



House of Commons  
Committee of Public Accounts

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# Armoured Vehicles: the Ajax programme

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**Seventh Report of Session 2022–23**

*Report, together with formal minutes relating  
to the report*

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## Summary

The Ajax programme, which began in 2010, is intended to transform the Army's surveillance and reconnaissance capability. However, it has gone badly wrong, with no deployable vehicle delivered to date let alone providing Initial Operating Capability or Full Operating Capability dates. The Department has a £5.5 billion firm-price contract with General Dynamics Land Systems UK for the design, manufacture and initial in-service support of 589 Ajax armoured vehicles. The Department initially expected to bring Ajax into service in 2017 but subsequently missed a revised target of June 2021. By December 2021, the Department had paid General Dynamics £3.2 billion but received only 26 Ajax vehicles, none of which it can use. The programme remains in turmoil because the Department still does not know whether the noise and vibration problems—which since July 2020 it has known may have injured soldiers—are fixable. It does not expect to determine this until late 2022. The Department is not willing to set a new target for initial operating capability before the noise and vibration problems are resolved and it does not know when it will be able to introduce the full capability into service. There remains considerable uncertainty over how to resolve these safety issues and the programme is slipping further behind schedule as the Department and General Dynamics seek to agree a way forward. The slow progress and continued delays create significant risks to value for money, put at risk the Army's plans for transformation and mean soldiers will have to use existing outdated vehicles for longer.

The Department's management of the programme was flawed from the outset as the programme was over-specified and the Department and General Dynamics did not understand the scale of the technical challenge. We have seen similar failings again and again in the Department's management of its equipment programmes. The Ajax programme also raises serious concerns about the Department's processes and culture for testing whether new equipment is safe to use. The Department needs to learn the lessons from the Ajax programme to ensure the litany of failures is never repeated and that our service personnel receive the equipment they need for operations and the nation's defence. As a matter of the utmost urgency, the Department must establish whether noise and vibration issues can be addressed by modifications or whether they require a fundamental redesign of the vehicle. If the latter, the Department must decide whether the right course is to proceed with General Dynamics or if it should opt for an alternative. We expect an update on this when we next take evidence and a definitive decision, either one way or the other, by December 2022. After twelve years, enough is enough.

As this Committee highlighted in its recent report on the MoD Equipment Plan 2021–31, the recent Russian invasion of Ukraine only reinforces the urgent need for the Department to reform, prioritise and effectively manage its expenditure to ensure the Armed Forces can secure all the equipment that they need in the quickest possible time.

## Introduction

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Ajax is an armoured fighting vehicle which should provide the Army with its first fully digitised platform. It will be based on new technologically advanced sensors and communication systems which should transform the Army's surveillance and reconnaissance capability. The vehicles form an integral part of the Ministry of Defence's (the Department's) vision for digital integration across land, air and sea domains, allowing real-time information-sharing and connectivity with other capabilities, such as Lightning II jets.

Ajax represents the biggest single order for a UK armoured vehicle in more than 20 years. The programme began in 2010, and the Department has a £5.5 billion firm-priced contract with General Dynamics Land Systems UK for the design, manufacture and initial in-service support of 589 vehicles. The programme is supposed to deliver six types of vehicle which will perform different roles. By December 2021, the Department had paid General Dynamics £3.2 billion, and General Dynamics had designed the vehicles, built 324 hulls and assembled and tested 143 vehicles. The Department had received 26 Ajax vehicles, together with training systems and some logistics support and spares. In 2014, the Department extended its expected in-service date by three years to July 2020, and the programme subsequently missed a revised target date of June 2021. In 2021, the Department acknowledged publicly concerns about excessive levels of noise and vibration on the Ajax vehicles. These issues remain unresolved, and the Department does not know when Ajax will enter service.

## Conclusions and recommendations

1. **The Department is failing to deliver the enhanced armoured vehicles capability that the Army needs to better protect the nation and meet its NATO commitments.** The Department is upgrading the Army's armoured vehicles to exploit modern technology and meet future threats, and it remains committed to delivering the Ajax programme to help achieve this. Ajax is central to the Army's plans for developing a "system of systems" in which capabilities, such as armoured vehicles, infantry, and artillery, cooperate, using common information about targets. However, the programme has been running for 12 years but has not yet delivered a single deployable vehicle to the Army. The Department and General Dynamics remain in dispute over unresolved contractual, safety and technical issues but the Department seems reluctant to consider alternative options should the Ajax contract fail. The Army is bullish about managing the implications of delays to introducing Ajax and its ability to meet its NATO commitments, but has had to plan a series of operational compromises to achieve this. It is "cautiously optimistic" that the full Ajax capability will enter service by 2030, as part of the Army's transformation outlined in the Integrated Review. However, any further delays to the Ajax programme will increase the risks of not achieving this aim.

**Recommendation:** *The Department must assess the longer-term implications of delays for the Army's transformation programme and investigate alternative options to Ajax now so that it can act quickly if the contract with General Dynamics collapses. We will expect an update on this when we next take evidence from the Department and answers by December 2022.*

2. **The Department has once again made fundamental mistakes in its planning and management of a major equipment programme.** Ajax's design is based on a pre-existing vehicle, but the Department's 1,200 capability requirements meant that, in effect, it was developed from scratch. However, the Department and General Dynamics did not fully understand the complexity and challenges of this hybrid approach and did not manage design changes effectively. The Department says it has reviewed its approach to requirement setting and now only approves programmes with a reasonable number of requirements, such as the 150 to 200 for the purchase of Boxer armoured personnel carriers and the upgraded Challenger tanks. Ajax's problems were exacerbated by inadequate governance and programme management failures. The current senior responsible owner, appointed in October 2021, is the first to be full-time, but even he has additional corporate roles and responsibilities. The programme's reset in 2018 introduced greater complexity and the revised programme schedule was unrealistic. While the profile of upfront investment before large-scale manufacture is unsurprising, the increased overlap of the demonstration and manufacturing phases means that unresolved technical and safety issues have remained whilst production continues. In response to these problems, the Department has commissioned a QC-led Ajax Lessons Learned Review into how it can deliver major programmes more effectively, including sharing and escalating information.

**Recommendation:** *Once the Ajax Lessons Learned Review has reported, the Department should write to the Committee setting out how it will incorporate*

*the recommendations into its future management of equipment programmes – considering the findings and recommendations of our and the NAO’s reports – to prevent this familiar list of mistakes being repeated yet again.*

3. **The failure to escalate and address noise and vibration issues in a timely manner shows that the Department must simplify its over-complex safety processes and change behaviours.** The Department acknowledges that it has injured some soldiers, which it rightly describes as “unforgivable”. It was slow to escalate concerns about noise and vibration because its processes were over-complicated, and parts of the Department lacked authority to ensure safety issues were addressed before trials began. The Army says it now places greater emphasis on safety and looking after its personnel, but acknowledges there is still more to do. The Department has started to implement the recommendations in David King’s noise and vibration report and introduced a new web-based application, which has led to a 40% increase in soldiers reporting incidents since January 2022. However, it needs to ensure the flow of information from junior ranks to senior officers will be thorough and transparent. Ajax’s safety problems have led the Department to investigate broader issues around noise-induced hearing loss, which results in the largest number of claims in the armed forces compensation scheme.

**Recommendation:** *The Department should set out the changes to its safety processes that it is making in response to the King Report and how it is monitoring the effectiveness of these initiatives. This should include the steps it is taking to improve openness and communication, including the use of the new web-based application. The Department should provide us with an update on progress when we next take evidence.*

4. **Nearly two years after identifying injuries to soldiers, the Department still does not know how to fix the noise and vibration problems.** General Dynamics must produce vehicles that are safe and has proposed modifications to reduce noise and vibration levels. The Department has commissioned trials to test the efficacy of these modifications. It intends to analyse test data and better understand how things work in practice before accepting General Dynamics’ solutions. The Department has also found that the headsets worn by crews—which the Army uses on all armoured vehicles—did not provide expected levels of protection. It will start upgrading its headsets from August 2022. It does not expect to make decisions on noise and vibration issues—and how to move the programme forward—until late 2022, more than two years since it first identified potential injuries to soldiers. It remains unclear whether the proposed modifications—which seek to reduce the impact on crews—will be effective or whether a more fundamental redesign of the vehicles is required. This could have significant implications for the programme because General Dynamics had built 324 hulls by December 2021. In addition, the Department cannot be confident that the programme will not encounter further technical or safety issues. It has proven only 30% of technical requirements so far and is tracking 136 ‘concerns’.

**Recommendation:** *As a matter of the utmost urgency, the Department must establish whether noise and vibration issues can be addressed by modifications or whether they require a fundamental redesign of the vehicle. If the latter, the*



*Department must decide whether the right course is to proceed with General Dynamics or if it should opt for an alternative. We will expect an update on this when we next take evidence and an answer by December 2022.*

5. **We are doubtful that the Department can recover the programme within existing costs and commercial arrangements.** The programme remains under significant pressure. It is more than a year behind even the revised schedule, trials involving Army crews have been suspended and noise and vibration issues remain unresolved. Despite these problems, the Department intends to continue holding General Dynamics to the current firm-priced contract for delivery of 589 vehicles. It claims that the relationship with General Dynamics is good and that both parties are working collaboratively. However, because of programme delays and missed milestones, the Department estimates that it owes General Dynamics £750 million for completed work, but has not paid anything since December 2020, and the parties remain in dispute. It is important that the Department uses appropriate commercial arrangements to incentivise delivery of the required capability, and it is seeking to resolve the technical issues and recover the programme through existing commercial terms. It says that the next step is to assess and seek internal approval for any changes to the schedule and definitions of capability, and agree any revisions to programme milestones with General Dynamics. However, the Department will not complete this process until it has determined how to resolve the noise and vibration issues, and so cannot say when it will decide on the programme's future.

**Recommendation:** *Whether or not the Department concludes that it should continue with the current Ajax contract, it must review its commercial arrangements to ensure these are appropriate to incentivise its prime contractor to deliver the programme and agree a recovery plan.*

6. **The Department's plans for using Ajax are at risk because of uncertainty about what constitutes full operating capability, when this will be achieved and how Ajax vehicles will be enhanced in the future.** The Department's original in-service date, 2017, was revised to June 2021, which has also been missed. It will not set a new initial operating capability date until it has resolved the on-going noise and vibration problems, and has no confidence in achieving the full operating capability target of April 2025. Therefore, 12 years after letting the design contract, the Department has no realistic target dates for introducing the Ajax capability. We are also extremely concerned that the Department may accept compromises on the level of capability that will be achieved at these milestones. Further, the Department is encountering difficulties on the enabling programmes needed to deliver the intended capability improvements and allow the Army to deploy Ajax on operations. In particular, delays to the Morpheus programme mean it will take longer before Ajax has the enhanced digital and communication systems which are so important to the way in which the Army plans to use the vehicles. The Department is seeking to develop a longer-term relationship with industry to enable upgrades throughout Ajax's service life to keep pace with technological developments and future military threats.

**Recommendation:** *Once the Department has reached agreement on solutions to the noise and vibration problems, it must agree a revised schedule and critical path*

*for initial operating capability and full operating capability, covering all enabling programmes. This should include clear definitions of what will be delivered at each stage, without reducing requirements just to achieve these milestones.*

# 1 The difficulties encountered by the Ajax programme

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1. On the basis of a report by the Comptroller and Auditor General, we took evidence from the Ministry of Defence (the Department) on the Ajax programme.<sup>1</sup>
2. Ajax is an armoured fighting vehicle which should provide the Army with its first fully digitised platform. The Army told us it would be game-changing because it would use cutting-edge, technologically advanced sensors and communication systems.<sup>2</sup> The vehicles are an integral part of the Department's vision for digital integration across land, air, and sea domains, allowing real-time information-sharing and connectivity with other capabilities, such as Lightning II jets.<sup>3</sup>
3. Ajax is the UK's biggest order for armoured vehicle in more than 20 years. The Department has a £5.5 billion firm-priced contract with General Dynamics Land Systems UK for the design and manufacture of 589 vehicles, as well as associated training systems and initial in-service support.<sup>4</sup> The programme should deliver six types of vehicle with different functions. By December 2021, the Department had paid General Dynamics £3.2 billion and, at that point, General Dynamics had designed the vehicles, built 324 hulls and completed factory testing of 143 vehicles. The Department had received 26 vehicles as well as training systems and support, although these vehicles were for training and familiarisation purposes only and are not deployable.<sup>5</sup>
4. The programme has encountered significant problems. In 2014, the Department extended its expected in-service date by three years to July 2020.<sup>6</sup> The programme subsequently missed a revised target date of June 2021. In 2021, the Department acknowledged concerns about excessive levels of noise and vibration on the Ajax vehicles, leading it to report regularly to Parliament on the programme's progress and the possible health impact on crews who had tested the vehicles. These issues remain unresolved and the Department expects the programme will be late delivering Ajax's full capability. It told us it would not set a new in-service target date before it has identified solutions, which it expects to do later this year.<sup>7</sup>

## The Army's need for enhanced armoured vehicles

5. The war in Ukraine has put into sharper focus the need for well-equipped, modern Armed Forces and clear plans for how military capabilities can be used effectively.<sup>8</sup> The Army explained that it needed to upgrade its armoured vehicles—with Ajax armoured reconnaissance vehicles, Boxer armoured personnel carriers and Challenger 3 main battle tanks—to exploit modern technology and meet future threats.<sup>9</sup> Ajax is central

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1 C&AG's Report, *The Ajax programme*, Session 2021–22, HC 1142, 11 March 2022

2 Q 8

3 C&AG's Report, para. 1

4 Q 12

5 C&AG's Report, paras 2, 1.17

6 Q 57

7 Qq 16, 60, 86; C&AG's Report, para. 3

8 Qq 2, 23

9 Qq 32, 33

to the Army's plans for developing a "system of systems" in which its capabilities, such as armoured vehicles, infantry and artillery, work together using common information about targets.<sup>10</sup>

6. The Department remains committed to delivering the Ajax programme. However, the programme, which has been running for 12 years, has not yet delivered a single deployable vehicle to the Army, and the Department does not know when Ajax will be operational.<sup>11</sup> The Department and General Dynamics remain in dispute over unresolved contractual, safety and technical issues, and they are in the early stages of a formal dispute resolution process. Nevertheless, the Department was reluctant to consider alternative options should the Ajax contract fail. It told us it did not want to speculate on the possibility of retendering the contract, preferring to persevere with General Dynamics and make the contract work.<sup>12</sup>

7. At the same time, the Army is undergoing a period of significant transformation, during which it will adjust its size, shape, and capabilities. It aims to have implemented the full changes, as outlined in the Integrated Review, by 2030. The Army told us it was "cautiously optimistic" that the full Ajax capability will have entered service by then.<sup>13</sup> However, any further delays to the Ajax programme would increase the risks of not achieving this aim.<sup>14</sup>

8. In the meantime, the Army was bullish about managing the implications of delays to introducing Ajax and its ability to meet its NATO commitments.<sup>15</sup> However, it has had to plan a series of operational compromises to achieve this, such as continuing to use Challenger 2 tanks and ageing Warrior armoured infantry vehicles, which the Department plans to withdraw from service shortly. The Army also acknowledged it would need careful planning to maintain the right number of frontline Challenger tanks because it must take Challenger 2 out of the line to upgrade them to Challenger 3.<sup>16</sup> Furthermore, keeping old capabilities in service adds to wider affordability pressures, which the Army will need to manage within its equipment programme.<sup>17</sup>

## Planning and programme management shortcomings

9. Ajax's design was based on a pre-existing vehicle, but the Department stipulated 1,200 capability requirements which meant that, in effect, it had to be developed from scratch. The Department told us that, with hindsight, having so many detailed requirements had not helped it obtain the capability it wanted in the way it expected.<sup>18</sup> It said that there was a place for off-the-shelf purchase of equipment of this type, and for its bespoke development. However, the design of Ajax was neither off-the-shelf nor bespoke. The Department and General Dynamics did not fully understand the complexity and challenges of this hybrid

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10 Qq 2, 67

11 Qq 34, 84, 99; C&AG's Report, para. 6

12 Qq 27, 84, 85

13 Qq 64, 78

14 C&AG's Report, para. 19

15 Qq 32, 64, 65

16 Q 113; C&AG's Report, para. 3.17

17 Q 74; C&AG's Report, para. 19

18 Qq 13, 97; C&AG's Report, para. 8

approach and did not manage the subsequent design changes effectively. The Department now recognises it must be particularly careful when making so many additions to something that is tried and tested.<sup>19</sup>

10. The Department told us it had reviewed its approach so that it no longer fell into the trap of setting an excessive number of requirements. It said it now only approved programmes with a reasonable number of requirements, such as the 150 to 200 for the purchase of Boxer and the upgraded Challenger tanks.<sup>20</sup> It told us it had now developed a more sophisticated approach, which it had set out in the *Defence and Security Industrial Strategy*.<sup>21</sup> For example, it recognised that acquiring an off-the-shelf capability quickly could sometimes be better than waiting for a capability to be developed that was exactly what it wanted. With Boxer, for example, the Department plans to introduce a base platform which it would develop when in service, rather than over-specifying requirements at the design stage.<sup>22</sup>

11. The problems on the Ajax programme were exacerbated by inadequate governance and programme management failures. The current senior responsible owner, appointed in October 2021, is the first to be full-time, although his corporate responsibilities take up about 5% of his time. The Department said that his role as head of its SRO profession helped with his Ajax role but, if necessary, he could step back from that corporate role to focus exclusively on Ajax.<sup>23</sup>

12. The Department admitted that the programme's reset in 2018 had been disappointing, and it recognised that the revised programme schedule had been unrealistic.<sup>24</sup> It said it had attempted to meet the planned in-service date by accepting an incremental build-up of capability, using a series of 'capability drops'. By this arrangement, the Department agreed that General Dynamics would deliver vehicles in four phases, with each drop adding capabilities. However, the introduction of four capability drops across six variants introduced more complexity into the programme whereas, with hindsight, the Department said that it was greater simplicity that the programme had needed.<sup>25</sup>

13. The Department explained that for complex, technologically advanced programmes, it was usual to have a profile of upfront investment before the manufacture phase began.<sup>26</sup> When the Department awarded the manufacture contract in 2014, it included some overlap of demonstration and manufacture phases, thinking this would reduce the risk of missing programme milestones. However, after the reset, progress was slower than expected and the overlap between phases doubled to almost eight years. This made addressing design and safety issues more complex because of the need to manage this alongside complex manufacturing, delivery and retrofitting schedules.<sup>27</sup> In response to the programme's

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19 Q 97; C&AG's Report, para. 9

20 Qq 6, 14

21 HM Government, *Defence and Security Industrial Strategy: A strategic approach to the UK's defence and security industrial sectors*, CP 410, March 2021

22 Qq 15, 97

23 Qq 9, 10, 11

24 Q 18

25 Q 57; C&AG's Report, para. 2.17

26 Q 57

27 C&AG's Report, Key facts and paras. 9, 1.9

problems, the Department has commissioned a QC-led Ajax Lessons Learned Review into how it can deliver major programmes more effectively, including sharing and escalating information.<sup>28</sup>

## The need for behavioural change

14. In 2021, the Department acknowledged publicly concerns about excessive levels of noise and vibration on the Ajax vehicles. The Department admitted that because of shortcomings with its safety processes, which made it complicated to raise issues, it had injured some of its own soldiers, which it rightly described as “unforgivable”.<sup>29</sup> The Defence Science and Technology Laboratory (DSTL) had first warned Defence Equipment & Support (DE&S) of concerns about Ajax’s potential compliance with legislative requirements in 2014. However, as advisers, DSTL lacked authority to ensure that the Department gave due consideration to the safety issues it had raised. The reporting of issues identified in trials was also limited and slow, which meant that safety concerns were not shared or escalated by the Army or DE&S. The Army’s trials team began reporting injuries from July 2020, having raised concerns about vibration since late 2019. But excessive noise and vibration levels were not reported to the SRO until September 2020.<sup>30</sup>

15. In June 2021 the Department commissioned David King, its Director Health, Safety and Environmental Protection, to assess whether correct health and safety procedures had been followed. His report, published in December 2021, concluded that collective failings enabled activity to continue when it should have been stopped or paused until stronger controls were in place. The report made 20 recommendations to improve the Department’s approach to safety.<sup>31</sup>

16. The Army told us it now placed greater emphasis on safety and looking after its personnel and that it had made “huge strides”. However, it acknowledged that it continued to be on a learning curve and that it still had more to do to improve safety. The Department said it had started to implement the recommendations in David King’s report, such as the introduction of noise and vibration working groups, which were now a key part of its risk-management approach. It had also introduced a new web-based application, which had led to a 40% increase in soldiers reporting incidents and near misses since January 2022.<sup>32</sup> However, the Army acknowledged that it must ensure the flow of information from junior ranks to senior officers was thorough and transparent, so that trends and the full range of potential issues were picked up earlier.<sup>33</sup>

17. The Department said that Ajax’s safety problems had highlighted broader issues around noise-induced hearing loss, which formed the largest number of claims in the armed forces compensation scheme. It has commissioned the vice-chief of the defence staff and the second permanent secretary to examine the causes of those claims to see what it needed to do in response.<sup>34</sup>

28 Q 1; Letter dated 29 March 2022 from Minister of State to PAC Chair; Minister for Defence Procurement [written statement](#) 29 March 2022.

29 Q 7; C&AG’s Report, para. 3

30 C&AG’s Report, paras. 12, 13

31 C&AG’s Report, para. 2.27; Ministry of Defence, HS&EP Ajax Noise and Vibration Review, December 2021

32 Qq 30, 31; Letter from Ministry of Defence to Committee dated 6 May 2022

33 Q 90

34 Q 30

## 2 Delivering the Ajax programme

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### Resolving the noise and vibration problems

18. Under the terms of the contract, General Dynamics is responsible for ensuring that Ajax vehicles are safe by design. The Department oversees and monitors this, conducting trials to ensure the vehicles are safe to use.<sup>35</sup> The two parties disagreed on whether the levels of noise and vibration in Ajax vehicles breached contractual requirements. The Department therefore undertook testing of four of the early manufactured vehicles to understand their characteristics and the root causes of these problems. It told us it had not previously understood the characteristics of the Ajax vehicles, which had “a complex and unexpected fingerprint”.<sup>36</sup> General Dynamics has proposed modifications to reduce noise and vibration levels and the Department has commissioned further trials to test whether these are acceptable. It needs to review and validate this test data before deciding whether it can accept General Dynamics’ proposed solutions.<sup>37</sup>

19. The Department told us that its contract with General Dynamics was to produce vehicles at an acceptable level of noise using existing headsets. It asserted that those headsets performed as it had assumed they would when the contract was let, something which General Dynamics disputes. However, the Department admitted that the headsets worn by its crews had not provided the higher levels of protection it had expected.<sup>38</sup> The Army had been aware of the issues with these headsets on other armoured vehicles since at least 2019. It said it planned to upgrade existing headsets to ensure soldiers can complete missions in a way that is effective and safe, and is introducing new headsets into the Army from August 2022.<sup>39</sup>

20. General Dynamics has proposed modifications to vehicles that seek to reduce the impact of noise and vibration on crews and include, for example, the damping of hand controllers and seating, and changes to improve body posture. However, the Department said it still needed to test the whole system—including the communications and electronic interface—and understand crews’ experiences of using the modified vehicles by running user verification trials.<sup>40</sup> The Department said it did not yet know whether the proposed modifications would be effective or whether a more fundamental redesign of the vehicles was required. It told us that it was cautiously optimistic that these modifications will allow the programme to move on to next phase of the work. However, if they do not and a fundamental redesign is needed, this could have significant implications for the programme because, by December 2021, General Dynamics had already built 324 hulls that might need to be redesigned.<sup>41</sup> The Department did not expect to make decisions on how to resolve the noise and vibration issues until late 2022, more than two years since it first identified potential injuries to soldiers.<sup>42</sup> On 19 May 2022, the Minister for Defence Procurement announced that the Department had re-started user verification trials.<sup>43</sup>

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35 Q 32; C&AG’s Report, para 2.25

36 Qq 35, 39, 81; C&AG’s Report, para. 14

37 Qq 18, 21, 35, 38, 39

38 Qq 42, 44, 45; C&AG’s Report, para. 2.21

39 Qq 43, 42, 44, 45; Letter from Ministry of Defence to Committee dated 6 May 2022; C&AG’s Report, para. 2.22

40 Qq 40, 41

41 Qq 35, 47; C&AG’s Report, para 2

42 Q 81

43 Ministerial Statement 19 May 2022

21. The Department accepted that it cannot be certain the programme will not encounter further technical or safety issues, stating that it is usual for engineering development on this scale to encounter challenges as it goes through the development cycle. It acknowledged that it is still testing compliance with the specifications and had proven only 30% of technical requirements so far.<sup>44</sup> In addition, in December 2021, the Department was tracking 136 ‘concerns’, only four of which related to noise and vibration, and had still to remove 27 limitations of use on Ajax vehicles, of which 11 were critical to achieving initial operating capability.<sup>45</sup> The Department said it was planning a series of reliability trials to test whether the vehicles were working properly and do what they were designed to do.<sup>46</sup>

## Delivering the programme

22. The programme remains under significant pressure. When the NAO reported, the programme was more than a year behind the revised schedule, trials involving Army crews had been suspended and noise and vibration issues remained unresolved.<sup>47</sup> General Dynamics had continued to produce Ajax vehicles despite not receiving any payment since December 2020. Because of programme delays, the Department estimated that it owed General Dynamics £750 million for completed work. The Department told us that General Dynamics had missed critical milestones and it would not have to pay any more money until General Dynamics had hit them.<sup>48</sup>

23. The Department said it intended to continue holding General Dynamics to the current firm-priced contract for delivery of 589 vehicles.<sup>49</sup> Despite remaining in contractual dispute, the Department claimed that its relationship with General Dynamics was good and that both parties were working collaboratively. It was seeking to resolve the technical issues and recover the programme through existing commercial terms. We emphasised the importance of using appropriate commercial arrangements to incentivise delivery of the required capability.<sup>50</sup>

24. The Department told us that it had consulted the Infrastructure and Projects Authority and HM Treasury about its plan for restoring effective governance to the programme. It said it needed to resolve the current technical issues and gain approval for any changes to the schedule and definitions of capability, including agreeing any revisions to programme milestones with General Dynamics.<sup>51</sup> However, the Department would not complete this process until it had determined how to resolve the noise and vibration issues, and so could not tell us when it would decide on the programme’s future.<sup>52</sup>

## Achieving the full Ajax capability

25. In 2010, when the Department let the design contract, its planning assumption was that Ajax would enter service in early 2017. It extended the expected in-service date by three

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44 Q 49

45 C&AG’s Report, para 15

46 Q 87

47 C&AG’s Report, para 16

48 Qq 19, 20, 26, 29, 36

49 Q 20

50 Qq 27, 29, 35, 37, 53, 59, 83

51 Qq 60, 87

52 Qq 17, 77, 87



years to July 2020 when it awarded the manufacture contract in 2014.<sup>53</sup> The programme subsequently missed a revised target date of June 2021. The Department told us it would not set a new initial operating capability date until it had resolved the on-going noise and vibration problems. Despite not having a timeline to achieve initial operating capability, it still retained a target date for achieving full operating capability by April 2025. However, the Department said it has no confidence in achieving this. We expressed concern that the Department did not have realistic target dates for introducing Ajax to enable the Army to make operational decisions on the capabilities that will be available and to help achieve value for money from the programme.<sup>54</sup>

26. The Department told us that it faced choices about the level of capability at initial and full operating capability milestones. It said it would look again at the definition of what was required, considering incremental development of the vehicles.<sup>55</sup> The Department admitted it had already accepted concessions against the original requirement—for example, the reset agreement had included technical constraints around the armour and weapon system.<sup>56</sup> We were extremely concerned that the Department would accept further reduced capability to achieve programme milestones. The Department said it would consider the Army's future transformation plans and how Ajax fits into these.<sup>57</sup>

27. Delivering the full Ajax capability depends on the Department delivering supporting programmes, including new communication systems, training facilities and infrastructure projects to store the vehicles.<sup>58</sup> The Army will also need to transport the vehicles to military operations.<sup>59</sup> However, the Department has encountered difficulties in delivering the enabling programmes needed to deliver the intended capability improvements. In particular, delays to the Morpheus programme mean it will be longer before Ajax has the enhanced digital and communication systems, which are so important to the way in which the Army plans to use the vehicles. It told us that it expected to upgrade Ajax to the new Morpheus system while the vehicles were in-service, and it would continue with its plan to use the latest Bowman communication system until then. The Army said it was content that the Bowman system was operating effectively.<sup>60</sup>

28. The Department told us it is seeking to design its new armoured vehicles, including Boxer and Challenger, to make through-life capability management easier. It recognised the need to update capabilities as new technologies emerge and keep pace with emerging military threats.<sup>61</sup> It expected its new armoured vehicles to have a 30-to-40-year life and the software systems have been designed to enable future upgrades to be incorporated. To facilitate this, the Department said it was seeking to develop a longer-term relationship with industry to enable upgrades throughout Ajax's service life.<sup>62</sup>

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53 Q 57; C&AG's Report, para. 3

54 Qq 8, 57, 59, 60

55 Qq 60, 61

56 Q 62; C&AG's Report, para. 2.16

57 Q 61

58 Q 108; C&AG's Report, para 18

59 Q 3

60 Qq 51, 52, 66, 104, 108; C&AG's Report, para. 18

61 Qq 24, 32

62 Qq 25, 52

## Formal minutes

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### Wednesday 25 May 2022

Members present:

Dame Meg Hillier

Mr Louie French

Peter Grant

Kate Green

Mr Mark Francois

Angela Richardson

### *Armoured Vehicles: the Ajax programme*

Draft Report (*Armoured Vehicles: the Ajax programme*), proposed by the Chair, brought up and read.

*Ordered*, That the draft Report be read a second time, paragraph by paragraph.

Paragraphs 1 to 28 read and agreed to.

Summary agreed to.

Introduction agreed to.

Conclusions and recommendations agreed to.

*Resolved*, That the Report be the Seventh of the Committee to the House.

*Ordered*, That the Chair make the Report to the House.

*Ordered*, That embargoed copies of the Report be made available, in accordance with the provisions of Standing Order No. 134.

### Adjournment

Adjourned till Wednesday 8 June at 1.00pm

## Witnesses

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The following witnesses gave evidence. Transcripts can be viewed on the [inquiry publications page](#) of the Committee's website.

### Wednesday 30 March 2022

**David Williams**, Permanent Secretary, Ministry of Defence; **Lt General Sir Chris Tickell KBE**, Deputy Chief of the General Staff and Portfolio Director General for Ajax, Ministry of Defence; **Andrew Forzani**, Director General of Commercial, Ministry of Defence; **Dr David Marsh**, Ajax Programme SRO, Ministry of Defence [Q1-114](#)

## Published written evidence

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The following written evidence was received and can be viewed on the [inquiry publications page](#) of the Committee's website.

ARM numbers are generated by the evidence processing system and so may not be complete.

- 1 CTA International ([ARM0002](#))
- 2 Patel, Jag ([ARM0001](#))

## List of Reports from the Committee during the current Parliament

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All publications from the Committee are available on the [publications page](#) of the Committee's website.

### Session 2022–23

Number	Title	Reference
1st	Department for Business, Energy & Industrial Strategy Annual Report and Accounts 2020–21	HC 59
2nd	Lessons from implementing IR35 reforms	HC 60
3rd	The future of the Advanced Gas-cooled Reactors	HC 118
4th	Use of evaluation and modelling in government	HC 254
1st Special Report	Sixth Annual Report of the Chair of the Committee of Public Accounts	HC 50

### Session 2021–22

Number	Title	Reference
1st	Low emission cars	HC 186
2nd	BBC strategic financial management	HC 187
3rd	COVID-19: Support for children's education	HC 240
4th	COVID-19: Local government finance	HC 239
5th	COVID-19: Government Support for Charities	HC 250
6th	Public Sector Pensions	HC 289
7th	Adult Social Care Markets	HC 252
8th	COVID 19: Culture Recovery Fund	HC 340
9th	Fraud and Error	HC 253
10th	Overview of the English rail system	HC 170
11th	Local auditor reporting on local government in England	HC 171
12th	COVID 19: Cost Tracker Update	HC 173
13th	Initial lessons from the government's response to the COVID-19 pandemic	HC 175
14th	Windrush Compensation Scheme	HC 174
15th	DWP Employment support	HC 177
16th	Principles of effective regulation	HC 176
17th	High Speed 2: Progress at Summer 2021	HC 329
18th	Government's delivery through arm's-length bodies	HC 181
19th	Protecting consumers from unsafe products	HC 180

<b>Number</b>	<b>Title</b>	<b>Reference</b>
20th	Optimising the defence estate	HC 179
21st	School Funding	HC 183
22nd	Improving the performance of major defence equipment contracts	HC 185
23rd	Test and Trace update	HC 182
24th	Crossrail: A progress update	HC 184
25th	The Department for Work and Pensions' Accounts 2020–21 – Fraud and error in the benefits system	HC 633
26th	Lessons from Greensill Capital: accreditation to business support schemes	HC 169
27th	Green Homes Grant Voucher Scheme	HC 635
28th	Efficiency in government	HC 636
29th	The National Law Enforcement Data Programme	HC 638
30th	Challenges in implementing digital change	HC 637
31st	Environmental Land Management Scheme	HC 639
32nd	Delivering gigabitcapable broadband	HC 743
33rd	Underpayments of the State Pension	HC 654
34th	Local Government Finance System: Overview and Challenges	HC 646
35th	The pharmacy early payment and salary advance schemes in the NHS	HC 745
36th	EU Exit: UK Border post transition	HC 746
37th	HMRC Performance in 2020–21	HC 641
38th	COVID-19 cost tracker update	HC 640
39th	DWP Employment Support: Kickstart Scheme	HC 655
40th	Excess votes 2020–21: Serious Fraud Office	HC 1099
41st	Achieving Net Zero: Follow up	HC 642
42nd	Financial sustainability of schools in England	HC 650
43rd	Reducing the backlog in criminal courts	HC 643
44th	NHS backlogs and waiting times in England	HC 747
45th	Progress with trade negotiations	HC 993
46th	Government preparedness for the COVID-19 pandemic: lessons for government on risk	HC 952
47th	Academies Sector Annual Report and Accounts 2019/20	HC 994
48th	HMRC's management of tax debt	HC 953
49th	Regulation of private renting	HC 996
50th	Bounce Back Loans Scheme: Follow-up	HC 951
51st	Improving outcomes for women in the criminal justice system	HC 997

<b>Number</b>	<b>Title</b>	<b>Reference</b>
52nd	Ministry of Defence Equipment Plan 2021–31	HC 1164
1st Special Report	Fifth Annual Report of the Chair of the Committee of Public Accounts	HC 222

### Session 2019–21

<b>Number</b>	<b>Title</b>	<b>Reference</b>
1st	Support for children with special educational needs and disabilities	HC 85
2nd	Defence Nuclear Infrastructure	HC 86
3rd	High Speed 2: Spring 2020 Update	HC 84
4th	EU Exit: Get ready for Brexit Campaign	HC 131
5th	University technical colleges	HC 87
6th	Excess votes 2018–19	HC 243
7th	Gambling regulation: problem gambling and protecting vulnerable people	HC 134
8th	NHS capital expenditure and financial management	HC 344
9th	Water supply and demand management	HC 378
10th	Defence capability and the Equipment Plan	HC 247
11th	Local authority investment in commercial property	HC 312
12th	Management of tax reliefs	HC 379
13th	Whole of Government Response to COVID-19	HC 404
14th	Readying the NHS and social care for the COVID-19 peak	HC 405
15th	Improving the prison estate	HC 244
16th	Progress in remediating dangerous cladding	HC 406
17th	Immigration enforcement	HC 407
18th	NHS nursing workforce	HC 408
19th	Restoration and renewal of the Palace of Westminster	HC 549
20th	Tackling the tax gap	HC 650
21st	Government support for UK exporters	HC 679
22nd	Digital transformation in the NHS	HC 680
23rd	Delivering carrier strike	HC 684
24th	Selecting towns for the Towns Fund	HC 651
25th	Asylum accommodation and support transformation programme	HC 683
26th	Department of Work and Pensions Accounts 2019–20	HC 681
27th	Covid-19: Supply of ventilators	HC 685

<b>Number</b>	<b>Title</b>	<b>Reference</b>
28th	The Nuclear Decommissioning Authority's management of the Magnox contract	HC 653
29th	Whitehall preparations for EU Exit	HC 682
30th	The production and distribution of cash	HC 654
31st	Starter Homes	HC 88
32nd	Specialist Skills in the civil service	HC 686
33rd	Covid-19: Bounce Back Loan Scheme	HC 687
34th	Covid-19: Support for jobs	HC 920
35th	Improving Broadband	HC 688
36th	HMRC performance 2019–20	HC 690
37th	Whole of Government Accounts 2018–19	HC 655
38th	Managing colleges' financial sustainability	HC 692
39th	Lessons from major projects and programmes	HC 694
40th	Achieving government's long-term environmental goals	HC 927
41st	COVID 19: the free school meals voucher scheme	HC 689
42nd	COVID-19: Government procurement and supply of Personal Protective Equipment	HC 928
43rd	COVID-19: Planning for a vaccine Part 1	HC 930
44th	Excess Votes 2019–20	HC 1205
45th	Managing flood risk	HC 931
46th	Achieving Net Zero	HC 935
47th	COVID-19: Test, track and trace (part 1)	HC 932
48th	Digital Services at the Border	HC 936
49th	COVID-19: housing people sleeping rough	HC 934
50th	Defence Equipment Plan 2020–2030	HC 693
51st	Managing the expiry of PFI contracts	HC 1114
52nd	Key challenges facing the Ministry of Justice	HC 1190
53rd	Covid 19: supporting the vulnerable during lockdown	HC 938
54th	Improving single living accommodation for service personnel	HC 940
55th	Environmental tax measures	HC 937
56th	Industrial Strategy Challenge Fund	HC 941