20-30]% share of supply for OCS projects in the UK for 2012-2021 according to the Parties' data.²⁸⁰ Most respondents to the CMA's investigation also recognised Resonate as a credible competitor and scored Resonate with an average of 3.6 out of 5 (where 1 is a very weak competitor and 5 is a very strong competitor).²⁸¹
298. The CMA notes the Parties' submission that Resonate benefits from a historical incumbency advantage in owning the UK's legacy SCS technology, and, based on ORR data, has the highest number of control systems commissioned in the UK.²⁸² The CMA also understands this affords Resonate an advantage in relation to the supply of integrated TMS (given the need for integrated TMS to interface with the installed SCS base).
299. However, the CMA understands from the ORR Market Study that while Resonate (and its predecessor companies) dominated the supply of OCS projects in the 1990s, Resonate's strong market position has gradually been eroded by Siemens

²⁷⁸ FMN (Chapter 1), Table 14.

²⁷⁹ Third-party responses to CMA Mainline signalling questionnaire.

²⁸⁰ FMN (Chapter 1), Tables 14 and 15.

²⁸¹ Third-party responses to CMA Mainline signalling questionnaire.

²⁸² ORR Market Study, paragraph 6.5.

and Alstom who, by 2020, held more than half ([50-60]%) of the installed base of OCS in the UK.²⁸³

300. The CMA understands this trend is likely to continue given that Resonate is unable to credibly compete for the TCSF, through which Network Rail is expected to procure most OCS projects in the coming years. The CMA notes the Parties' submissions that SCS falls within the scope of the TCSF, but TMS does not. However, ORR explained that there is significant commonality in terms of the potential supplier base for SCS and TMS. ORR does not have visibility of what will fall under the TCSF in terms of OCS projects and therefore that it could not exclude at this stage that TMS would be procured by Network Rail under the TCSF.²⁸⁴ Nevertheless, even if TMS falls outside the TCSF, the CMA considers that Resonate will still be disadvantaged in relation to future TMS tenders if, due to not being on the TCSF, it is unable to win projects for SCS renewals. Resonate's weakness as a competitor in this regard lies in the fact that it is only active in relation to OCS and not other mainline signalling subsystems. As noted in paragraphs 192 to 195, given Network Rail's preference to acquire multiple signalling subsystems from the same supplier as they come up for renewal, this is expected to put Resonate at a significant disadvantage.
301. Overall, the CMA considers that Resonate is likely to exert only a limited competitive constraint on the Merged Entity.
- *Others*
302. Aside from Siemens, Alstom, and Resonate, the Parties have not identified any other alternative competitors active in relation to OCS projects in the UK.
303. The CMA has considered each of the European OEMs (AZD Praha, Indra, Mipro, and CAF) referenced in the Parties' submissions.
304. As set out at paragraph 170 above, the Parties submitted that three capabilities are required for a strong signalling offering: access to technology and design; local capabilities, knowledge and resources; and an installed base of interlockings.^{285, 286} As set out in paragraphs 196 to 199 the CMA considers that European OEMs lack local capabilities in the UK and therefore any European OEMs seeking to supply mainline signalling projects in the UK would likely partner with an integrator in order to supplement this weaknesses. Given that all of the European OEMs discussed below lack the required local capabilities to compete for OCS contracts in the UK and would each partner with an integrator to gain such capabilities were they to

²⁸³ ORR Market Study, paragraph 6.5.

²⁸⁴ ORR's submission to the CMA of 5 December 2022.

²⁸⁵ Parties' response to the Issues Letter dated 24 November 2022, paragraph 2.4.

²⁸⁶ As set out at paragraph 89 above, Siemens and Alstom supply the majority of the installed base of interlockings in the UK accounting for c.98% of the installed base.

compete in the UK, the CMA has not assessed these suppliers in relation to their local capabilities (ie the lack of these local capabilities). The CMA has instead considered these suppliers' technical capabilities below.

305. At the European level, the Parties' share of supply data for 2012-2021 indicate that there are two other suppliers with more than de minimis shares of supply: Atos and Indra, with shares of [0-10]% and [0-10]% respectively. The CMA understands, however, that Atos does not have any references for OCS projects in Europe,²⁸⁷ while third parties responding to the CMA's market investigation did not identify Atos as a current or potential competitor for OCS projects in the UK. In the case of Indra, Indra only has three references for OCS projects in Europe (in Lithuania, Estonia, and Spain). Two competitors responding to the CMA's phase 1 investigation indicated that Indra is a potential competitor for OCS projects in the UK.²⁸⁸ However, Indra's ability to enter and expand in relation to the supply of OCS projects in the UK is likely to be very limited, given that Indra is likely to be a relatively weaker competitor than either Party (absent the Merger) in relation to the TCSF, as discussed in paragraphs 205 to 207 above.
306. The Parties identified AZD Praha, Mipro, and CAF as potential competitors for OCS projects in the UK. AZD Praha has one reference for an OCS project in Europe (in Czech Republic) while Mipro has two references (in Finland). However, neither firm was mentioned as a potential competitor by competitors responding to the CMA's phase 1 investigation, and neither firm was identified as credible competitors for TCSF (see paragraphs 208 to 212). CAF has two references for OCS projects in Europe (in Spain) and is identified as a potential competitor for OCS projects in the UK by only one competitor in response to the CMA's phase 1 investigation.²⁸⁹ Moreover, while third parties identified CAF as a potential competitor for the TCSF, as set out at paragraph 203 above, the CMA considers that CAF will be a weaker competitor for the TCSF than both Parties.
307. Mermec and Amey were also identified as potential competitors in the UK by competitors in response to the CMA's phase 1 investigation, but only by a single competitor²⁹⁰ and neither of these firms have references for OCS projects in Europe.²⁹¹ Stadler was not identified as a potential competitor in the UK by competitors responding to the CMA's phase 1 investigation and it does not have references for OCS projects in the Europe.

²⁸⁷ Parties' response to CMA RFI of 22 November 2022, Annex Q.4.

²⁸⁸ Third-party responses to CMA Mainline signalling questionnaire.

²⁸⁹ Third-party responses to CMA Mainline signalling questionnaire.

²⁹⁰ Third-party responses to CMA Mainline signalling questionnaire.

²⁹¹ Atkins and DXC were identified by two or fewer competitors as current competitors for OCS projects in the UK, but the CMA understands that neither firm currently supplies OCS projects in the UK.

308. The CMA therefore considers, based on the available evidence, that none of the above suppliers are likely to exert a significant constraint on the Merged Entity in relation to OCS projects in the UK.

Conclusion

309. In view of the above evidence, the CMA considers that the Parties, while currently modest players in the supply of OCS projects in the UK, are likely to significantly expand their presence in the UK as a result of the TCSF and compete closely in future. Post-Merger, the CMA considers that the Parties are likely to be constrained by only a limited number of competitors, including Siemens, Alstom, and, to a limited extent, Resonate. There is a low likelihood of other smaller European suppliers entering and significantly expanding in the UK to offset the loss of competition between the Parties resulting from the Merger.

310. For the above reasons, the CMA considers that there is a realistic prospect that the Merger will lead to a substantial lessening of competition in the supply of OCS projects in the UK.

TOH 3: Horizontal unilateral effects in the supply of interlocking projects

311. Interlocking projects may concern either legacy or digital interlocking projects. As noted in paragraph 85, the CMA understands that Network Rail typically seeks to procure interlockings and ETCS ATP wayside jointly from the same supplier as they come up for renewal (re-signalling projects).²⁹² As a result, competitive conditions in the supply of digital interlockings (ie the competitive conditions for the supply of interlockings bundled with ETCS ATP Wayside) are considered in the Horizontal Unilateral Effects in the supply of ETCS ATP wayside re-signalling section. In this section, the CMA focuses instead on the competitive conditions in relation to legacy interlocking projects.

Parties' submissions

312. The Parties submitted that there is no overlap between their activities as regards the supply of interlockings in the UK. [REDACTED] Hitachi Rail has been successful in winning interlocking projects in the UK, [REDACTED].²⁹³

313. Moreover, as regards the supply of legacy interlocking projects in particular, the Parties submitted that [REDACTED].²⁹⁴

314. [REDACTED].²⁹⁵ [REDACTED], unlike the digital signalling projects procured through the TCSF, Network Rail does not intend to provide funding towards the development or

²⁹² Note of call with a third party.

²⁹³ FMN (Chapter 1), Table 1(a), FMN (Executive Summary), paragraph 10.

²⁹⁴ Parties' response to the Issues Letter of 24 November 2022, paragraph 5.4.1.

²⁹⁵ Parties' response to the Issues Letter of 24 November 2022, paragraphs 5.5 and 5.6.

adaptation for legacy interlockings. Further, only 16% of the TCSF will comprise legacy signalling projects, meaning that the TCSF will not create a sufficiently committed pipeline of upcoming work to support the investment required to enter. The Parties also submitted that as legacy interlockings will eventually be replaced by digital interlockings, the volume of procurement for legacy interlockings is expected to decrease over time.

CMA's assessment

315. The CMA notes Hitachi Rail's submission that [REDACTED]. However, [REDACTED], a third party indicated that Hitachi would likely compete for legacy works included in the TCSF.²⁹⁶ As detailed above in paragraph 179, competitors responding to the CMA's investigation similarly considered that Hitachi Rail would compete effectively for legacy signalling works included in the TCSF.
316. The CMA has considered whether Thales would seek to introduce a UK legacy interlocking product.
- (a) On the one hand, [REDACTED].²⁹⁷ [REDACTED].²⁹⁸
- (b) On the other hand, more generally, the CMA understands that the future demand for legacy interlocking projects is declining as a result of the transition to digital signalling (see paragraph 51 above), and that the vast majority of legacy signalling projects procured through the TCSF will be purchased during CP7, with CP8 primarily comprising of digital signalling.²⁹⁹ In this context, a third party explained that Thales will not seek to compete for legacy works included in the TCSF, and that Thales will instead seek to focus on digital technologies, as legacy mainline signalling is a declining market in the UK.³⁰⁰ [REDACTED].³⁰¹ ORR also submitted that Thales is less likely than Hitachi Rail to compete for conventional works included in the TCSF.³⁰²
317. On this basis, the CMA considers the available evidence does not, in the round, support the position that Thales would enter the market for the supply of legacy interlocking projects in the UK. The CMA therefore considers it is unlikely that the Parties would, absent the Merger, compete closely in the supply of legacy interlocking projects in the UK.

²⁹⁶ Third-party response to CMA RFI.

²⁹⁷ Annex T.M.Q16.002 [REDACTED], submitted by Thales in response to the FMN, slide 2.

²⁹⁸ Annex T.Q1.005 [REDACTED], submitted by Thales in response to the FMN, slide 28.

²⁹⁹ Note of call with ORR on 18 November 2022.

³⁰⁰ Note of call with a third party.

³⁰¹ Annex T.Q12.001, [REDACTED], submitted by Thales in response to the CMA's RFI of 6 September 2022.

³⁰² Note of the call with ORR on 18 November 2022.

Conclusion

318. For the above reasons, the CMA does not consider that the Merger will lead to a realistic prospect of a substantial lessening of competition in the supply of legacy interlocking projects in the UK.

TOH 4: Horizontal unilateral effects in the supply of ETCS ATP wayside overlay projects

319. In this section, the CMA considers the competitive conditions in the supply of ETCS ATP wayside overlay projects. ETCS ATP wayside overlay projects refer to the standalone provision of an ETCS ATP wayside system.

Parties' submissions

320. The Parties submitted that ETCS ATP wayside overlay projects form part of a wider market for ETCS ATP wayside projects together with ETCS ATP wayside re-signalling projects and that in Europe the Parties' market shares are modest and they do not compete closely with one another.³⁰³

321. Even if a separate market for ETCS ATP wayside overlay projects is considered and the market is considered at a UK level, the Parties submitted that they do not overlap, [X]. Hitachi Rail has also only delivered [X] in the past 10 years, which related to the relevant section of track [X].³⁰⁴

322. The Parties further submitted that ETCS ATP overlay projects are likely to be relatively small and infrequent in the UK given Network Rail is expected to re-signal rather than to overlay ETCS. In addition, the Parties submitted that overlay projects are technologically complex as they require the modification of the original interlocking. This in turn affords a significant advantage to the incumbent interlocking supplier in competing for overlay projects, which for almost all installed interlockings in the UK is either Siemens or Alstom. Given these factors, the Parties submitted that they are unlikely to significantly expand, if at all, in the supply of ETCS ATP overlay projects in the UK, irrespective of the Merger.

CMA's assessment

323. The CMA understands that ETCS ATP wayside overlay projects have been very infrequent over 2012-2021, with only [X] projects recorded in the Parties' share of supply estimates, with one [X] tender awarded to Hitachi Rail, and one [X] tender awarded to Alstom, resulting in Hitachi Rail and Alstom having a [10-20]% and [90-100]% share of supply respectively.³⁰⁵

³⁰³ FMN (Chapter 1), paragraphs 14.2-14.20.

³⁰⁴ Parties' response to the Issues Letter, paragraph 7.4.

³⁰⁵ Annex Q14.002 (V5), [X], submitted in response to the FMN. These are shares of supply by value.

324. Regarding the [redacted] contestable tender, the Parties' bidding data indicates that [redacted].³⁰⁶ [redacted]. The CMA also notes that, on the basis of the available evidence, it is unclear if the contract only concerned an overlay project because, [redacted].
325. The CMA notes the Parties' submission that overlay projects are likely to be relatively infrequent in the UK going forward. This is supported by the ORR Market Study, to which the Parties referred, which noted that 'Network Rail intends to replace signalling assets as they come up for renewal to avoid dual signalling, however, some overlay will be necessary'.³⁰⁷ The CMA also understands that Network Rail seeks to renew signalling subsystems together at the same time, even if only one of the relevant subsystems needs to be replaced from a technical standpoint.
326. Network Rail has also confirmed the Parties' submission that ETCS ATP wayside overlay projects are more complex because they require a non-incumbent supplier to engage with the incumbent interlocking supplier for support to interface with the original interlocking. Network Rail indicated that it still expects non-incumbents to be able to compete by engaging with the supplier of the existing interlocking for support on interfacing and that there will typically be contractual requirements for overlay suppliers to cooperate with other mainline signalling projects suppliers.³⁰⁸
327. Nonetheless, the ORR Market Study found that, based on past experience, the need to interface with the installed base has tended to raise costs for some suppliers and has prevented them from being able to submit a competitive bid for a project.³⁰⁹ ORR has proposed recommendations as part of the ORR Market Study to help address this issue, including recommending Network Rail to maintain and enforce contractual obligations requiring cooperation between suppliers, ensuring interfaces are open and setting up internal mechanisms to address inter-supplier concerns and company complaints.
328. The incumbency advantage held by existing suppliers is, however, significant: c.98% of the current installed base of interlockings has been manufactured by either Siemens and Alstom or one of their predecessor companies.³¹⁰ The CMA notes that the measures proposed by ORR are generally intended to mitigate this established advantage (rather than the more concrete proposals provided for within the TCSF). On this basis, the CMA considers that most future ETCS ATP overlay projects are likely to confer some level of incumbency advantage for either of these suppliers and make it harder for non-incumbent suppliers such as the Parties to compete.

³⁰⁶ Annex H.109.Q3.009. [redacted], submitted by Hitachi in response to the CMA s109 of 8 September 2022.

³⁰⁷ Parties' response to the Issues Letter, paragraph 7.1, and ORR Market Study, paragraph 3.17.

³⁰⁸ Note of call with Network Rail on 29 September 2022.

³⁰⁹ ORR Market Study, page 10 and paragraphs 7.42-7.46.

³¹⁰ ORR Market Study, paragraph 6.4.

329. On this basis, the CMA considers that in practice the number of opportunities for either Party to successfully enter and/or expand in the supply of ETCS ATP wayside overlay projects in the UK in future is likely to be limited.

Conclusion

330. For the above reasons, the CMA does not consider that the Merger will lead to a realistic prospect of a substantial lessening of competition in the supply of ETCS ATP wayside overlay projects in the UK.

TOH 5: Horizontal unilateral effects in the supply of mainline signalling products developed within the OTTO project

331. The CMA has considered whether the Merger could reduce the number of credible bidders in relation to any future tender for the supply of the mainline signalling products to be developed within the OTTO project.

Parties' submissions

332. The Parties submitted that the OTTO project is a concept only and there is uncertainty about whether it will progress. Even if it does proceed to a tender process, the Parties submitted that [redacted].³¹¹

333. In particular, the Parties noted that the OTTO project is expected to encompass three component parts (which the Parties submitted are likely to be tendered separately): [redacted]. Thales noted [redacted].³¹²

334. The Parties submitted that a number of other competitors are likely to be competitive in relation to any OTTO tender process, including in relation to each of the above three component parts, and would provide strong competition in the event that the Parties were to participate.³¹³

• *CMA's assessment*

335. The CMA acknowledges that the OTTO project is currently only at a feasibility study stage and there is uncertainty as to the nature of the project's outputs and whether it will proceed to a tender process. Nonetheless, the CMA has considered, in the event the OTTO project does reach the tender stage, whether both Parties, absent the Merger, are likely to participate in the tender.

336. Thales confirmed [redacted].³¹⁴ Furthermore, ORR has indicated that it is possible Thales may have a first-mover advantage in relation to the OTTO project given its existing

³¹¹ Parties' response to the Issues Letter of 24 November 2022, paragraphs 10.5 and Table 3.

³¹² Parties' response to the Issues Letter of 24 November 2022, paragraphs 10.11.

³¹³ Parties' response to the Issues Letter of 24 November 2022, Table 3.

³¹⁴ Parties' response to the Issues Letter of 24 November 2022, paragraph 10.8.

position in relation to TPWS.³¹⁵ One third party has also noted that Thales has a dominant position in the supply of TPWS legacy products in the UK which it could leverage in any new potential wayside market created by the OTTO project.³¹⁶

337. As for Hitachi Rail, Hitachi Rail has confirmed [redacted],³¹⁷ and, as noted above, [redacted]. In contrast to Thales, however, the CMA understands that Hitachi Rail [redacted].
338. The CMA therefore considers that, in the event the OTTO project proceeds to a tender process, both Parties absent the Merger would likely participate, with Thales being in a particularly strong position to do so.
339. However, third parties responding to the CMA's phase 1 investigation have generally confirmed that any future tender process for the OTTO project would likely attract a wide pool of suppliers. In particular, ORR and other third parties indicated that there would be a wider competitor set for any future tender process for the OTTO project compared to the supply of other mainline signaling projects.³¹⁸
340. ORR added that there is a lack of incumbency advantage for the Parties, Siemens or Alstom, as major competitors for mainline signalling projects in the UK. ORR also noted that Mors Smitt and Unipart are likely to be credible suppliers given they currently provide the underlying technology used within the OTTO project.³¹⁹
341. One third party noted that Mors Smitt and Unipart, like Thales, are current suppliers of TPWS OBUs in the UK.³²⁰ [redacted]. The CMA therefore understands that Mors Smitt and Unipart could be generally as well placed as Thales to compete in any tendering process relating to the OTTO project, [redacted]. Finally, one third party indicated that Thales does not have unique R&D capabilities compared to other suppliers to develop products within the remit of the OTTO project.^{321, 322}

Conclusion

342. In view of the above, in the event the OTTO project proceeds to a tender process, whilst the CMA considers that both Parties would likely participate in any such

³¹⁵ ORR's submission to the CMA of 5 December 2022.

³¹⁶ Third-party response to CMA RFI.

³¹⁷ Parties' response to the Issues Letter of 24 November 2022, paragraph 10.11.

³¹⁸ ORR's response to the CMA RFI of 24 November 2022; note of call with a third party; Third-party response to CMA RFI.

³¹⁹ ORR's submission to the CMA of 25 November 2022.

³²⁰ ORR response to the CMA's RFI of 24 November 2022.

³²¹ Note of call with a third party.

³²² The CMA has also considered whether, in the event the OTTO project proceeds to a tender exercise [redacted], the Merged Entity could be in a position to foreclose rival signalling providers from accessing the on-board train positioning system. The CMA understands that in the event project OTTO proceeds to a tender process and product roll-out, Network Rail intends the relevant products to be subject to open specifications, and that Network Rail may appoint multiple product suppliers as part of any future tender, rather than a single supplier. The CMA has not considered this issue further in the Decision.

process, there is likely to remain a sufficient number of credible alternative bidders to constrain the Merged Entity.

343. For the above reasons, the CMA does not consider that the Merger raises a realistic prospect of a substantial lessening of competition in relation to the supply of mainline signalling products developed within the OTTO project.

TOH 6: Horizontal unilateral effects in the supply of ETCS OBU projects

344. ETCS OBUs may be installed on new rolling stock or retrofitted on rolling stock already in use. Customers of ETCS OBU projects therefore include rolling stock manufacturers as well as ROSCOs and TOCs.
345. The supply of ETCS OBU projects in the UK is comprised of internal and external sales. Internal sales refer to the self-supply of ETCS OBU projects by integrated rolling stock manufacturers for use on their own rolling stock. External sales refer to customers sourcing ETCS OBU projects from third-party suppliers. External sales customers are either a rolling stock manufacturer that does not have in-house signalling capabilities; or a ROSCO or TOC that tenders for retrofit ETCS OBU projects. Customers that require retrofitting typically procure from the original supplier of the OBU, which is usually the rolling stock manufacturer if they have the in-house signalling capabilities.
346. The CMA's competitive assessment is focussed on competitive tenders for external sales because all rolling stock suppliers in the UK are vertically integrated and are therefore able to self-supply ETCS OBU projects for installation on their own rolling stock.

Parties' submissions

347. The Parties submitted that Thales supplies ETCS OBUs only for retrofitting in the UK.³²³
348. The Parties submitted that Hitachi Rail does not supply retrofit ETCS OBU projects in the UK and [redacted].³²⁴ Although it has undertaken retrofit ETCS OBU projects in Europe,³²⁵ Hitachi Rail submitted that these are distinctive [redacted], Hitachi Rail's success in winning retrofit ETCS OBU projects in Europe is not indicative of its ability to compete for UK retrofit ETCS OBU projects in the future.³²⁶

³²³ Parties' response to the Issues Letter of 24 November 2022, paragraph 9.5.1.

³²⁴ Parties' response to the Issues Letter of 24 November 2022, paragraphs 9.5.2, 9.7.

³²⁵ Based on the Parties' bidding data, Hitachi Rail bid for [redacted] tenders in Europe and won [redacted] tenders in Italy and Sweden.

³²⁶ Parties' response to the Issues Letter of 24 November 2022, paragraph 9.5.2.

349. The Parties submitted that the external retrofitting market is ‘already de minimis’ and ‘shrinking’.³²⁷ In the Parties’ view, it is limited to a small fleet of trains that have (i) never been fitted with an OBU and (ii) where the original supplier is no longer in business.³²⁸ To date, Thales has won contracts to retrofit only [X] trains. Thales estimates approximately [X] passenger trains remain to be retrofitted in the UK in total, including trains that are already under contract to be retrofitted.³²⁹
350. Thales submitted that it is not ‘uniquely advantaged’ as a competitor for retrofit ETCS OBU projects because it has strengths in relation to UK legacy TPWS OBUs.³³⁰ Furthermore, Thales also submitted that its status as a non-integrated competitor for retrofit ETCS OBU projects is irrelevant to its ability to compete for these projects.³³¹

CMA’s assessment

351. Contrary to the Parties’ submissions, the CMA does not consider that the market for retrofit ETCS OBU projects in the UK is small or de minimis. In response to the Issues Letter, Thales estimated that [X] passenger trains in the UK are yet to be retrofitted with ETCS OBU projects, as well as other non-passenger freight trains, on-track machinery, and heritage and charter trains.³³² Of these [X] passenger trains, [X] trains are not yet under contract with a supplier to be retrofitted and will likely be fitted with an ETCS OBU in future.³³³ The CMA estimates the total potential value of these future retrofit ETCS OBU projects to be between €105-400 million.³³⁴
352. Historically, the Parties have [X] to supply the same ETCS OBU projects in the UK. Hitachi Rail, as an integrated supplier of ETCS OBUs, primarily supplies ETCS OBU projects internally for installation on its own rolling stock. Hitachi Rail [X] external retrofit ETCS OBU contracts in the UK and [X] against Thales for ETCS OBU projects. Considering the supply of all ETCS OBU projects in the UK Hitachi

³²⁷ Parties’ response to the Issues Letter of 24 November 2022, paragraph 9.5.2.

³²⁸ Parties’ response to the Issues Letter of 24 November 2022, paragraph 9.3.

³²⁹ Parties’ response to the Issues Letter of 24 November 2022, paragraphs 9.3 and 9.5.2.

³³⁰ Parties’ response to the Issues Letter of 24 November 2022, paragraph 9.9.1.

³³¹ Parties’ response to the Issues Letter of 24 November 2022, paragraph 9.9.2.

³³² Parties’ response to the Issues Letter of 24 November 2022, paragraph 9.3.

³³³ Parties’ response to the Issues Letter of 24 November 2022, footnote 63. The Parties explained that, of the [X] passenger trains which remain to be retrofitted, [X] trains are likely to be retired and replaced over the next 10 years and [X] trains are already under contract to be retrofitted. This leaves [X] trains available in the next 10 years to be retrofitted.

³³⁴ The CMA has estimated the lower bound of this range (€105 million) by multiplying the total number of available passenger trains to be retrofitted by the average ETCS OBU unit price of €[X], as submitted by the Parties in footnote 37 of Annex Q14.001 to the FMN. The CMA has estimated the upper bound of this range (€400 million) by multiplying the total number of available passenger trains to be retrofitted by the average unit price of the UK retrofit ETCS OBU projects Thales has supplied in the UK [X]), as submitted by the Parties in Annex Q14.002 (V5) to the FMN. [X].

Rail has a share of [30-40]%, and when considering the supply of only external ETCS OBU projects in the UK, Hitachi Rail has a share of [20-30]%.³³⁵

353. Thales is a non-integrated supplier of ETCS OBU projects [§<] in the UK in the last 10 years. Considering the supply of all ETCS OBU projects in the UK, Thales has a market share of [0-10]%, and when considering the supply of only external ETCS OBU projects in the UK, Thales has a share of [0-10]%. When considering only tenders for the supply of retrofit ETCS OBU projects in the UK, Thales has a share of [10-20]%.³³⁶
354. The differences between the Parties also suggest they would be unlikely to compete more closely in future. While Hitachi Rail has competed in the last 10 years for the supply of external retrofit ETCS OBU projects in Europe, [§<]. While some evidence suggests that Hitachi Rail may be a credible competitor for retrofit ETCS OBU projects in the UK,³³⁷ the CMA understands that its lack of UK legacy expertise means Hitachi Rail's UK supply of ETCS OBU projects is therefore likely to remain primarily internal.
355. Consistent with the Parties' submissions, competitor³³⁸ and customer submissions³³⁹ indicated that retrofit ETCS OBU projects are almost always procured from the original supplier of the OBU or rolling stock as that supplier faces less interfacing risk when retrofitting a new ETCS OBU. Unlike Hitachi Rail, Thales, as a non-integrated supplier of ETCS OBUs, is therefore limited to competing for future retrofit projects for rolling stock without OBUs or where the original OEM is no longer in business. Moreover, Thales is also a small player in the UK market for retrofit ETCS OBU projects, having only won contracts to retrofit [§<] trains in the last 10 years.³⁴⁰
356. Additionally, the supply of ETCS OBU projects falls outside of the TCSF and these projects are instead procured individually by ROSCOs, TOCs, and rolling stock manufacturers. Accordingly, unlike for the other mainline signalling projects that will be procured under the TCSF, the CMA considers there are no particular circumstances which would enable either Thales, or Hitachi Rail, to significantly expand their current market presence or capabilities in the supply of ETCS OBU projects in the UK, including for retrofit projects.
357. Based on the available evidence, the CMA considers that the Parties are not close competitors in the supply of ETCS OBU projects in the UK. The CMA also

³³⁵ Annex Q.14.002 (V5), [§<], submitted by the Parties in response to the FMN.

³³⁶ Annex Q.14.002 (V5), [§<], submitted by the Parties in response to the FMN

³³⁷ Annex T.Q4.017, [§<], submitted by Thales in response to the CMA s109 of 8 September 2022, slide 10. See also third-party responses to CMA ETCS OBU questionnaire.

³³⁸ Third-party responses to CMA ETCS OBU questionnaire.

³³⁹ Third-party responses to CMA ETCS OBU questionnaire.

³⁴⁰ Parties' response to the Issues Letter of 24 November 2022, paragraph 9.3.

considers that on balance the Parties are unlikely to become closer competitors in relation to the supply of ETCS OBUs projects for retrofit in future.

Conclusion

358. For the above reasons, the CMA does not consider that there is a realistic prospect that the Merger will lead to a substantial lessening of competition in the supply of ETCS OBU projects in the UK.

Vertical effects in the supply of mainline signalling

359. Vertical effects may arise when a merger involves firms at different levels of the supply chain, ie an upstream firm and a downstream firm.³⁴¹ The concern with an input foreclosure theory of harm is that the merged entity may use its control of an important input to harm its downstream rivals' competitiveness, for example by refusing to supply the input (total foreclosure) or by increasing the price of the input supplied to them (partial foreclosure). This might then harm overall competition in the downstream market, to the detriment of customers. This may occur irrespective of whether the merger firms have a pre-existing commercial relationship.³⁴²

360. The CMA has considered whether the Merger gives rise to input foreclosure in relation to ETCS OBU projects.

TOH 7: Vertical effects in the supply of ETCS OBUs to mainline rolling stock manufacturers

361. Rolling stock manufacturers are responsible for offering a product which incorporates ETCS OBUs that can interoperate, inter alia, with the train control systems of the rolling stock (traction power, brakes, etc.). In this respect, ETCS OBUs are used as an input by rolling stock suppliers. As both Parties supply ETCS OBUs and Hitachi Rail is also a supplier of rolling stock, the CMA has considered whether the Merged Entity has the ability and incentive to foreclose Hitachi Rail's rivals in the supply of rolling stock by refusing to supply to them ETCS OBU projects (ie by increasing prices or imposing disadvantageous terms on customers sourcing ETCS OBU projects).

Parties' submissions

362. The Parties submitted that no foreclosure concerns can arise because the Merged Entity will not have the ability to foreclose mainline rolling stock competitors, for the following reasons:³⁴³

³⁴¹ [Merger Assessment Guidelines](#), paragraph 4.1.

³⁴² [Merger Assessment Guidelines](#), paragraph 7.9.

³⁴³ FMN (Chapter 3), paragraphs 19.34 and 19.35.

- (a) Thales has not [X] won any contracts for the supply of ETCS OBUs for new rolling stock over the last [X] years in the UK;
- (b) all suppliers of rolling stock that have participated in UK rolling stock tenders over the last 10 years can self-supply ETCS OBUs; and
- (c) the Merged Entity would face strong competition from market leaders Alstom and Siemens for the supply of ETCS OBU projects, either together with their rolling stock products, or on a standalone basis to rolling stock manufacturers.

363. As there would be no ability to foreclose rival rolling stock suppliers, the Parties consider it unnecessary for the CMA to assess the Merged Entity's incentive to engage in a foreclosure strategy.

- *CMA's assessment*

364. The CMA notes the Parties' submission that Thales has not [X] won any contracts for the supply of ETCS OBUs for new rolling stock over the last [X] years in the UK.

365. Thales' internal documents [X].³⁴⁴ Another Thales internal document [X].³⁴⁵

366. Additionally, rival rolling stock manufacturers responding to the CMA's market investigation confirmed that all rolling stock manufacturers currently active in the UK (namely Alstom, Siemens, Stadler and CAF) have the ability to self-supply ETCS OBU projects, although Stadler's ETCS OBU is not yet homologated in the UK.³⁴⁶

Conclusion

367. Given that Thales has not been active in the supply of ETCS OBUs for new rolling stock in the UK and the available evidence indicates there are limited opportunities for Thales to do so in future, the CMA does not consider that the Merger would afford Hitachi Rail the ability to foreclose rival rolling stock manufacturers.

368. For the above reasons, the CMA does not consider that the Merger gives rise to a realistic prospect of a substantial lessening of competition as a result of vertical effects in relation to ETCS OBUs to rolling stock manufacturers in the UK.

Urban rail signalling

369. The CMA has considered whether the Merger gives rise to horizontal unilateral effects in the supply of CBTC signalling projects signalling for metros.

³⁴⁴ Annex T.Q4.001, [X], submitted by Thales in response to the CMA s109 of 8 September 2022.

³⁴⁵ Annex T.Q4.014, [X], submitted by Thales in response to the CMA s109 of 8 September 2022, slide 6.

³⁴⁶ Third-party responses to the CMA Mainline Signalling Questionnaire; note of call with a third party.

370. The CMA has also assessed whether the Merger gives rise to conglomerate effects through the bundling of CBTC signalling projects and urban rolling stock.

Horizontal unilateral effects in the supply of urban signalling

TOH 8: Horizontal unilateral effects in the supply of CBTC signalling projects for metros

371. As noted in paragraph 130 the Parties overlap in the supply of CBTC signalling projects for metros in the UK, with Thales supplying CBTC signalling projects in London and Hitachi Rail supplying CBTC signalling projects in Glasgow.³⁴⁷ In terms of their past bidding behaviour, Thales [redacted], and Hitachi Rail has previously [redacted].
372. The CMA understands that future demand for CBTC signalling projects in the UK is likely to be driven by future projects in London,³⁴⁸ and as such has considered in particular suppliers' ability to compete for future London projects.
373. Similar to the approach in mainline signalling, the CMA has taken a forward-looking assessment to its assessment of the impact of the Merger in this market taking into account a range of evidence (and not just evidence of historical market performance). The CMA has considered the Parties' submissions, consideration of prior bidders to UK tenders for CBTC signalling projects, references obtained by suppliers from past tenders for CBTC signalling projects in the UK and in other cities across the world, internal documents, and third-party submissions.

Closeness of competition

Parties' submissions

374. The Parties submitted that they are not close competitors in relation to CBTC signalling projects for metros, as they have fundamentally different profiles.³⁴⁹
375. The Parties submitted that, in the last [redacted] years, Thales has only won tenders for CBTC signalling projects in London [redacted], while, over the same period, Hitachi Rail has not won any tenders in London and [redacted]. In the Parties' view, Hitachi Rail [redacted].³⁵⁰

³⁴⁷ As set out at paragraph 131 below, Tyne and Wear metro operates using mainline signalling systems and is therefore not considered in this section as a potential customer for CBTC signalling.

³⁴⁸ Strathclyde Partnership for Transport (SPT) entered into a contract in 2016 for the supply of an integrated system of rolling stock, a signalling system, an operational control centre, platform screen doors and depot equipment. When the integrated system becomes operational, it will have a lifespan in excess of 30 years. SPT will not be seeking to purchase a CBTC signalling system for the Glasgow Subway for some decades. Email from the Strathclyde Public Transport Authority, dated 8 December 2022.

³⁴⁹ Parties' response to the Issues Letter of 24 November 2022, paragraph 11.4.

³⁵⁰ Parties' response to the Issues Letter of 24 November 2022, paragraph 11.7.

376. Hitachi Rail submitted that, due to the specific characteristics of the London metro system,³⁵¹ [X].³⁵² More specifically, Hitachi Rail submitted that it [X].³⁵³ Hitachi Rail also submitted that [X].³⁵⁴ Furthermore, Hitachi Rail noted that London tenders require suppliers to demonstrate previous experience of delivering projects for the London Underground or other similar high-capacity metros [X].
377. Further, the Parties submitted that they have competed against one another far less frequently Europe-wide, compared to their competitive interactions in the UK.
378. In response to the Issues Letter, the Parties submitted that [X] is not indicative of the Parties being close competitors for CBTC signalling projects. This is because the tender was a bundled tender for rolling stock and the CBTC signalling project and, as [X]% of the overall value of the project related to rolling stock, the CBTC signalling project was not the main driver of competition.³⁵⁵ The Parties further submitted that Hitachi Rail's supply of CBTC signalling for the Glasgow project cannot be considered a strong reference for London CBTC signalling projects. This is because, despite the project being comparatively simple, [X].³⁵⁶
379. The Parties submitted that it was not possible to draw reliable conclusions from the UK market shares because they are based on a very small number of tenders.³⁵⁷ The Parties submitted that market shares are distorted by the inclusion of a very large tender that Thales won in 2015, the 4LM project, which was valued at €[X]. The Parties made the same argument with regards to market shares across Europe over the same 10-year period (ie that these are also skewed by the inclusion of the 4LM project). According to the Parties, this represents approximately [X] of the total value of tenders across Europe for the 2012-2021 period.³⁵⁸ In the Parties' view, Thales' success in winning the 4LM contract is not indicative of Thales' market power more broadly [X], and because Thales has a win rate of [X]% when considering European tenders between 2012-2021.³⁵⁹

³⁵¹ The Parties submitted that the London metro system has specific time constraints and is one of the busiest metro systems in the world. Most tube lines operate 17 or 18 hours a day, and certain lines operate a 24-hour service on Friday and Saturdays, leaving a very small window for works to be carried out. According to the Parties, a CBTC signalling supplier therefore needs to be confident of its ability to deliver a project within these constraints. The Parties submitted that a supplier without relevant experience in London or other similar high-capacity metro systems can find it difficult to appropriately factor in costs and risk involved in delivering such projects in their bids. The Parties also submitted that contracts for CBTC signalling projects also often have clauses for liquidated damages for failure to deliver within a certain time, which increases the risks to bidding for such contracts. FMN (Chapter 2), paragraphs 14.28-14.29.

³⁵² FMN (Chapter 2), paragraphs 14.14-14.25 and 14.28-14.31.

³⁵³ FMN (Chapter 2), paragraph 14.27.

³⁵⁴ FMN (Chapter 2), paragraph 14.30.

³⁵⁵ Parties' response to the Issues Letter of 24 November 2022, paragraph 11.10.

³⁵⁶ Parties' response to the Issues Letter of 24 November 2022, paragraph 11.16.

³⁵⁷ FMN (Chapter 2), paragraph 14.18.

³⁵⁸ FMN (Chapter 2), paragraph 14.12.

³⁵⁹ FMN (Chapter 2), paragraph 14.12.

380. The Parties submitted that the Parties' combined share was considerably lower when considered across the wider geographic market of Europe and over a shorter period, ie for the period 2017-2021. Over this period, the Parties' combined share for all tenders was [0-10]% and [0-10]% for contestable tenders.

- *CMA's assessment*

381. As regards past UK tenders for CBTC signalling projects for metros, there have been five contestable tenders between 2012 and 2021 (four of which were completed and one of which was cancelled). These are as follows:³⁶⁰

- (a) **Crossrail (2012)**. The Crossrail tender was a greenfield project relating to the signalling of the newly constructed Elizabeth line, organised by Crossrail Limited (a wholly owned subsidiary of TfL). Alstom, Siemens, and Thales participated in this tender, and it was ultimately won by Siemens.
- (b) **4LM project (2015)**. The 4LM project was the re-tender of the cancelled SSR tender, organised by London Underground Limited (a wholly owned subsidiary of TfL).³⁶¹ Thales, Siemens, and Alstom participated in the tender, and it was ultimately won by Thales.³⁶²
- (c) **Stansted Airport People Mover tender (2015)**. The Stansted Airport People Mover tender related to the transit system that conveys air passengers between Stansted Airport's main airport terminal and the departure/arrival gates, organised by London Stansted Airport. The tender was awarded to Alstom, with no other suppliers submitting a bid.
- (d) **Glasgow (2016)**. The Glasgow subway tender, organised by the Strathclyde Partnership for Transport, related to the supply of rolling stock and CBTC signalling projects for the Glasgow subway. As detailed below, the Parties' internal documents [redacted]. The tender was awarded to Hitachi Rail.³⁶³
- (e) **Deep Tube Upgrade Programme (2017)**. The Deep Tube Upgrade Programme aimed to replace trains and signalling systems across the Piccadilly, Bakerloo, Central, and Waterloo & City lines, and was organised by London Underground Limited. The project was cancelled due to funding

³⁶⁰ This summary draws on FMN (Chapter 2), Table 2, paragraph 15.2, and Appendix 2.

³⁶¹ The sub surface re-signalling (SSR) project was a brownfield project to modernise the Circle, District, Hammersmith & City and Metropolitan lines, organised by TfL in 2011. Alstom, Siemens, Thales, and Hitachi Rail participated in the tender, [redacted]. Alstom and Siemens were subsequently shortlisted, and the tender was ultimately won by Alstom. The tender was cancelled following material delays in project delivery and was re-tendered as the 4LM project in 2015.

³⁶² Annex Q14.002 (V5), [redacted], submitted in response to the FMN.

³⁶³ Annex H.109.Q8.005, [redacted], submitted by Hitachi in response to the CMA s109 of 8 September 2022.

constraints but is expected to be re-tendered in the future.³⁶⁴ [X] participated in the tender, [X].

382. Thales participated in the majority of [X] London CBTC tenders between 2012-2021 ([X], 4LM, and the [X]). As set out above, Thales was successful in winning the 4LM project. Thales has also been the supplier for all the [X] tenders in London during this period (the Northern Line project in 2016 and two DLR projects in 2019).^{365, 366} Cumulatively, these successes have resulted in Thales having a significant presence in London. The CMA understands that, once the signalling for the 4LM project is completed, Thales will signal roughly [X]% of TfL's network on the London Underground and the DLR.³⁶⁷ [X].
383. Hitachi Rail [X] of the four contestable London tenders held in the last 10 years, ie the [X] and also the tender for the Glasgow metro system. Hitachi Rail won the Glasgow tender but [X]. Hitachi Rail submitted it [X]³⁶⁸ [X].³⁶⁹ This suggests that in future, Hitachi Rail may be better placed to bid for and win contracts in London than it has been historically.³⁷⁰
384. Hitachi Rail has experience in supplying CBTC signalling projects for metros outside the UK, including for metro systems in Brussels, Copenhagen, Paris, Thessaloniki, Ho Chi Minh City, Taipei City and San Francisco (ie the Bay Area Rapid Transport (**BART**) contract, valued at US\$798m).^{371, 372} As discussed in paragraph 409 below, Hitachi Rail is one of only four competitors with strong existing capabilities in the supply of CBTC signalling projects for metros.
385. The Parties submitted market shares on several different bases, including by different types of tenders (all tenders, contestable tenders, and tenders with more than one bidder); for different periods (10 and 5-year period covering 2012-2021

³⁶⁴ As the tender was cancelled, the Deep Tube Upgrade is not included in the shares of supply submitted by the Parties.

³⁶⁵ Note of call with a third party.

³⁶⁶ The Northern Line project related to the extension to the existing signalling system, which involved adding two stations to the end of the existing Northern Line. The DLR Projects relate to upgrades to the existing signalling system to accommodate new rolling stock (ie on-board control systems will be integrated onto 43 new trains, which will be further supported by signalling system upgrades to the software subsystems).

³⁶⁷ Note of call with a third party.

³⁶⁸ FMN (Chapter 2), footnote 309.

³⁶⁹ Hitachi Rail acquired control over Ansaldo STS (active in the design and production of signalling systems and products, for both urban and mainline signalling) and AnsaldoBreda (active in the manufacture and supply of rolling stock, including high-speed, mainline, and urban rolling stock) in 2015, with outstanding shares in Ansaldo STS subsequently acquired overtime, concluding in 2019. See Parties' response to CMA RFI of 6 September, question 4.

³⁷⁰ The Parties also submit that the Parties are not close competitors because, Thales, as a non-integrated player, may perceive a disadvantage in competing for bundled tenders for CBTC and metro rolling stock (FMN (Chapter 2), paragraph 14.41). The CMA does not currently consider that this argument is well evidenced, given that [X].

³⁷¹ [Hitachi Rail Website](#).

³⁷² FMN (Chapter 2), paragraph 14.30; Parties' response to the CMA's Issues Letter dated 24 November 2022, footnote 96.

and 2017-2021 respectively); and for different geographic markets (Europe, and UK-wide). These shares are detailed in and below.

Table 2: CBTC shares of supply by revenue, in the UK

Supplier	2012-2021		2017-2021	
	Value (€m)	%	Value (€m)	%
Hitachi Rail	[<]	[0-10]	[<]	[0-10]
Thales	[<]	[90-100]	[<]	[90-100]
Combined	[<]	[90-100]	[<]	[90-100]
Siemens	[<]	[0-10]	[<]	[0-10]
Alstom-Bombardier	[<]	[0-10]	[<]	[0-10]
Total	[<]	100	[<]	100

Source: The Parties' analysis of the consolidated database based on Thales' and Hitachi Rail's project lists. Shares of supply based on total value of order intake.

Table 3: CBTC shares of supply by revenue, in Europe

Supplier	2012-2021		2017-2021	
	Value (€m)	%	Value (€m)	%
Hitachi Rail	[<]	[0-10]	[<]	[0-10]
Thales	[<]	[30-40]	[<]	[0-10]
Combined	[<]	[40-50]	[<]	[0-10]
Siemens	[<]	[30-40]	[<]	[50-60]
Alstom-Bombardier	[<]	[20-30]	[<]	[30-40]
CAF	[<]	[0-10]	[<]	[0-10]
Total	[<]	100	[<]	100

Source: The Parties' analysis of the consolidated database based on Thales' and Hitachi Rail's project lists. Shares of supply based on total value of order intake.

386. Table 2 above sets out the Parties' and their competitors' UK shares of supply by revenue between 2012-2021 and 2017-2021. Based on the Parties' estimates, they

are each two of only four suppliers who have won contracts for CBTC signalling projects for metros in the past 10 years in the UK, ie the Parties, Siemens, and Alstom. The Parties have a very high combined market share of [90-100]% across all tenders for the period 2012-2021, with an increment of [0-10]%. The CMA notes that there have been no relevant UK tenders in the past five years (ie during the period 2017-2021).

387. 3 sets out the Parties' and their competitors' European shares of supply by revenue between 2012-2021 and 2017-2021. For the 2012-2021 period, the Parties have a combined share of supply by revenue of [40-50]%, with an increment of [0-10]%. They are followed by Siemens ([30-40]%), Alstom ([20-30]%) and CAF ([0-10]%). For the 2017-2021 period, the Parties have a [X] combined share of supply by revenue of [0-10]%. Siemens has the largest share at [50-60]%, and Alstom the second largest at [40-50]%.
388. For the reasons set out in paragraphs 135 to 141, the CMA considers the correct geographic frame of reference is the UK. In any event, even if European shares of supply are considered, the CMA considers shares of supply calculated over a 10-year basis will be more informative than those calculated over a five-year basis. This is because the shares calculated over the 2017-2021 period are based on a small number of observations, which make the resulting shares lumpy. Therefore, in the context of CBTC signalling projects for metros, considering market shares over a longer period is more informative.
389. The Parties' internal documents further demonstrate Thales' strength in London:
- (a) A Thales' internal document [X] (please see further paragraph 390 below).³⁷³ [X].
 - (b) Additionally, another Thales' internal document [X].³⁷⁴ [X].
390. Internal documents submitted by the Parties also identify Hitachi Rail as a competitor in the supply of CBTC signalling projects, including in London:
- (a) The Thales' document referenced at paragraph 389 above relating to the [X] recognises both Ansaldo³⁷⁵ and Hitachi Rail as competitors (in addition to Siemens and Alstom).³⁷⁶ [X], the CMA considers that Hitachi Rail has improved its CBTC offering since 2014, including through the acquisition of Ansaldo, [X].³⁷⁷

³⁷³ Annex T.U.Q16.001, [X], submitted by Thales in response to FMN, slides 7, 10, and 14.

³⁷⁴ M.10507 – Annex PNRFI2_Q18.3 – [X], slides 8 and 10.

³⁷⁵ As noted at paragraph 383 above, Ansaldo was acquired by Hitachi Rail in 2015.

³⁷⁶ Annex T.U.Q16.001, [X], submitted by Thales in response to FMN, slides 7, 10 and 14.

³⁷⁷ The Parties' response to the CMA's Issues Letter dated 24 November 2022, Annex 1.

- (b) The Thales' internal document referenced at paragraph 387 above also identifies Hitachi Rail as a competitor in the supply of CBTC signalling projects for metros on a global basis.³⁷⁸ [REDACTED],³⁷⁹ [REDACTED]. The CMA considers this success indicates that Hitachi Rail is progressing towards the development of a portfolio of global references that could allow it to compete more strongly for CBTC signalling projects for metros in London in future (see paragraph 384 above for other global references currently held by Hitachi Rail).
- (c) Separately, a Thales' internal document [REDACTED].³⁸⁰ While the CMA notes the Parties' submissions that the Glasgow contract is not an appropriate reference for London, [REDACTED].^{381, 382}

391. TfL told the CMA that both Thales and Hitachi Rail can reference sites globally where it has deployed relevant systems and can therefore demonstrate signalling solutions in a rail environment.³⁸³

392. The CMA asked competitors to rank suppliers in CBTC signalling projects for metros (i) in London and (ii) in the UK excluding London. Competitors mentioned both Thales and Hitachi Rail, in particular:

(a) Thales was mentioned by all respondents within London and received an average score of 5 (out of 5 where 1 is very weak and 5 is very strong). Outside of London, Thales was also mentioned by all respondents and received an average score of 4.7.³⁸⁴

(b) Hitachi Rail was mentioned by most respondents within London and received an average score of 2 (out of 5 where 1 is very weak and 5 is very strong). Outside of London, Hitachi Rail was also mentioned by most respondents and received an average score of 3.5.³⁸⁵

393. The CMA considers that the evidence above shows that Thales is a strong incumbent supplier of CBTC signalling projects for metros in the UK, particularly in London. Given the scale of the 4LM tender, Thales' success in being awarded this project has had a material effect on Thales' UK, and European share in the supply of CBTC signalling projects for metros. However, the CMA considers that Thales' high share is consistent with the other evidence (including internal documents and third-party submissions) which suggests that Thales is, in light of its position in

³⁷⁸ M.10507 – Annex PNRFI2_Q18.3 – [REDACTED], slide 8, 10.

³⁷⁹ [Hitachi Wins CBTC System Contract in California | Railway-News](#)

³⁸⁰ Annex T.U.Q15.001, [REDACTED], submitted by Thales in response to the FMN.

³⁸¹ Annex H.109.Q8.005, [REDACTED], submitted by Hitachi in response to the CMA s109 notice of 8 September 2022, [REDACTED].

³⁸² Annex H.109.Q8.003, [REDACTED], submitted by Hitachi in response to the CMA s109 notice of 8 September 2022.

³⁸³ As well as Siemens and Alstom. TfL response to CMA RFI of 14 November 2022.

³⁸⁴ Third-party responses to CMA's Urban Rail Signalling questionnaire, question 4.

³⁸⁵ Third-party responses to CMA's Urban Rail Signalling questionnaire, question 4.

London, a strong incumbent supplier of CBTC signalling projects for metros in the UK. Given that future demand in the UK is likely to be driven by projects in London, the CMA considers that Thales will continue to be a strong competitor in the supply of CBTC signalling projects for metros in the UK.

394. The CMA considers that the shares also demonstrate that Hitachi Rail has successfully competed in the UK, although its presence to date has been more limited. The CMA also considers that the evidence suggests that Hitachi Rail is considered a credible supplier in CBTC signalling projects for metros. While some evidence, such as the internal document described at paragraph 390, suggests that Hitachi Rail has historically been a relatively weaker competitor, the CMA notes that Hitachi Rail is likely to have become stronger as regards the supply of CBTC signalling projects for metros. Moreover, Hitachi Rail remains one of only a few competitors (as discussed further at paragraphs 395 to 409 below) with strong existing capabilities in the supply of CBTC signalling projects for metros. The evidence also indicates that Hitachi Rail is developing a portfolio of global references and is therefore likely to compete more closely with Thales for London projects in future.

Competitive constraints from alternative suppliers

- *Parties' submissions*

395. [REDACTED].³⁸⁶

396. The Parties also submitted that they are both small players in the supply of CBTC signalling projects for metros. Over the last five years in Europe, Hitachi and Thales have only had a [0-10]% and [0-10]% share of supply for all tenders respectively, and [0-10]% and [0-10]% share of supply for contestable tenders respectively. Siemens and Alstom are instead the market leaders and by a significant margin, with shares of supply exceeding [50-60]% and [40-50]% respectively both in relation to all tenders and contestable tenders.³⁸⁷

397. Finally, the Parties submitted that CAF is a new entrant in the supply of CBTC.³⁸⁸ In addition, in response to the Issues Letter, the Parties submitted that Chinese competitors CRSC and CRRC are well placed and eager to enter the European market, including the UK, for CBTC signalling projects for metros in the future, as they grow their capabilities and price competitively.^{389, 390}

³⁸⁶ FMN (Chapter 2), paragraphs 14.7-14.14.

³⁸⁷ FMN (Chapter 2), paragraph 14.7.

³⁸⁸ FMN (Chapter 2), paragraph 15.2.5.

³⁸⁹ Parties' response to the Issues Letter of 24 November 2022, paragraph 11.22.

³⁹⁰ According to the Parties, CRSC is the leading Chinese rail signalling OEM, which has developed a CBTC solution and is present across Asia and the United States, and in 2019 developed an ETCS-2 laboratory in

- *CMA's assessment*

- *Siemens and Alstom*

398. Siemens and Alstom are the only other suppliers (excluding the Parties) of CBTC signalling projects for metros currently present in the UK. As regards past tenders, Siemens has been successful in winning the Crossrail tender in London and Alstom won the Stansted Airport People Mover tender (see paragraph 381 above). As regards Siemens' and Alstom's participation in past tenders, Siemens and Alstom bid in [redacted] the contestable tenders that Hitachi Rail participated in. [redacted].

399. As indicated by the shares of supply set out above, Siemens and Alstom each hold a significantly lower share than Thales in the UK. Specifically, Siemens has a share of [0-10]% and Alstom has a share of [0-10]%.

400. [redacted]. For example, [redacted].³⁹¹ The Thales' internal document [redacted].³⁹²

401. TfL told the CMA that Siemens and Alstom can both reference sites globally where they have deployed relevant systems and can therefore demonstrate signalling solutions in a rail environment.³⁹³

402. As set out in paragraph 392 above, the CMA asked competitors to rank suppliers in CBTC signalling projects for metros (i) in London and (ii) in the UK excluding London. Competitors that responded to the CMA's phase 1 investigation identified Siemens and Alstom as competitors:

(a) For London tenders, Siemens was mentioned by one respondent and received an average score of 3 out of 5 (where 1 is very weak and 5 is very strong) and Alstom was recognised by one respondent and received an average score of 3.³⁹⁴

(b) For tenders outside of London, Siemens was also mentioned by one respondent and received an average score of 2 out of 5, and Alstom was mentioned by one competitor and received an average score of 4 out of 5.³⁹⁵

- *Other suppliers*

403. The evidence gathered by the CMA throughout its phase 1 investigation indicates that no suppliers other the Parties, Siemens, and Alstom supply CBTC signalling

Serbia; while CRRC is a Chinese rolling stock and signalling OEM that has developed its own CBTC solution.

³⁹¹ Annex H.109.Q6.001, [redacted], submitted by Hitachi in response to the CMA s109 notice of 8 September 2022, slide 13.

³⁹² Annex T.U.Q16.001, [redacted], submitted by Thales in response to FMN, slide 20.

³⁹³ As well as Thales, Siemens and Alstom. TfL response to CMA RFI of 14 November 2022.

³⁹⁴ Third-party responses to CMA's Urban Rail Signalling questionnaire, question 4.

³⁹⁵ Third-party responses to CMA's Urban Rail Signalling questionnaire, question 4.

projects for metro in the UK. According to the Parties' tender analysis, no other supplier has participated in tenders in Europe between 2012 and 2021.

404. The Parties' internal documents considering competitors for UK CBTC signalling projects for metro tenders also do not identify any competitors other than the Parties, Siemens, and Alstom. Moreover, the Thales' internal document [redacted].³⁹⁶ The CMA notes, in this regard, that London is a brownfield market for CBTC signalling projects for metros.
405. Consistent with this position, one customer told the CMA that there has been consolidation in the market and that there are currently few CBTC signalling projects for metros suppliers that can bid for future tenders.³⁹⁷
406. One UK customer mentioned TSTS³⁹⁸ as a potential bidder for CBTC signalling projects for metros.³⁹⁹ However, this company was not mentioned by the competitors that responded to the CMA's questionnaires, nor was it mentioned in the Parties' own internal documents.
407. As regards CAF, the CMA notes that this supplier has no current presence in the supply of CBTC signalling projects for metros in the UK, [redacted].⁴⁰⁰ Further, no third parties responding to the CMA's phase 1 investigation identified CAF as a competitor for CBTC signalling projects for metros in the UK. In addition to this, CAF is not recognised in the Parties' own internal documents as a competitor for any CBTC signalling projects for metros in the UK. The CMA therefore does not consider that CAF exerts a material competitive constraint on the Parties as regards the supply of CBTC signalling projects for metros in the UK.
408. As such and despite the Parties' submissions noted in paragraphs 395 to 397 the CMA does not consider the evidence supportive of any supplier outside of the Parties, Siemens and Alstom competing to supply CBTC signalling projects for metros in the UK.

Conclusion

409. In view of the evidence noted above, the CMA considers that the Parties are close competitors in the supply of CBTC signalling projects for metros in the UK. Thales is the largest provider of CBTC signalling projects for TfL services, with very few rivals and is likely to continue to compete strongly in future, particularly as future UK demand is likely to be driven by demand in London. While Hitachi Rail has been a weaker competitor to date in London, it is an established player globally and is well

³⁹⁶ M.10507 – Annex PNRFI2_Q18.3 – [redacted], slides 4, 8 and 10.

³⁹⁷ Note of call with a third party.

³⁹⁸ Please see [Welcome to TSTS](#).

³⁹⁹ Third-party response to CMA RFI.

⁴⁰⁰ The tender analysis submitted by the Parties shows that [redacted]. Annex Q14.002 (V5), Updated Bidding Data Shares of supply and CPLs (10246491266.1), submitted in response to the FMN.

placed to be a strong and close competitor to Thales in the UK in future as it continues to develop its experience and global portfolio of references.

410. Post-Merger, while both Siemens and Alstom are likely to remain credible competitors for CBTC signalling projects for metros in the UK, the CMA considers it unlikely that any other competitor would constrain the Merged Entity.
411. For the above reasons, the CMA considers that there is a realistic prospect that the Merger will lead to a substantial lessening of competition in the supply of CBTC signalling projects for metros in the UK.

Conglomerate effects in the supply of urban signalling

412. Conglomerate effects may arise in mergers of firms that are active in the supply of goods or services that do not form part of the same market but which are nevertheless related in some way.
413. A common concern is that conglomerate mergers may result in the foreclosure of current or potential rivals – that the merged entity will be able to use its strong position in one market (the adjacent market) to exclude rivals in another (the focal market).
414. This loss of sales by competitors is not problematic in and of itself, and linked sales of related products can result in efficiencies. However, competition concerns may arise if such a strategy would result in rivals in the focal market becoming less effective competitors (eg by denying entrants growth opportunities), which may result in higher prices or lower quality in the longer term.

TOH 9: Bundling of CBTC signalling projects and urban rolling stock

415. The CMA has assessed whether the Merged Entity could foreclose Hitachi Rail's rivals in the supply of urban rolling stock by engaging in commercial bundling of Thales' CBTC signalling solution for metros with Hitachi Rail's urban rolling stock.⁴⁰¹ The CMA considered the following conditions to assess the Merged Entity's ability to foreclose rival rolling stock suppliers using a bundled strategy: (i) the importance of Thales' CBTC signalling projects for metros for UK customers; (ii) the attractiveness to UK customers of an offer that would comprise of Hitachi Rail's urban rolling stock and Thales' CBTC signalling projects; and (iii) the frequency of such bundled tenders.

⁴⁰¹ The CMA has also considered whether the Merged Entity could foreclose Hitachi Rail's rivals in the supply of metros by refusing to grant CBTC signalling components, such as on-board units. The Parties submitted they generally do not sell on-board units on a standalone basis to competing urban rolling stock manufacturers in Europe. The Parties further submitted they have not supplied such products in the UK between 2012 and 2021, except one occasion. [3<]. The CMA has not considered this issue further in the Decision.

- *Parties' submissions*

416. The Parties submitted the Merged Entity will not have the ability to foreclose competitors in the supply of urban rolling stock or harm customers for the following main reasons:⁴⁰²

- (a) Hitachi Rail [X] urban rolling stock in the UK in the last 10 years.⁴⁰³
- (b) CBTC signalling projects for metros accounts only for a minor share of the total spending for bundled projects that include urban rolling stock and CBTC signalling projects.⁴⁰⁴ The Parties further noted that customers primarily focus on the pricing and characteristics of the main product, ie the urban rolling stock, and therefore the Merged Entity would not have the ability to leverage its position in the CBTC market to increase its position in the urban rolling stock market.
- (c) Customers do not usually bundle CBTC signalling projects with urban rolling stock. The Parties submitted that [X] out of a total of [X] tenders for CBTC signalling projects have been bundled with urban rolling stock in the last 10 years.
- (d) Siemens and Alstom are the two largest suppliers of rolling stock and strong providers of CBTC signalling projects for metros and they can replicate the potential bundles that would be offered by the Merged Entity.
- (e) Customers such as TfL have buyer power and can use contractual mechanisms to ensure that suppliers of CBTC signalling projects cooperate with rolling stock suppliers and can require suppliers of CBTC signalling projects to provide CBTC solutions directly to the supplier of rolling stock.⁴⁰⁵

- *CMA's assessment*

417. As set out above in paragraphs 371 to 411, the CMA notes that the only metro system in the UK that could still upgrade to CBTC signalling is the London metro system. In this context, the CMA notes that TfL has procured CBTC signalling projects separately from urban rolling stock in the last 10 years.

418. As outlined in paragraph 382, the CMA understands Thales provides CBTC signalling projects for [X] of the London metro system⁴⁰⁶ and therefore believes

⁴⁰² FMN (Chapter 3), paragraphs 20.38, 20.39, 20.41, 20.42, 20.47-20.49 and 20.60. The Parties also submitted that on a European basis, Hitachi Rail's share of supply is below [0-10]%.
⁴⁰³ FMN (Chapter 3), Tables 8-9.

⁴⁰⁴ The Parties submitted that for the Glasgow project the urban rolling stock accounted for approximately [X] whereas the CBTC signalling for approximately [X] (FMN, paragraph 20.41).

⁴⁰⁵ According to the Parties, when TfL launched a tender in 2019 to procure new rolling stock for the DLR which would operate with the existing CBTC system (which is provided by Thales), [X].

⁴⁰⁶ Note of call with a third party.

that Thales' CBTC signalling solution is valuable to TfL. In addition, while Thales appears to be an important supplier of CBTC signalling projects for TfL, Hitachi Rail [§<]. The CMA further notes that Hitachi Rail partnered with Stadler for the delivery of urban rolling stock when bidding for the Glasgow project and did not offer a bundled solution using its own products. According to the Parties, [§<].⁴⁰⁷

419. Finally, while the CMA understands that most of the CBTC signalling projects for metro tenders in the UK are not bundled with urban rolling stock, the CMA considered on a cautious basis whether that is the case as well within the EEA.⁴⁰⁸
420. Third-party feedback confirms the Parties' submissions that most of the CBTC signalling projects for metros tenders in Europe are not bundled with urban rolling stock. Competitors noted that a wide majority of the tenders carried out in the last 10 years have not been bundled. Similarly, most of the future tenders that respondents are aware of will relate only to CBTC signalling projects for metros. The evidence also indicates that at least one vertically integrated CBTC signalling supplier has partnered with other urban rolling stock providers in order to submit a tender.
421. On this basis, the CMA considers that the Merged Entity does not have the ability to foreclose Hitachi Rail's rivals in urban rolling stock. In particular, the CMA understands that customers across Europe and UK tend to procure CBTC signalling projects for metros separately from urban rolling stock and that this approach will not change in the future.

Conclusion

422. For the reasons set out above, the CMA does not consider that the Merger gives rise to a realistic prospect of a substantial lessening of competition as a result of conglomerate effects in relation to CBTC signalling projects for metros in the UK.

BARRIERS TO ENTRY AND EXPANSION

423. Entry, or expansion of existing firms, can mitigate the initial effect of a merger on competition, and in some cases may mean that there is no SLC. In assessing whether entry or expansion might prevent an SLC, the CMA considers whether such entry or expansion would be timely, likely, and sufficient.⁴⁰⁹

Parties' submissions

424. The Parties submitted that new players have been entering the market for both mainline and urban signalling solutions, noting Stadler and CAF as two recent

⁴⁰⁷ FMN (Chapter 3), paragraph 20.67.

⁴⁰⁸ Third-party responses to CMA RFI of 31 October 2022.

⁴⁰⁹ [Merger Assessment Guidelines \(CMA129\)](#), March 2021, from paragraph 8.40.

competitors in Europe.⁴¹⁰ The Parties also submitted that Chinese companies are expected to expand into European rail infrastructure markets in the coming years to utilise their spare capacity, such as CRSC and CRRC.

425. The Parties further submitted that:

- (a) Investments to develop required solutions in response to a tender do not constitute a significant barrier to entry because the scale and frequency of projects enable suppliers to recoup R&D efforts across several projects. Furthermore, the Parties submit that Network Rail has recently indicated that it may reimburse parts of supplier development costs in relation to the TCSF.
- (b) Technical standards at European and national levels do not present a barrier to entry/expansion, as homologation is not a prerequisite to participating in a bid and homologation costs are typically factored into the price of a project.
- (c) Customer references that are typically requested by customers do not constitute a decisive selection criterion in selecting the winning bidder.

CMA's assessment

426. The evidence received by the CMA in the investigation does not indicate that entry or expansion will be timely, likely, or sufficient to mitigate any SLC arising.

427. The CMA has already taken into account recent and potential entry in the theory of harm sections set out above. The CMA considers that neither Stadler nor CAF are likely to exercise a sufficient constraint to prevent an SLC. Furthermore, third parties identified CRSC only as a weak potential competitor in relation to CBTC signalling projects for metros, while CRRC was not identified as a potential competitor at all.

428. Further evidence in relation to barriers to entry and expansion specific to mainline signalling and urban signalling is set out below.

Mainline signalling

429. Most competitors responding to the CMA's market investigation identified barriers to entry and expansion in relation to mainline signalling in the UK.⁴¹¹ Two competitors referred to the need to develop a solution that meets UK specific requirements and that complies with Network Rail's approval process. Two competitors noted uncertainty in relation to the volume of work that may be won by participating in a

⁴¹⁰ The Parties submitted that Stadler has recently developed its own in-house ETCS solution in 2019 which is in use in several European countries and is growing as a CBTC signalling provider outside the UK, such as in the US and Switzerland. The Parties submitted that CAF is already a supplier in mainline signalling and has recently developed its own CBTC technology that it successfully integrated with third-party technology to deliver a signalling solution to the Bilbao metro.

⁴¹¹ Third-party responses to the CMA's Competitor Mainline signalling questionnaire.

tender which makes it difficult for a supplier to guarantee being able to recoup the investments required to enter the UK market. Competitors also explained that there are specific barriers to supplying projects relating to certain mainline signalling subsystems, with one competitor noting ATP wayside projects because they require complex interfacing and another competitor noting OCS projects because these require certain commercial references.

430. The ORR Market Study has also identified a number of significant barriers to entry and expansion. ORR's recommendations seek to lower the barriers to entry and expansion identified and within that context the TCSF will include five suppliers. The CMA has discussed the scope for entry and expansion for third parties both in relation to the TCSF and in the competitive assessment for each theory of harm separately.
431. In light of the above, the CMA does not believe that entry or expansion will be timely, likely, or sufficient to mitigate the competition concerns arising as a result of the Merger in relation to mainline signalling.

Urban signalling

432. With regard to urban signalling, one competitor in response to the CMA phase 1 investigation told the CMA that barriers to entry are high. Signalling projects for metro lines require high safety requirements and developing such solutions requires high investments in terms of time and capital. Furthermore, in order to enter the UK market, a supplier needs commercial references that demonstrate its CBTC solution has been deployed successfully on an equivalent metro line.
433. Furthermore, the Parties have acknowledged (as set out in footnote 351 above) that supplying CBTC signalling projects for the London metro system requires specific expertise given that it is one of busiest metro systems in the world.
434. In light of the above, the CMA does not believe that entry or expansion will be timely, likely, or sufficient to mitigate the competition concerns arising as a result of the Merger in relation to urban signalling.

COUNTERVAILING BUYER POWER

435. The Parties submitted that customers in mainline rail and urban signalling segments hold significant buyer power. According to the Parties, customers have significant procurement experience and are highly cost sensitive. The Parties further submitted that customers can encourage new entrants or support specific suppliers, by suggesting consortia, incentivising product development, offering to share risks associated with supplying a new project, and offering large framework contract agreements covering large orders over a long period of time rather than fragmented, smaller, contracts.

436. As set out in the CMA's Merger Assessment Guidelines, most forms of buyer power do not result in new entry – for example, buyer power based on a customer's size, sophistication, or ability to switch easily – and are unlikely to prevent an SLC that would otherwise arise from the elimination of competition between merger firms. This is because a customer's buyer power depends on the availability of good alternatives they can switch to, which in the context of an SLC will have been reduced.⁴¹² Therefore, given the CMA's findings that there will be insufficient alternatives to constrain the Merged Entity, the CMA does not consider that customers will be able to exert buyer power to prevent an SLC arising.

THIRD PARTY VIEWS

437. The CMA contacted customers and competitors of the Parties in mainline and urban signalling, as well as ORR and DfT. Third-party comments have been taken into account where appropriate in the competitive assessment above.

CONCLUSION ON SUBSTANTIAL LESSENING OF COMPETITION

438. Based on the evidence set out above, the CMA believes that it is or may be the case that the Merger may be expected to result in an SLC as a result of:

- (a) horizontal unilateral effects in the supply of ETCS ATP wayside re-signalling projects in the UK;
- (b) horizontal unilateral effects in the supply of OCS projects in the UK; and
- (c) horizontal unilateral effects in the supply of CBTC signalling projects for metros in the UK.

⁴¹² Merger Assessment Guidelines, paragraph 4.20.

DECISION

439. Consequently, the CMA believes that it is or may be the case that (i) arrangements are in progress or in contemplation which, if carried into effect, will result in the creation of a relevant merger situation; and (ii) the creation of that situation may be expected to result in an SLC within a market or markets in the United Kingdom.
440. The CMA therefore believes that it is under a duty to refer under section 33(1) of the Act. However, the duty to refer is not exercised while the CMA is considering whether to accept undertakings under section 73 of the Act instead of making such a reference.⁴¹³ The Parties have until 16 December 2022⁴¹⁴ to offer an undertaking to the CMA.⁴¹⁵ The CMA will refer the Merger for a phase 2 investigation⁴¹⁶ if the Parties do not offer an undertaking by this date; if the Parties indicate before this date that they do not wish to offer an undertaking; or if the CMA decides⁴¹⁷ by 23 December 2022 that there are no reasonable grounds for believing that it might accept the undertaking offered by the Parties, or a modified version of it.

Colin Raftery
Senior Director, Mergers
Competition and Markets Authority
09 December 2022

⁴¹³ Section 33(3)(b) of the Act.

⁴¹⁴ Section 73A(1) of the Act.

⁴¹⁵ Section 73(2) of the Act.

⁴¹⁶ Sections 33(1) and 34ZA(2) of the Act.

⁴¹⁷ Section 73A(2) of the Act.