



National Audit Office

Report

by the Comptroller
and Auditor General

Home Office

Digital Services at the Border

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Home Office

Digital Services at the Border

Report by the Comptroller and Auditor General

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Gareth Davies
Comptroller and Auditor General
National Audit Office

3 December 2020

This report examines the Home Office's (the Department's) Digital Services at the Border programme (the programme) to assess whether it has delivered value for money.

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Key facts

141m

passenger arrivals to the UK in the year to March 2020 (reduced to 103 million in the year to June 2020 due to the coronavirus pandemic)

56

ports where the Home Office (the Department) plans its Border Crossing system will be live from July 2021

£311m

total expected cost to the Home Office of building systems in its Digital Services at the Border (DSAB) programme, 2014-15 to 2021-22

£120 million was spent by the Home Office on building systems in its DSAB programme up to March 2019 (£79 million less than it had planned)

£191 million is the amount the Home Office expects to spend completing delivery of systems in its DSAB programme from start April 2019 to end March 2022

1,050 searches per minute required from the watchlist for the new Border Crossing system

36 months is how long the Department has delayed the programme, from end March 2019 to end March 2022

4 senior responsible owners were appointed by the Department for the programme from 2014 to 2019

4 of 5 reviews by the Infrastructure and Projects Authority rating the programme as Amber-Red in the five years 2014 to 2019

298 eGates are currently used at ports of entry to the UK

Summary

1 In 2019-20 there were 141 million passenger arrivals in the UK, with around 40 million being from the European Union (EU). These arrivals included UK citizens returning home and people travelling to the UK for tourism or study, to work, to seek asylum or to migrate permanently. People and goods can enter the country by land, sea or air and may have travelled fewer than 30 miles or thousands of miles. Protecting the border at over 270 crossing points and 56 major entry points, controlling migration and cross-border criminality and security, collecting revenues that are due and facilitating the legitimate movement of people and trade is primarily the responsibility of the Home Office (the Department). Border Force, a law enforcement command within the Department, has the lead operational responsibility for securing the UK border by carrying out immigration and customs controls on people and goods entering the UK.

2 In securing the border, government has two overarching objectives:

- *to protect the public* from terrorism, crime, illegal immigration, trafficking and the importation of illegal goods; and
- *to facilitate legitimate movement* of people and goods across the border as quickly as possible, to promote national prosperity.

3 Upgrading or replacing legacy systems and improving information at the border through digital transformation programmes has been an ambition of the Department since the launch of its e-borders programme in 2003. E-borders, due to be delivered in 2011, aimed to improve data collection by improving and automating systems and processes at the border. But in 2010, the Department cancelled its contract to deliver a single e-borders system, citing failure to achieve milestones, as set out in our 2015 report *E-borders and successor programmes*.¹ In 2014, the Department started its Digital Services at the Border programme (the programme), as a new attempt to achieve its objectives by March 2019 through replacing the legacy systems Warnings Index and Semaphore (which are respectively 26 and 16 years old). The Department considers these legacy systems increasingly expensive, difficult to maintain and unfit for the future needs of government.

¹ Comptroller and Auditor General, *E-borders and successor programmes*, Session 2015-16, HC 608, National Audit Office, December 2015.

4 The Department intends that the programme will provide UK Border Force staff with better information to make decisions about people crossing the border than current systems. The programme is crucial to delivering the Department's overall objectives for national security at the border. Since 2014, the Department has changed its strategic priorities to support its broader ambition for a digitised immigration system (Future Border and Immigration System, FBIS) and provide the border controls required following the UK's decision to leave the EU. It also needed to accommodate a government change to the classification of security data in its design of systems, as well as an emerging Departmental ambition for improved intelligence, combining passenger and freight data to improve targeting of resources towards areas of higher risk.

5 In 2019, due to these changes, scope creep and poor programme performance, the Department decided to reset the programme, reducing some elements of its scope (and adding new elements) and pushing delivery back to the end of March 2022. The main effect of the reset was to prioritise those elements of the programme required for FBIS after the UK's departure from the EU, with the Department planning to deliver elements of the original programme scope in other ways. The Department's ambition is that successful delivery of its planned reset work, together with other planned improvements to its analysis and use of data, would deliver significant improvements in its capability at the border.

6 This report assesses the Department's progress in delivering the programme (**Figure 1**). It examines:

- progress in achieving the Department's objectives for digitising the border up to 2019;
- the Department's reset of the programme; and
- the remaining risks facing the Department in delivering the programme.

7 Our audit approach is set out in Appendix One. Appendix Two sets out our evidence base.

Figure 1

The border system programmes

How this report assesses the Home Office's progress

**Legacy systems currently in use**

Warnings Index	A 26-year-old system maintained by Fujitsu, holds lists of individuals of interest known as a watchlist and is used at the border for checking passengers against.
Semaphore	A 16-year-old system maintained by IBM for analysing advance passenger information provided by carriers.
Freight Tracking System + 35 others	HM Revenue & Customs systems that monitor goods crossing the border.

Digital Services at the Border programme 2014 vision

Border Crossing	A more advanced, theoretically quicker watchlist to check passengers against.
Advance Border Control	A more advanced and quicker replacement of Semaphore providing analysis of watchlist data to law enforcement and other agencies.
Advanced Freight Targeting Capability	Proposed replacement for Freight Tracking System, aimed at implementing technology to identify and target goods deemed at risk of illegal entry.

Source: National Audit Office

Key findings

Progress in achieving the Department's objectives for digitising the border up to 2019

8 The Department's vision for its digital programmes has been consistent, but it has had difficulties setting a manageable scope and plan to deliver.

The Department's vision for the programme was not matched by a realistic implementation plan. The Department faced pressures to increase the scope of the programme since it began in 2014, and it had not clearly defined what the programme was required to deliver. It sought to accommodate changing technologies and new requirements, including a 2014 government change to classification of security data, as well as demand for improved intelligence on areas of risk and better targeting of resources, with insufficient consideration of their impact. The changed requirements also stemmed from the UK's decision to leave the European Union and in 2018 the Department decided that the programme should support a new digitised immigration system and a set of border controls as part of its FBIS (paragraphs 1.9 to 1.11, 1.18 and 2.3).

9 The Department did not deliver the three main systems it planned to its original timetable of March 2019, so spent less than it intended by this date.

When the Department started the programme it lacked clear objectives, a timetable for delivery and a budget. From 2014 the Department developed some parts of the required Advanced Freight Targeting Capability and Advance Border Control systems. But by March 2019, it had failed to deliver these new systems as planned, with the pilot Border Crossing (version 0.3) system being the only one of the programme's planned three systems that was in live operation. An expanding scope and lack of clarity over the scope of related projects, such as how the Department would hold data provided by law enforcement and other agencies, impacted delivery of the three main systems. The Department expected to spend £199 million building its new systems, but by March 2019 it had spent £120 million, £79 million less than it had planned (paragraphs 1.12, 1.15, 1.16, 1.19 and 2.3).

10 The Department underestimated the technology requirements of the programme and the capability it needed to deliver them.

The programme board received reports of resourcing shortages, particularly of technical staff, eight times in 35 months between July 2015 and May 2018, with the Department categorising programme resourcing risk at the highest possible level in July 2019. It struggled with technical delivery, with its Border Crossing pilot not performing as well as it had planned to the timescales it intended. However, the Department considers that lessons from this pilot are supporting its rollout of Border Crossing. The Department found it complex and expensive to build physical storage centres required to hold Secret level data, following the change to classification of security data introduced in 2014, and by May 2019 this issue also attracted the highest risk-rating category, and had not been resolved (paragraphs 1.14, 1.18, 1.19, 1.23 and 2.11).

11 Until 2019, the Department lacked appropriate oversight, leadership and governance to ensure progress was made and to manage programme risks effectively. Between 2014 and 2019, external reviews and governance boards for the programme identified delivery issues which the Department did not resolve. The Infrastructure and Projects Authority (IPA) rated its confidence in programme delivery as Amber-Red in four of the five years leading up to 2019. Of the risks reported to the programme board from 2014 to June 2019, 26% were rated Black or Red for at least six months, and almost half of these were Black or Red for at least 12 months (paragraph 1.13).

Progress since the Department reset the programme in July 2019

12 In July 2019, the Department decided to reset the programme, extending its delivery timescale by three years and increasing costs. In July 2019, the Department decided to undertake a reset and refocus the programme on its core national security requirement to provide more control over who enters the UK. The reset meant it would continue rolling out its Border Crossing system; stabilise and improve, rather than replace, the Semaphore system; remove the flow of goods from the programme's scope; and run legacy systems for three more years. The total estimated cost of delivering the new systems from 2014-15 to 2021-22 is £311 million. The decision to extend the programme's duration by 36 months to the end of March 2022 added £191 million to the cost of delivering the systems, and the need to keep legacy systems running over this period added a further £145 million, which means that the total cost increase resulting from delayed delivery is £336 million (2019-20 to 2021-22). However, this cost increase is reduced because the Department spent less than planned by March 2019 and it does not start to pay the running costs of the new systems until 2022-23. The Department therefore estimates that the net impact of not delivering to its original timetable of March 2019 is an additional cost of £173 million (paragraphs 2.2, 2.4, 2.6 and 2.9).

13 The Department will not meet all the user needs and requirements it originally planned through the programme by its new end of March 2022 delivery date. The Department had planned that the programme would meet the data requirements of law enforcement organisations and other agencies to enable them to better identify unknown threats. This included tools to apply risk-based checking of people and goods crossing the border. The Department removed this requirement from the programme following the reset and transferred responsibility for delivering it to another Departmental team, which is working with stakeholders to set out the timetable for delivery of this work (paragraph 2.17).

14 The Department is dependent on the delivery of Border Crossing to meet new demands on border management arising from the UK's decision to leave the EU. The Department has additional requirements for its FBIS, as EU passengers from outside the Common Travel Area will need to demonstrate their immigration status when crossing the border. The most significant requirement will be to enable electronic visas, settled status and other status, which will be official digital permissions allowing entry to the UK, to be checked at the border for these passengers. The successful rollout and operation of Border Crossing is a key dependency for the Department's post EU Exit plans (paragraph 2.5).

15 The Department has faced technical challenges but it is now confident it has people with the right skills to deliver the programme. Technical issues affected the availability of the Department's Border Crossing version 0.4 system when it was live from September 2019, causing progressively increased downtime (both planned and unplanned). In December 2019, six out of the seven pilot ports were using it to check fewer than 20% of passengers. In March 2020 the programme board suspended Border Crossing to improve system stability and support. In total it had been available for 54% (84) of the days it was in live operation. As part of the reset, the Department increased the number of technical staff working on the programme. The Department is confident that it now has the technical capability and resources it needs to deliver the programme (paragraphs 2.12 and 2.14).

16 In September 2019, the Department revised its programme governance arrangements to address the oversight and risk management issues it had faced. In May 2019, a Department-commissioned review found that programme leadership had failed to understand the technical requirements of the programme and that staff leading the programme had bred a culture of manipulated communications towards key stakeholders and senior leadership. In September 2019, the programme board became the sole decision-making body and amended its attendee list, to make board discussions more focused on the priority issues, with appropriate stakeholders present to inform decisions. In doing so, the board aimed to improve the clarity of its remit, encourage informed decision-making and clarify authority. However, the Department had not reviewed the management information the board received and how technical delivery was reported and understood across the programme (paragraphs 1.14, 2.19 and 2.20).

The remaining risks facing the Department in delivering the programme

17 Since the Department reset the programme in July 2019, it has amended its approach, changing its scope risk rating in August 2020. The Department has changed its approach to delivering its solution for managing the watchlist of people of interest. Its solution will now replace the old watchlist in two phases rather than one. Recognising this change and, to ensure focus on it, the Department amended its programme scope risk to Red (paragraph 3.2).

18 In August 2020, the Department set a challenging schedule to deliver its new systems by the end of March 2022. Building on work it has done since the reset, the Department has 16 months from December 2020 to introduce its new systems. This includes delivering the more technically complex aspects of the programme, which it has previously struggled with (paragraph 3.6). The Department has already missed some planned dates since reset (paragraph 2.8). The key elements it plans to deliver are:

- **Border Crossing.** Re-introduction on 30 November 2020, with 24/7 service availability from April 2021 and national rollout by mid-June 2021 to all 56 ports covered by the programme. This far exceeds the scale and pace of rollout it achieved with its previous version of Border Crossing, although its approach to rollout has been informed by it (paragraphs 3.7 and 3.8).
- **Upgrading of Semaphore.** The Department has not fully developed a detailed timetable for the modernisation of Semaphore. Its plans are already slipping as its work to move Semaphore to a cloud-based environment and to stabilise the system is delayed (paragraphs 2.7, 2.8 and 3.9).
- **Replacement of the watchlist.** The Department is now planning how it will deliver its long-term watchlist solution. It has decided to introduce a two-phase solution to support its objective to replace Warnings Index by the end of March 2022 (paragraph 3.10).

19 The Department depends on the delivery of other Departmental programmes by 2023-24 to meet its wider objectives at the border. In July 2020, the Department began its Data Futures programme, which includes re-use of work from its earlier development of Advance Border Control. It plans that Data Futures will meet the requirements that it removed in the reset, as well as additional requirements. Until its planned delivery of Data Futures by 2023-24, the Department will mostly have replicated, rather than improved, legacy system functionality (paragraph 3.3).

20 The Department has significant interdependencies to manage with other programmes as well as interdependencies between programme activities. From July 2021, the Department intends to check at the border whether EU passengers have settled status in the UK. From October 2021, it also plans to prevent most people travelling to the UK on an identity card rather than a full passport. To do this, it will need to have Border Crossing in full operation with the ability to check passenger status, otherwise Border Force officers will need to make additional checks on existing systems which might cause disruption and delays. Other interdependencies include, during 2021, upgrading all 298 eGates used at 15 ports: upgrading software, changing connection to the Department-owned network and moving them onto the Border Crossing system. The Department also plans to improve resilience of a Department-owned network at ports through its Port Office Infrastructure programme. This is necessary to enable Border Crossing and eGates to cease using the Warnings Index network by the end of March 2022 (paragraphs 3.11 and 3.12).

21 The Department's engagement of front-line users in developing systems

has been limited but is now increasing. The Department's Border Crossing (version 0.4) covered 28% of ports and 11% of all front-line Border Force staff. Border Force officers had been embedded in the programme team during the design and development of the Border Crossing system and have remained so. However, after the Department suspended Border Crossing 0.4 in March 2020, most front-line officers did not receive communications about future plans for the system for several months. In August 2020, the Department re-engaged with users, with some front-line officers attending workshops outlining changes to the system. The Department scheduled for its embedded officers to undertake user testing between 16 and 22 November 2020 before the launch of its latest version of Border Crossing on 30 November 2020. As the Department's suspension of Border Crossing 0.4 demonstrates, releasing a major update presents risks of technical issues and system instability only emerging during live use with limited time to remedy them, but the Department considers that embedding front-line officers in the programme team will help mitigate these risks (paragraphs 2.13, 2.14 and 3.17).

22 Stakeholders depending on the programme's watchlisting services face uncertainty about how and when their requirements will be met.

After it reset the programme, the Department developed a new plan for communicating with its stakeholders. However, we found that the majority of law enforcement stakeholders depending on the programme's watchlisting services remained unclear about how and when their requirements would be met. Furthermore, together with partners across law enforcement and government, the Department has yet to work through the implications for the programme's stakeholders of not using the Schengen Information System II (SIS II), the most widely used information sharing system for security and border management in Europe, to which it may not have access after the end of transition following EU Exit. If an agreement with the EU cannot be reached about participating in SIS II, the Department intends to use Interpol channels to exchange information with EU member states, alongside other bilateral channels (paragraphs 3.2 and 3.16).

23 Since March 2020, board and external reviewer confidence about programme delivery has increased, but significant risks remain. In June 2020, IPA increased its delivery confidence to Amber from Amber-Red in February 2020. It reported that, since February, significant progress had been made, with the leadership team and delivery capability strengthened dramatically. It observed that the issues and challenges facing the programme were well understood and being addressed. It also observed that significant risks and uncertainties remained including: development capability; Border Crossing service availability; and delivering secure software, servers, storage and networking. Given the past shortcomings with the Department's oversight and management of the programme (paragraph 11), it is of particular importance for the Department to sustain developments in its ability to track progress, including keeping sight of how the remaining risks are managed, and to understand the performance of the many systems that comprise the programme (paragraphs 3.18 and 3.19).

Conclusion on value for money

24 Between 2014 and 2019, the Department did not achieve value for money against its plans to deliver the Digital Services at the Border programme. As a result of both internal and external factors, the Department did not deliver the programme by its original timetable of March 2019, with only one of the programme's planned three systems (Border Crossing) in live operation at that point. These difficulties meant that the Department had to continue using legacy systems which are increasingly expensive and difficult to maintain and delayed its objective of giving UK Border Force officers better information with which to make decisions about people crossing the border.

25 The Department's decision in July 2019 to reset the programme provides it with a clearer focus on Border Crossing and offers a more realistic delivery plan. Since March 2020, board and external reviewer confidence about programme delivery has also increased. The Department has strengthened the programme's governance, leadership and delivery capability, better understands the challenges it faces and is working to address them. But the reset decision has extended the programme's delivery timescale by three years and the additional cost to the taxpayer of not delivering to its original timetable is £173 million. The Department is re-using some work done prior to reset but has missed some post-reset milestones, has only recently re-engaged with users, needs to complete the more technically complex aspects of the programme and must manage multiple key dependencies. Therefore, the Department still faces significant risks in delivering and integrating its new systems against a challenging timetable. And there are wider risks to value for money if it cannot successfully integrate Border Crossing, Semaphore changes and other interdependent programmes in order to deliver its ambitions for the digital border as a practical reality.

Recommendations

- 26** The Department should:
- a** build on the recent progress the programme board has made in understanding risks, and its tracking of progress, to set up ways of working in line with the scale and pace of implementation it now requires to deliver the programme. This should include ensuring that feedback mechanisms with front-line users allow it to respond rapidly to their views;
 - b** check and plan for the implications of its mitigation actions if key elements of the programme are not ready or working effectively to the timescales it requires;
 - c** continue to monitor its technical capability and skills to deliver the programme during rollout and urgently rectify any key shortfalls it identifies;
 - d** set out and monitor the dependencies between the programme and the delivery and performance of other, related activities, and the consequences of further delay upon the benefits it expects to realise from the new systems; and
 - e** analyse the key dependencies the programme has with other Home Office systems, both current and planned, and set out its high-level plans for managing the time and functionality dependencies between programmes.

Part One

Progress in achieving the Home Office's objectives for digitising the border up to 2019

The Home Office's (the Department's) objectives

1.1 In 2019-20, there were 141 million passenger arrivals in the UK, with around 40 million being from the EU. The management of the UK Border is primarily the responsibility of the Department. Border Force, a law enforcement command within the Department, has the lead operational responsibility for securing the UK border by carrying out immigration and customs controls for people and goods entering the UK.

1.2 In this part, we examine the context for the Department's Digital Services at the Border programme (the programme) and its progress in achieving the objectives it set for the programme when it started in 2014 up to its scheduled delivery in 2019.

1.3 In securing the border, government has two overarching objectives:

- *to protect the public* from terrorism, crime, illegal immigration, trafficking and the importation of illegal goods; and
- *to facilitate legitimate movement* of people and goods across the border as quickly as possible, to promote national prosperity.

1.4 In February 2014, the Department started the programme to underpin these objectives. It aimed to deliver a digitally driven border security IT system and new processes to support Border Force and law enforcement, immigration, customs and counterterrorism organisations. To strengthen border security it wanted to: replace existing systems; enable improvements in technical capability; and gather, analyse and share passenger data. **Figure 2** overleaf sets out the planned new systems in the original Digital Services at the Border programme. The Department intended to deliver these by the end of March 2019.

Figure 2

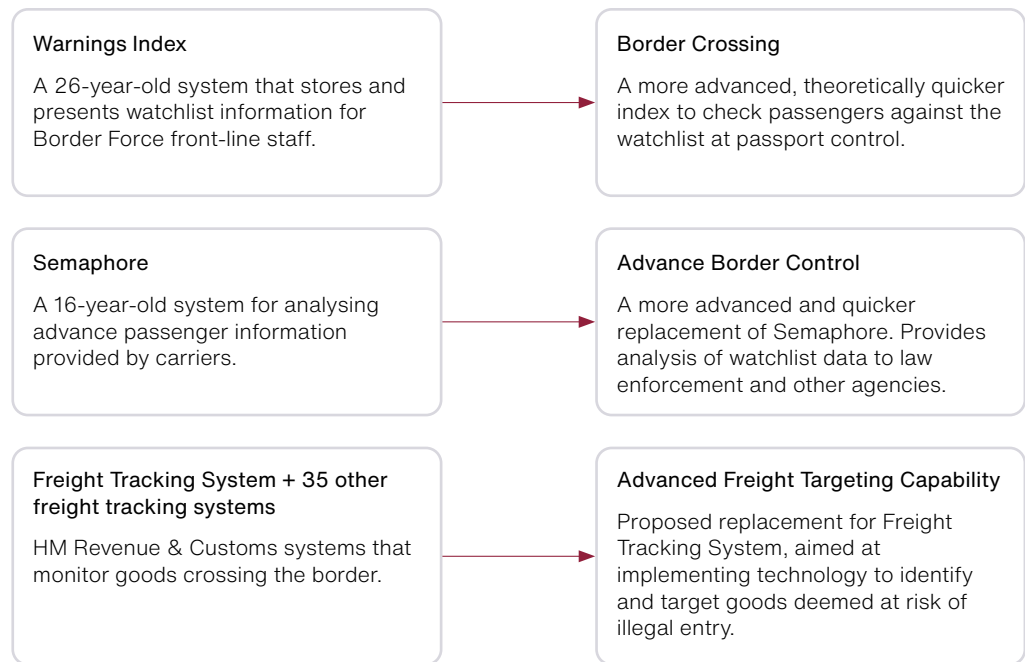
The scope of the Home Office’s Digital Services at the Border (DSAB) programme, 2014

The original scope

Legacy systems in operation

2014 Scope (original programme)

DSAB programme



Notes

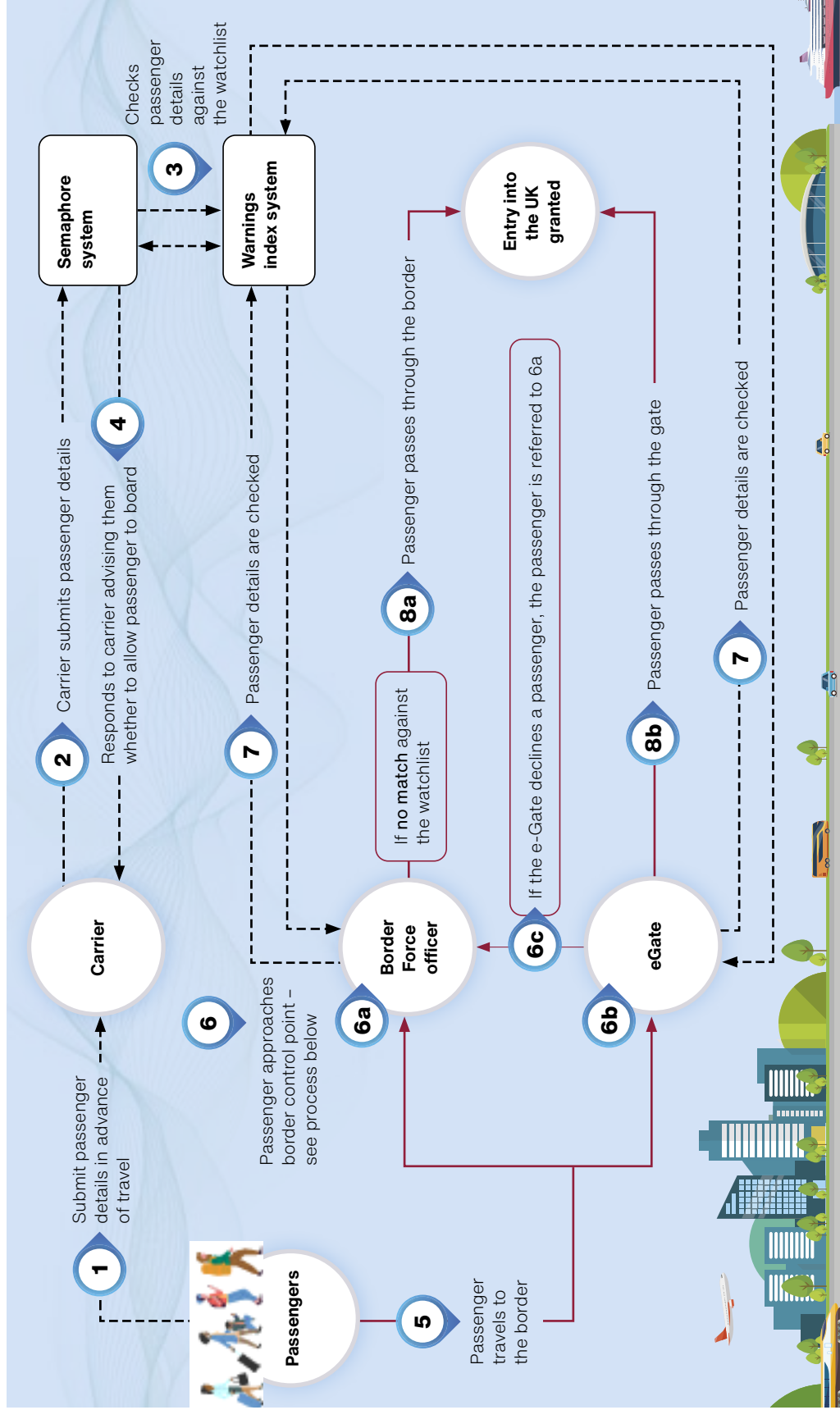
- 1 Freight targeting system is operated by HMRC, which has responsibility for checking goods at the border.
- 2 Freight targeting system provides risk profiling to target potentially suspect freight consignments.

Source: National Audit Office analysis of Home Office data

1.5 The Department uses two systems, Warnings Index and Semaphore, to determine whether passengers pose a security threat. Warnings Index provides a list of individuals of interest, known as the watchlist, which Border Force officers use to check against passenger information to determine whether a passenger can enter the UK or should be stopped at the border. The Department’s Watchlist Information Control Unit imports data for this watchlist from around 30 sources. Semaphore receives and analyses advance passenger data provided by companies transporting people across the border (**Figure 3**).

Figure 3
 Passenger journey interaction with Home Office border systems

Each passenger has interactions with Home Office systems and staff when their journey crosses the UK border



Source: National Audit Office analysis of Home Office data

1.6 The Department considers these legacy systems are increasingly expensive, difficult to maintain and unfit for the future needs of government. They use obsolete technology, cannot process the number of passengers that, before the coronavirus pandemic, was expected in the future, and their use presents security and legal risks. Warnings Index was created in 1995 and Semaphore was created as a pilot in 2004. Their ongoing maintenance requires hardware, technology and skills that are no longer easily available.

1.7 In preparing to introduce the programme, the Department set out seven strategic objectives (**Figure 4**). To examine progress, we have grouped these into the Department's three main ambitions for the programme, which were to:

- own, design and build the system, in line with business needs;
- provide enhanced information to support border management; and
- provide greater efficiency to border operations.

Figure 4

The strategic objectives of the Home Office's Digital Services at the Border (DSAB) programme

The Department's seven strategic objectives for the DSAB programme are:

- 1 Validate entitlement to enter the UK;
- 2 Enhance the acquisition, sharing, exploitation, quality and management of data;
- 3 Improve customer experience and passenger flow;
- 4 Enable control, supervision and audit;
- 5 Enhance targeting and intelligence capabilities;
- 6 Maintain system stability and enhance performance; and
- 7 Increase the efficiency of border operations.

Source: Home Office's 2014 Digital Services at the Border business case

Building the system in line with business needs

1.8 Upgrading or replacing legacy systems and improving information at the border has been an ambition of the Department since the launch of its e-borders programme in 2003.² E-borders aimed to improve data collection by improving and automating systems and processes at the border, and was due to deliver in 2011. But in 2010, the Department cancelled its contract to deliver a single e-borders system, citing failure to achieve milestones, resulting in a legal case which ultimately cost the Department £185 million. Our work has shown that the Department has also struggled to deliver other major technology programmes, such as the Emergency Services Network, suggesting that technical delivery has previously been a challenge for the Department.^{3,4}

1.9 Since 2010, the Department has commissioned a series of successor programmes to e-borders to try and realise its original e-borders vision. For the Digital Services at the Border programme, its annual programme business cases⁵ included a consistent vision but no clear plan for delivery, with only high-level deadlines.

The scope of the programme

1.10 Since the start of the programme, the Department faced pressures to increase its scope, and had not clearly defined what the programme was required to deliver. It sought to accommodate new business needs, changing priorities and technologies, with insufficient consideration of their impact. For example, the Major Projects Authority (MPA) warned in 2016 that increases in the scope of Advanced Freight Targeting Capability threatened programme priorities such as Border Crossing. The Department also lacked clarity over the scope of dependent projects such as the Common Data platform for holding data provided by law enforcement and other agencies.

1.11 In 2018, the Department added technological requirements to the programme's scope to support a digitised immigration system and a set of border controls as part of its Future Border and Immigration System (FBIS) following the UK's decision to leave the EU. *It had also anticipated, prior to the coronavirus pandemic, higher volumes of passengers requiring checks after the UK's departure from the EU.* The Department wanted FBIS to provide a fully digitised border, processing more data from EU passengers than previously. The Department introduced these new requirements without following due process for considering the impact and formally approving the change.

² Comptroller and Auditor General, *E-borders and successor programmes*, Session 2015-16, HC 608, National Audit Office, December 2015.

³ Comptroller and Auditor General, *Upgrading emergency service communications: the Emergency Services Network*, Session 2016-17, HC 627, September 2016.

⁴ Comptroller and Auditor General, *Progress delivering the Emergency Services Network*, Session 2017-2019, HC 2140, National Audit Office, May 2019.

⁵ The Department set out new business cases each year from 2014-15 to 2017-18.

Planning and delivering the programme

1.12 When the Department started the programme, it lacked clear objectives, a timetable for delivery and budget. By October 2014, the Department had not outlined its planned technical roadmap, despite its intention to set this down in September 2014.

1.13 External reviews and governance boards for the programme had identified delivery issues which, by 2019, the Department had not resolved. The Infrastructure and Projects Authority rated its confidence in programme delivery as Amber-Red in four of the five years leading up to 2019. Of the risks reported to the programme board from 2014 to June 2019, 26% were rated Black or Red (the highest and second highest ratings) for at least six months, and almost half of these were Black or Red for at least 12 months. Such risks included delays to the Border Crossing system and to solutions for storing different data classifications required for the Advance Border Control (ABC) system. The Department needed to address both of these in order to deliver its vision for the programme.

1.14 The Department faced challenges with the stability and quality of the programme's leadership in this period. It appointed four senior responsible owners and three programme directors between 2014 and 2019. Both the MPA (in November 2014) and the Department (in May 2019) identified that programme leadership had failed to understand the technical requirements of the programme. Furthermore, staff leading the programme had bred a culture of tightly controlled and manipulated communications towards key stakeholders and senior leadership, making it difficult for the Department to discuss honestly options to move the programme forward.

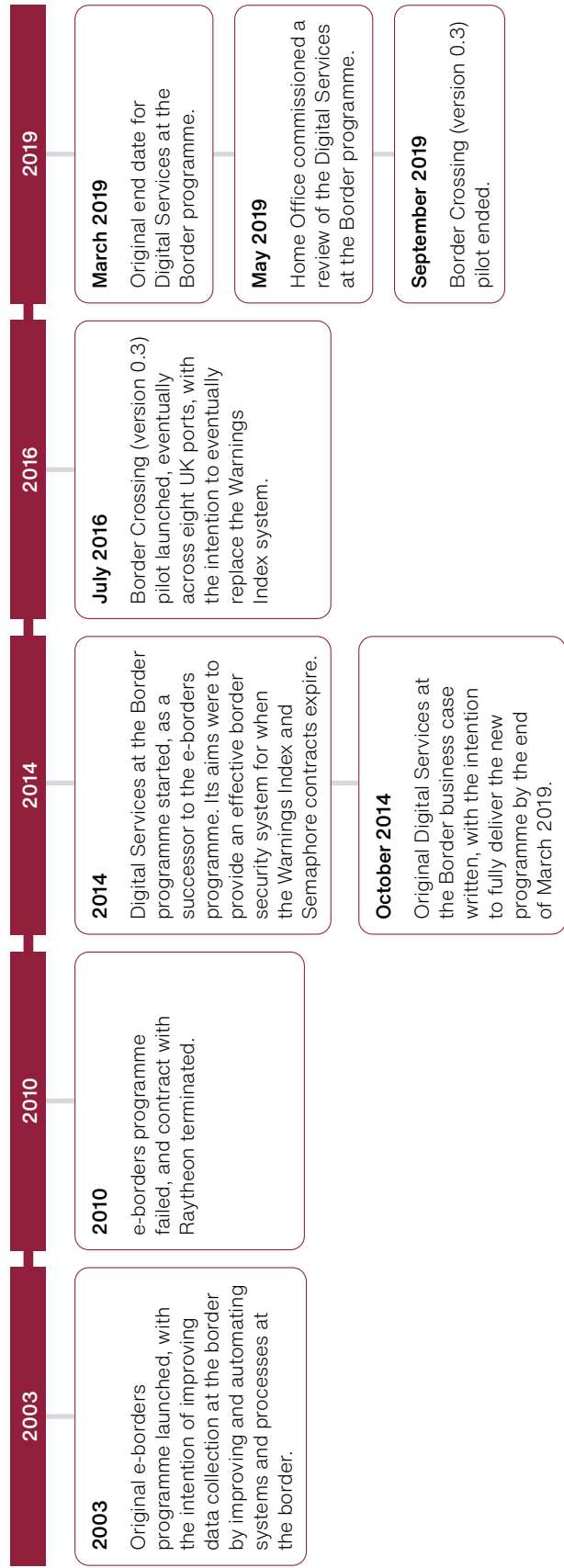
1.15 The Department failed to deliver the new systems in the programme to its planned timetable of March 2019 (**Figure 5**). By this date:

- Border Crossing was the only one of the three systems that was in live operation. The Department was operating a pilot (version 0.3) in up to eight ports across the UK;
- the Department had developed some limited capability for ABC but was still identifying what data inputs were needed. ABC remained in a development phase, so no operational system had been delivered; and
- the Department was considering how to adjust Advanced Freight Targeting Capability (AFTC) to meet business needs having developed capability to support one of the four transport modes it was intended for, despite a commitment it made in May 2016 to the Committee of Public Accounts that AFTC would be completed by June 2017.⁶ In the interim, AFTC was not in live operation. By July 2019 it stopped AFTC as it would not deliver the planned technology to identify and target goods deemed at risk of illegal entry.

⁶ HM Treasury, *Government responses on the Twenty-Seventh to the Thirty-Third reports from the Committee of Public Accounts Session 2015-16*, Cm 9270, May 2016.

Figure 5
Timeline of digital programmes at the border

The Digital Services at the Border (DSAB) programme did not deliver according to its original timetable



Source: National Audit Office analysis of Home Office data

The costs of the programme

1.16 The Department did not estimate the whole-life cost of the programme when the programme began. Its October 2014 business case included an estimated total cost of building the new systems of £189 million (equivalent to £199 million in 2020-21 terms⁷), but did not include any information on running costs or the cost of continuing to run legacy systems. By March 2019 the Department had spent £120 million developing new programme systems, £79 million less than it had planned. The annual business cases the Department produced from 2015-16 to 2017-18 have not taken a consistent approach to assessing which running costs were included; for example, some excluded the cost of legacy systems entirely.

Enhanced information to support border management

1.17 As part of its planning to improve the information to support border management, the Department faced three main challenges. It needed to:

- respond to changed requirements about how it held information;
- move data for ABC onto a common platform; and
- improve the quality of data feeding into the watchlist.

Responding to changed requirements

1.18 From April 2014, in a change introduced by the Cabinet Office, government abolished the Confidential security classification, the level at which the Department held Warnings Index data.⁸ This meant that some of the data the Department holds would need to be classified at Secret level and some at Official level on programme systems. There are specific requirements for holding Secret data which are more demanding than those for Official level data. The Department planned to build its own physical data centre containing computers for storing all watchlist data at the Secret classification, regardless of its classification level, whereas data for the Warnings Index is held by Fujitsu in its data centres and at the ports.

1.19 The Department found that holding data in its own physical data centres was complex and expensive to deliver, as it imposed greater security requirements across the programme's systems. By May 2019 the physical environment and technical support of the data centre was risk-rated Black – the highest level of risk rating – and had not been resolved. The Department will be unable to replace Warnings Index with Border Crossing until it has addressed this requirement.

⁷ Costs stated in 2020-21 terms using gross domestic product deflators published by the Office for National Statistics in September 2020.

⁸ Cabinet Office, *Introducing the Government Security Classifications*, October 2013, available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/251481/Government-Security-Classifications-Supplier-Briefing-Oct-2013.pdf, October 2013.

Moving data for ABC onto a common platform

1.20 The data for ABC come from multiple agencies that use different formats and classifications for their information. The Department found that it was complex to move ABC onto a common data platform to hold all relevant data in the same system and allow faster and more secure access to those data. Using Semaphore instead of its planned replacement with ABC caused increased system instability and limited operational performance due to the increasingly obsolete technology the system relies on. Users considered that the AFTC system for goods did not have the right functionality to meet their future requirements, as it lacked the ability to combine data on goods and people, which had been the reason for replacing the existing system.

Improving the quality of data

1.21 The completeness and accuracy of the watchlist depends on quality of data input and data provision by those agencies which own the data ('data owners') including law enforcement, immigration, and other agencies. By March 2019, the Department had not delivered the improved data quality and automation of data management it had planned. Currently, the Department's Watchlist Information Control Unit brings together data from multiple sources and resolves conflicts between them. But the quality of data on the watchlist, which the Department considers part of the UK's critical national infrastructure, is below what it expects. Until the Department can improve the quality of data, more people will be flagged for review by Border Force officials than necessary.

Improving efficiency for border operations

1.22 The programme was intended to deliver: more efficient processing of individuals through ports; better understanding of which data are being accessed, by which officials; and improved security, as data about individuals would be stored in cloud-based systems rather than downloaded and held on individual laptops.

1.23 To test its Border Crossing system, the Department ran a pilot version of Border Crossing (version 0.3) at eight ports between July 2016 and September 2019. Border Crossing (version 0.3) took on average 60% longer per search than the existing Warnings Index system, which used a lower quality search. However, Border Crossing did improve the accuracy of information presented to Border Force officers for identifying potential security risks. The Department considers that lessons from this pilot are supporting its rollout of Border Crossing.

1.24 The Department faces a number of risks and challenges with the continued operation of existing systems. For example, Warnings Index creates the risk of unlawful data processing because data cannot be easily segregated to different classifications requiring separate storage. The longer the current system is in place, the longer these risks persist.

Part Two

The Home Office's reset of the programme

2.1 In July 2019 the Home Office (the Department) decided to 'reset' its Digital Services at the Border programme (the programme). This part sets out why the Department has faced difficulties with the programme and examines how its reset aimed to address five interlinked issues at the root of its difficulties:

- the scope of the programme;
- the delivery of programme systems;
- technical challenges;
- satisfying the needs of users; and
- governance of the programme.

The scope of the programme

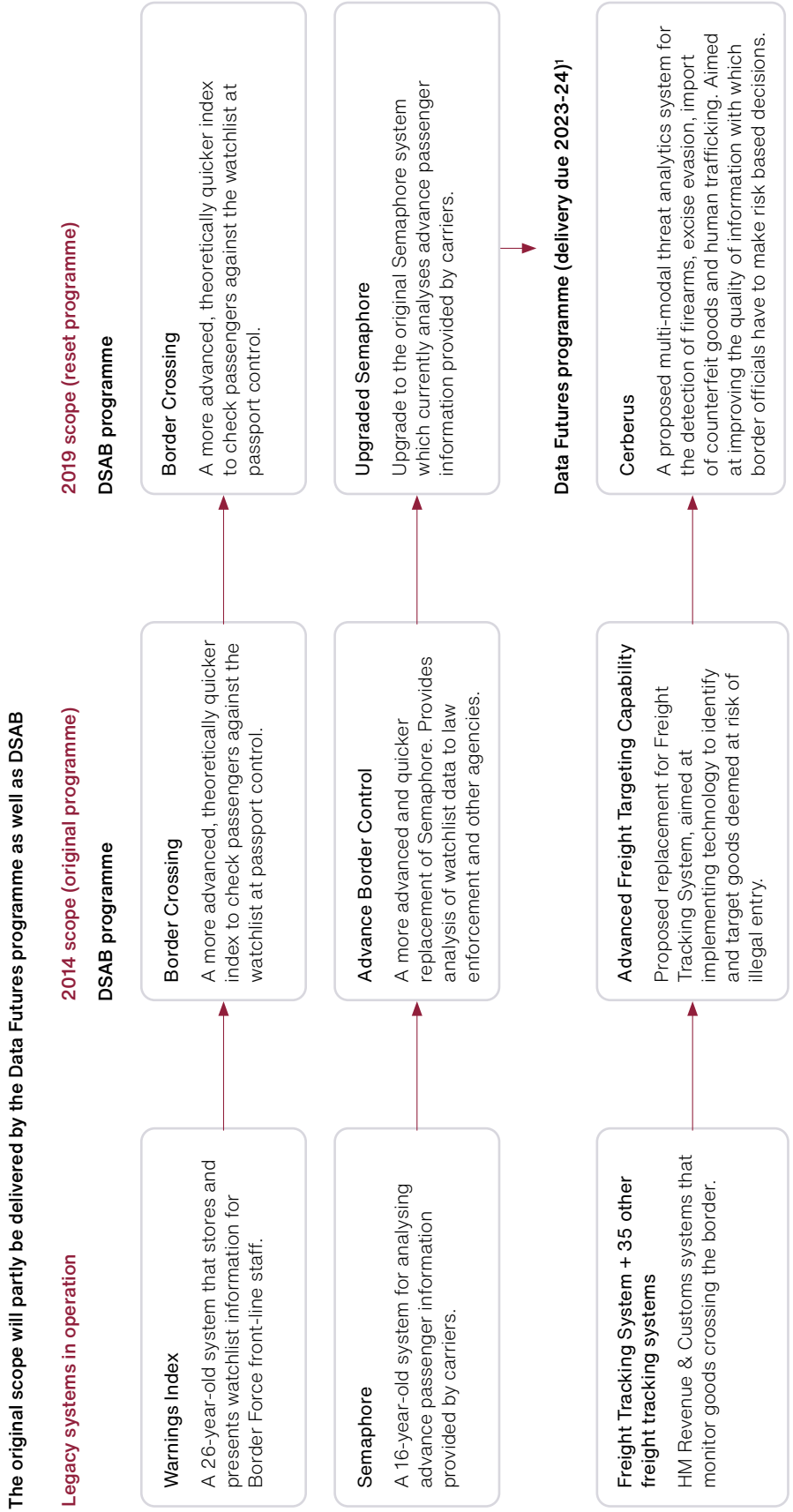
2.2 The Department decided to reset the programme following a review in May 2019. It approved the reset in July 2019. In March 2020 the Department's Portfolio Investment Committee approved a new programme business case, which it subsequently updated and approved in May 2020. The programme board formally closed the reset period in June 2020.

2.3 The Department intended that its reset would give the programme a reduced, more manageable scope. It recognised scope creep, changes including the government change to classification of security data; a government requirement to improve data and analytical systems to provide intelligence on areas of risk and better targeting of resources to areas where risks and vulnerabilities were greater; and requirements stemming from the UK's decision to leave the European Union, had affected its ability to deliver the programme to its original March 2019 timescale. The Department emphasised that its objectives were to replace existing legacy systems and to enable the border controls required for the Department's EU Exit work, including its planned digitised immigration system (Future Border and Immigration System (FBIS)). These objectives evolved from its aims in 2014 for fundamental transformation of the functionality available to Border Force staff (paragraph 1.4), which will now depend on other programmes being developed by the Department.

2.4 Of the three systems it originally planned to deliver through the programme (paragraph 1.4 and Figure 2), the Department now plans to deliver only the Border Crossing system (**Figure 6** overleaf):

- It plans that Border Crossing will now include technology that allows the simultaneous search of multiple databases which will be the long-term solution for managing the watchlist. It will enable the checking of passengers against data held by law enforcement and other agencies in their own separate databases rather than the Department aggregating all of these databases into a single centrally-held watchlist. This will include searching Secret level data held in a Home Office data centre. The Department intends that this simultaneous search capability will replace the watchlist informing the Warnings Index (paragraph 1.5).
- The Department now plans to stabilise and improve Semaphore rather than replace it with Advance Border Control (ABC). This will involve moving it to a cloud-based service and stabilising it by separating the reporting database used by data owners to add new data and the operational database used by front-line Border Force officers. In July 2019, the Department had rated the delivery risk to ABC as Red.
- The Department suspended work on Advanced Freight Targeting Capability (AFTC) in May 2019. It subsequently ended work on this system in July 2019 as part of its programme reset, removing the flow of goods from scope. It had planned for the ABC and AFTC systems to deliver tools to apply risk-based checking of people and goods crossing the border. It removed these tools from the programme's scope in March 2020. It reallocated these requirements to the Department's Digital, Data and Technology function, but did not set a timetable for delivery.

Figure 6 Digital Services at the Border (DSAB) programme scope before and after the Home Office reset the programme



Note

1 At the time of the reset, the Data Futures programme had not started and no delivery timetable had been set.

Source: National Audit Office analysis of Home Office data

2.5 The Department has new demands to meet on border management in relation to EU Exit. Additional requirements for the programme stem from its FBIS (paragraph 1.11), as EU passengers from outside the Common Travel Area between the UK and Ireland will, when crossing the border, need to demonstrate their immigration status such as whether they are settled in the UK or a visitor. The most significant requirement will be to enable electronic visas, settled status and other status, which will be official digital permissions to enter the UK, to be checked at the border for these passengers. EU passengers applying for them will need to be checked against the watchlist, to determine their eligibility to enter the UK. In practice, the successful rollout and operation of Border Crossing is a key dependency for the Department's post EU Exit plans.

2.6 Having reset the programme, the Department expects it to deliver lower quantified benefits. In its 2014 business case it forecast benefits of £62 million over three years. Following the reset, the Department no longer believes the programme's contribution to these benefits can be quantified (**Figure 7** overleaf). The Department used the reset to refocus the programme on providing core national security benefits such as reducing terrorist and criminal threats by giving the Department more control over who enters the UK. The Department's March 2020 business case also forecasts £11 million benefits over nine years based on predicted efficiency savings for Border Force staff. The Department told us that it now calculates benefits in a different way and that it expects its FBIS programme (paragraph 1.11) to deliver some of the benefits no longer in the programme, but this has not been confirmed.

Figure 7

Benefits from the Digital Services at the Border programme quantified by the Home Office (the Department) in 2014 compared to 2019

The Department has reduced expected quantifiable benefits by 82% since 2014

Benefit	Description	Value in 2014 business case (£m, net present value)	Value in 2019-20 business case (£m, net present value)
Cost of crime ²	Reduced crime by stopping people or goods at the border	41	NA
Welfare benefits ²	Stopping benefit payments to those not entitled while they are abroad	20	NA
Landing cards ³	No longer requiring landing cards	1	NA
Automated documentation	Automated production of a document notifying travellers that they are subject to further investigation (saving seven minutes per form)	NA	4
Process efficiency	Reduced time spent looking up data at the back office (saving 13 minutes per investigation)	NA	3
Semaphore	Automated checking of Semaphore results (saving two minutes per result)	NA	2
Watchlisting	Reduced manual processing of watchlist data through greater automation and reduced data retention	NA	2
Total benefits		62	11

Notes

- 1 All benefits discounted to 2020-21 using the government's preferred discount rate of 3.5%.
- 2 The 2014 business case forecast quantified benefits would occur between 2016-17 and 2018-19. Following the reset, the Department no longer believes the programme's contribution to benefits recognised in the 2014 business case can be quantified, and these are marked as 'NA'. The 2019-20 business case forecasts benefits will occur over 2021-22 to 2029-30.
- 3 The Department withdrew landing cards in 2019.

Source: National Audit Office analysis of Home Office data

The delivery of programme systems

2.7 The Department's reset revised its timescale, with an intention to deliver its programme by the end of March 2022 (**Figure 8** on pages 30 and 31). The Department's March 2020 business case set out its ambitions for FBIS and for replacing Warnings Index and modernising Semaphore. The Department has set out key dates for system delivery but it still lacks a detailed end-to-end timetable. For instance, it expects to complete stabilisation of the Semaphore database, and the move of Semaphore data to cloud-based services in 2020, but it has not set a detailed timetable for delivery of each programme requirement.

2.8 The Department has already failed to meet planned dates it set out following its programme reset. It began its national rollout of Border Crossing (version 0.4) in September 2019, 27 months later than the commitment of a June 2017 start date it had made to the Committee of Public Accounts in May 2016.⁹ It was scheduled to complete its national rollout in October 2020. The Department decided to suspend its operation of Border Crossing (version 0.4) in early March 2020, as it faced stability issues during the rollout, leading to the system being taken offline, which it recognised needed resolving. The Department told us that it launched its latest version of Border Crossing on 30 November 2020. It had delayed moving Semaphore to the cloud from May 2020 to November 2020.

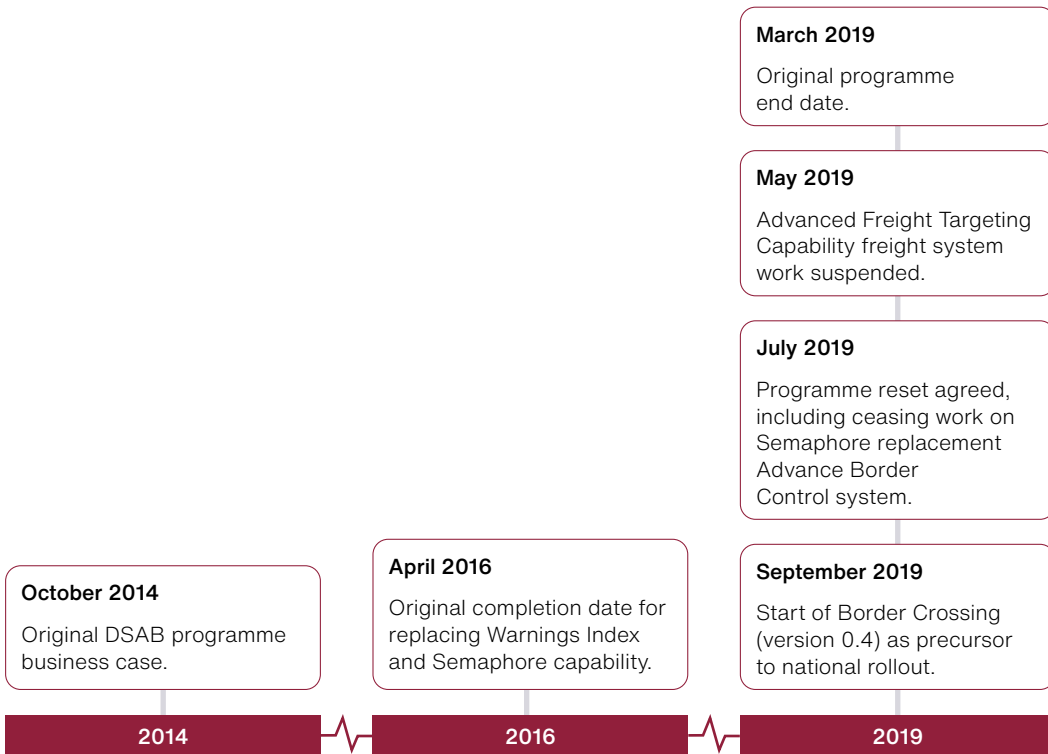
2.9 The Department's decision to extend programme delivery for three years will add costs to the programme and further costs will be incurred to maintain legacy systems. It had spent £120 million by March 2019 (see paragraph 1.16), and now expects to spend a further £191 million to complete the programme systems by March 2022, taking the total estimated cost of delivering the new systems from 2014-15 to 2021-22 to £311 million. The Department also expects to pay a further £145 million to keep the legacy systems running until 2022. In total, costs incurred as a result of delayed delivery have increased by £336 million between 2019-20 and 2021-22. However, this cost increase is reduced because the Department spent £79 million less than planned by March 2019 and the delay means it does not start to pay running costs of around £84 million until 2022-23. Estimates of these running costs are uncertain because the original business case did not estimate how much running costs would have been had the programme delivered by March 2019. The Department therefore estimates that the net impact of not delivering to its original timetable of March 2019 is an additional cost of £173 million between 2014-15 and 2021-22.

⁹ HM Treasury, *Government responses on the Twenty Seventh to the Thirty Third reports from the Committee of Public Accounts Session 2015-16*, Cm 9270, May 2016.

Figure 8

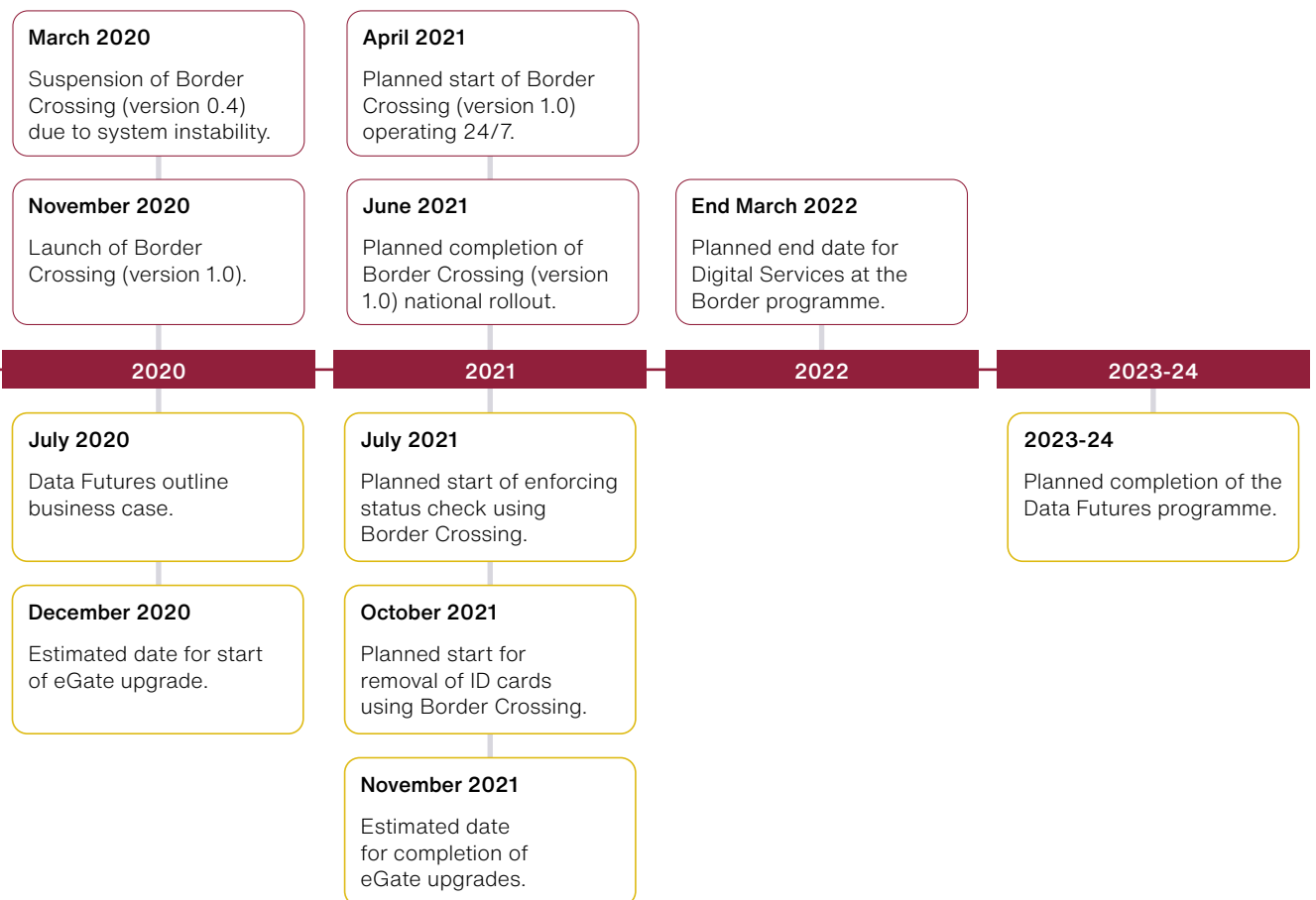
The Home Office’s (the Department’s) delivery timeline for the Digital Services at the Border (DSAB) programme and dependencies

The Department must meet multiple milestones for the DSAB programme and related dependency milestones by the end of March 2022



- DSAB programme
- Dependencies

Source: National Audit Office analysis of Home Office data



2.10 The Department's March 2020 business case took greater account of the running costs of the systems once they are operating. It estimated total costs for the operating phase, 2022-23 to 2029-30, at £296 million, comprising £143 million to run legacy systems and £153 million to run its new programme systems. From 2014-15 to 2029-30, the Department expects to spend in total around £1,013 million on providing and running the new and legacy systems for essential watchlist and border security capabilities (**Figure 9**). The Department estimates that this is lower than the amount it would have spent on legacy systems had the programme been stopped instead of re-set, as it would have needed to increase the amount spent on legacy systems if they were not being replaced. If expenditure reverted to 2014-15 levels from 2020-21, the total cost of continuing on legacy systems (2014-15 to 2029-30) could have been £1,150 million.

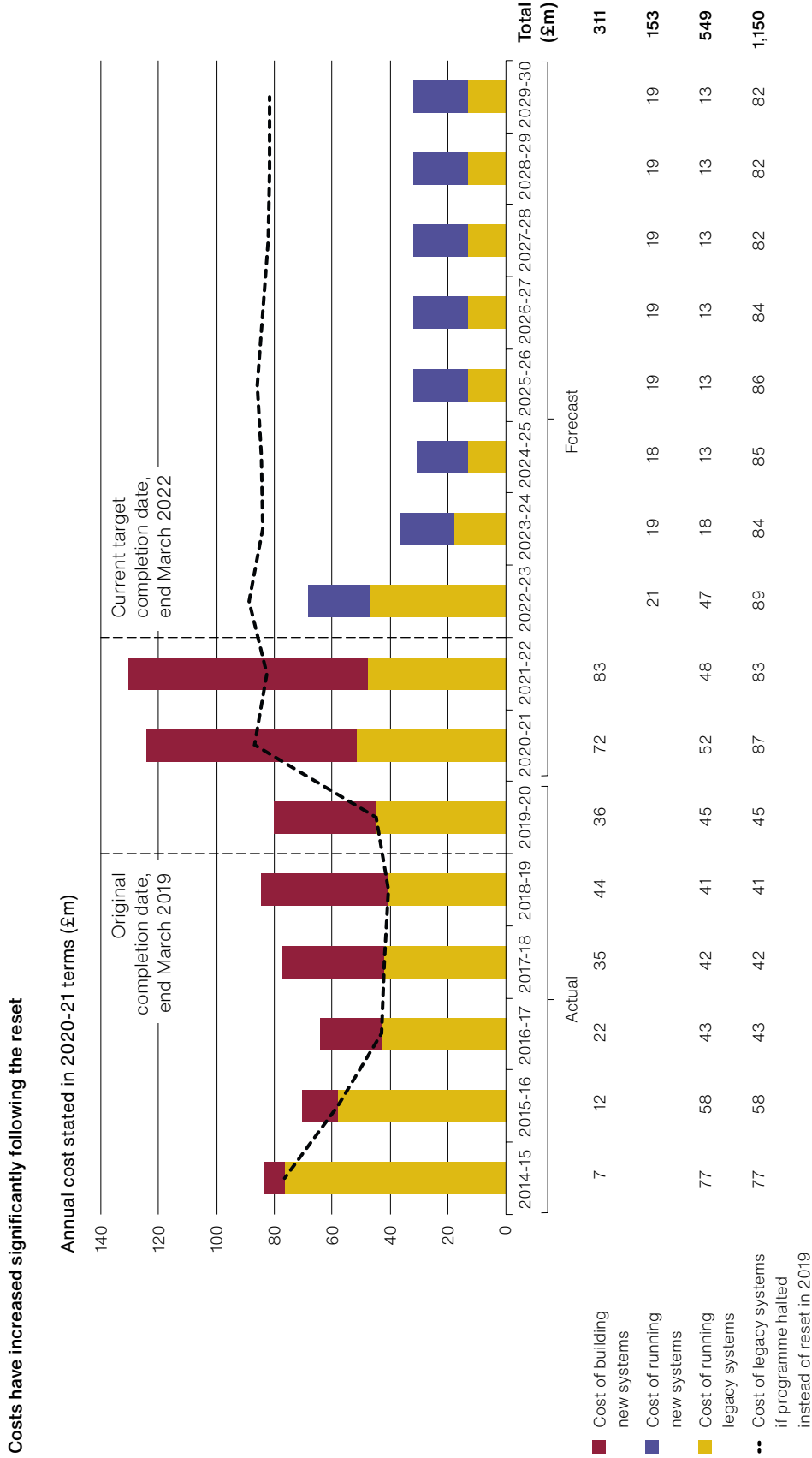
Technical challenges

2.11 Prior to the reset, the Department had underestimated the technology requirements of the programme, and the capability it needed for delivery. Its May 2019 review found that the Department had failed to appreciate the scope and scale of issues impacting the programme. Resourcing shortages, particularly of technical staff, were reported to the programme board eight times in 35 months between July 2015 and May 2018, although the Department considers such shortages were not unique to the programme. By July 2019 the Department risk-rated the programme resourcing as Black – the highest possible risk-rating – meaning that a risk was critical or significant in severity and likely or very likely to occur.

2.12 As part of the reset, the Department increased its Digital, Data and Technology function staff working on technical aspects of the programme such as testing and support. To reduce programme running costs, it sought to reduce its reliance on contractors, which stood at more than 80% of staff delivering the programme in May 2019. By May 2020 it had reduced this to 64% but by September 2020 it had increased again to 78%. The Department is now confident that it has the technical capability and resources it needs to deliver the programme.

2.13 The Department directed its technical capability to ongoing and emerging technical challenges. When the Department launched Border Crossing (version 0.4) in September 2019, it continued to use the same rules for passenger entry to the UK as the Warnings Index (paragraph 1.24). The Department's launch of Border Crossing covered 28% of ports due to use it and 11% of all front-line Border Force staff. Its intention was to scale-up the system to national rollout, covering 57 ports by October 2020. The system was available only between 8am and 8pm, as the Department did not have the resources it needed to support the 24/7 service it required.

Figure 9
The Home Office's (the Department's) total spending on its Digital Services at the Border programme and legacy systems between 2014-15 and 2029-30



Notes

- Shows the Department's March 2020 estimate of costs of building and running the new and legacy systems. From 2022-23 legacy costs represent the forecast cost of the Semaphore system. 'Cost of legacy systems if programme halted instead of reset in 2019' assumes investment reverts to 2014-15 levels in real-terms. We have not audited these data.
- Costs stated in 2020-21 terms using gross domestic product deflators published by the Office for National Statistics in September 2020.

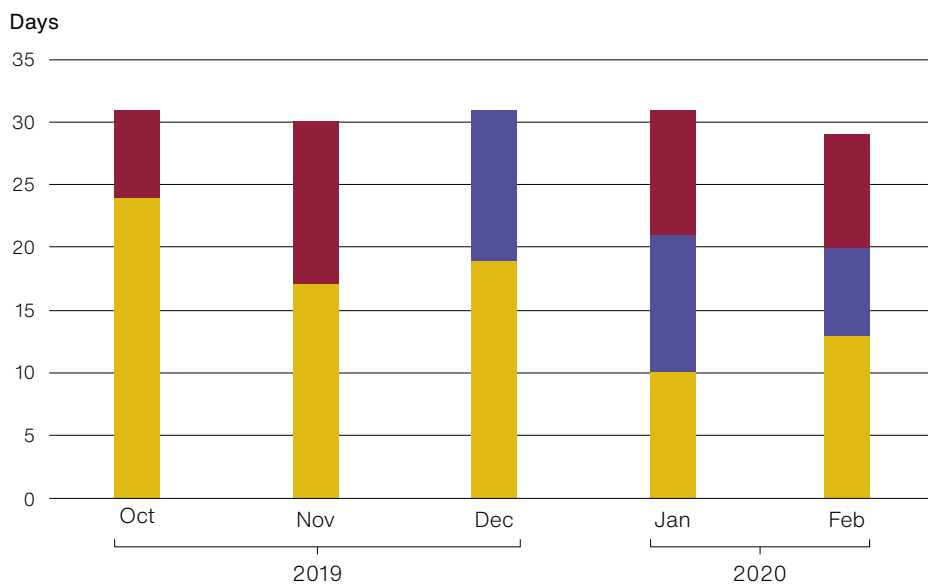
Source: National Audit Office analysis of Home Office data

2.14 Technical issues affected the availability of the system when it was live, causing progressively increased downtime (both planned and unplanned). In December 2019, six out of the seven planned ports were using Border Crossing to check fewer than 20% of passengers. In March 2020 the programme board suspended Border Crossing to improve system stability and support. In total Border Crossing had been available for 54% (84) of the days it was in live operation (**Figure 10**).

Figure 10

Availability of the Home Office’s (the Department’s) Border Crossing system (version 0.4) between October 2019 and February 2020

Technical issues affected the availability of the system when it was live and the Department suspended Border Crossing in March 2020 due to system instability



■ Unplanned downtime	7	13	0	10	9
■ Planned downtime	0	0	12	11	7
■ Available without Interruption	24	17	19	10	13

Notes

- 1 This Figure does not show operation during September 2019 and March 2020. Border Crossing (version 0.4) also operated without interruption on 30 September 2019. Between 1 and 4 March it had four days of unplanned downtime. In total, Border Crossing was available for 84 of the days the system was in live operation (54%).
- 2 Unplanned downtime: days when Border Crossing was unavailable due to unforeseen problems with the system.
- 3 Planned downtime: days when the Border Crossing system was unavailable due to planned work and upgrades on the system.

Source: National Audit Office analysis of Home Office data.

2.15 Following the reset the Department restated its priority to improve data quality in the programme (see paragraphs 1.5 and 1.22). It is seeking to influence good data quality among data owners and establish common data standards for the first time to help systems to connect to one another. It has not yet set new common data standards or begun the substantial task of improving the quality of data already held on the watchlist (for example, removing entries with insufficient information to identify an individual). The problems caused by poor data quality for the Department and data owners will continue until this work is progressed (see paragraph 1.19).

Satisfying the needs of users

2.16 The Department's failure to deliver the new systems in the programme by its planned date of March 2019 meant that it did not meet the needs of users of the planned new systems in the Department and elsewhere, including those of front-line Border Force officers.

2.17 The Department had planned that the programme would meet the data requirements of law enforcement organisations and other agencies to enable them to maximise the detection of unknown threats. This included tools to apply risk-based checking of people and goods crossing the border. Following the removal of this requirement from the programme's scope following the reset, the Department transferred responsibility for delivering this capability to its Digital, Data and Technology function, with requirements set by the Border Force Intelligence directorate. The Departmental team is working with stakeholders to set out the timetable for delivery of this work.

2.18 Border Force officers have not yet reported a notable improvement in system performance when using Border Crossing in comparison with the legacy system, with limited formal collection or evaluation of quantitative and qualitative feedback by the Department about the system. The Department has gathered some evidence that Border Force officers liked the appearance of the new system screens but were dissatisfied with the service availability. During its Border Crossing (version 0.4) rollout, the Department collected survey feedback from Border Force officers using the system. The Department received 26 responses from 783 users (3.3%). Of these, 12% (three) reported a decrease in the number of back-office checks required which would improve efficiency, 27% (seven) found Border Crossing performance faster and 31% (eight) reported fewer search results making it easier to identify passengers of interest than on the legacy system. We found in discussions with Border Force officers that their experience of using the system had been mixed. They liked the potential offered by the Border Crossing system but had been frustrated by its reliability.

Governance of the programme

2.19 In September 2019, the Department revised its programme governance arrangements, aiming to resolve stakeholder confusion, encourage informed decision-making and clarify authority. The programme's senior responsible owner decided the programme board would become the sole decision-making body and amended its attendee list, seeking to make board discussions more strategic and focused on the priority issues, with appropriate stakeholders present to inform decisions.

2.20 The Department increased the programme's technical leadership capability in response to external review but it did not review how progress was reported at programme board level. In February 2020, the Infrastructure and Projects Authority rated its delivery confidence for the programme as Amber-Red. It recommended that the Department should review the composition of its programme leadership to improve its capability in delivering a complex technical programme. In March 2020, the Department appointed a Technical Delivery Director to work alongside the Programme Director. However, the Department had not reviewed the management information the programme board received and how technical delivery was reported and understood across the programme.

Part Three

Remaining risks to delivery

3.1 This part covers the Home Office's (the Department's) progress since its reset of the Digital Services at the Border programme (the programme) concluded in March 2020. In the context of this progress, it examines the extent to which the Department has addressed risks to delivering the programme across the issues we identified in Part Two:

- the scope of the programme;
- planning, delivery, technological challenges and capability;
- satisfying the needs of users; and
- leadership and governance.

The scope of the programme

3.2 Since March 2020, the Department has not altered its objectives, but it has amended the programme's scope. Recent changes to the programme have been better controlled and followed governance processes. However, in August 2020, it rated scope risk as Red, highlighting an increased likelihood of scope change.

- The programme board approved a change in approach to delivering its solution for managing the watchlist of people of interest so that its solution will now replace the existing system in two phases rather than one. Recognising this change and, to ensure focus on this activity, the board amended its programme scope risk to Red.

- In May 2020, the Department decided to remove future connections to the Schengen Information System (SIS II) from all its programmes, including Digital Services at the Border. SIS II is the most widely used information sharing system for security and border management in Europe, but the EU Commission's view is that there is no legal basis on which the UK could continue to participate in SIS II after its departure from the EU. The Department has plans in place to remove all SIS data from all systems including Semaphore, Warnings Index and Border Crossing on 31 December 2020. While it plans to mitigate the loss of access to SIS II, the implications of replacing this key data source for the programme's stakeholders are yet to be worked through. Partners across law enforcement and government face similar challenges in assessing the impact of lost access to SIS II. If an agreement with the EU cannot be reached about participating in SIS II, the Department intends to use Interpol channels to exchange information with EU member states, alongside other bilateral channels.

3.3 The Department depends upon the delivery of other activity by 2023-24 to meet its overarching objectives. In July 2020, the Department began its Data Futures programme, which includes re-use of work from its earlier development of Advance Border Control. It plans that Data Futures will meet the requirements that it removed in the reset, as well as additional requirements (paragraphs 2.4 to 2.6). It plans to develop a single system, enabling analysis of datasets and passenger and freight data across different types of transport, to achieve its original 2014 objective of replacing the Semaphore system. The Department recognises that this is a critical gap in the use of data which will remain until its planned delivery of this element of the Data Futures programme by 2023-24. Prior to that the Department will mostly have replicated, rather than improved, legacy system functionality (**Figure 11**).

3.4 As the Department did not meet its timetable to deliver its new programme systems by March 2019, it extended its legacy system contracts with Fujitsu and IBM to 30 April 2022. The Department has not yet set out a detailed strategy for replacing the legacy contracts. It can choose to extend the Fujitsu and IBM contracts beyond 2022, but it would need to negotiate the detailed terms of such an extension, including its cost, with suppliers. The Department considers extension of the legacy contracts to be its contingency plan should it not meet its revised timetable for delivery of the programme. Both suppliers told us that short extensions made it hard to justify their continued investment and the existing contracts already expose the Department to the risk of additional costs and service risks should obsolete components fail.

Figure 11

Changes to how the Home Office (the Department) will meet border requirements

The Department will not meet all the user needs and requirements it planned through the Digital Services at the Border (DSAB) programme by its new end of March 2022 delivery date

Requirements	Customer	The programme's business case scope		Responsible programme for delivering scope in future	
		2014	2020	DSAB (by 2022)	Data Futures (by 2023-24)
Replacement for Warnings Index system	Border Force	✓	✓	✓	
Replacement for Semaphore	Border Force, police and other law enforcement agencies	✓	✗		✓
Modernising Semaphore	Border Force, Police and other law enforcement agencies	✗	✓	✓	
Replacement for HM Revenue & Customs' (HMRC) Freight Tracking System	Border Force and HMRC	✓	✗		
Split of Official- and Secret-level classified data	Border Force	✗	✓	✓	
Data collection from carriers	Police and other law enforcement agencies	✓	✗		✓
Carrier data analysis	Police, other law enforcement agencies, UK Visas and Immigration, Immigration, HMRC and the Department for Work & Pensions	✓	✗		✓
Status check	Border Force	✗	✓	✓	
eGates connection to Border Crossing	Border Force	✗	✓	✓	
Multiple watchlist search capability	Border Force	✗	✓	✓	
Shorter Home Office Watchlist	Border Force	✗	✓	✓	

Source: National Audit Office analysis of Home Office business cases

3.5 The Department intends to replace the Warnings Index contract with Fujitsu and split the Semaphore service with IBM into smaller contracts after it has completed its Semaphore modernisation work (Appendix Three). It has not started to consider how Semaphore will be split nor how the potentially greater number of contracts will work in practice. These new contracts will run until the modernised Semaphore system is replaced by its Data Futures programme. The Department has not planned for the decommissioning of these contracts. For the Warnings Index, the Department has not yet agreed an exit plan with Fujitsu.

Planning, delivery, technological challenges and capability

3.6 In August 2020, the Department set a challenging schedule to deliver its new systems by the end of March 2022. The key elements of the programme it plans to deliver are:

- Border Crossing;
- upgrading of Semaphore; and
- replacement of the watchlist.

At the same time, it has to manage a range of interdependencies and the performance of the overall system. The Department has 16 months from December 2020 to deliver the more technically complex aspects of the programme which it has previously struggled with.

Border Crossing

3.7 The Department re-introduced Border Crossing (version 1.0) on 30 November 2020, with national rollout planned by mid-June 2021 to all 56 ports covered by the programme (**Figure 12**). This will require it to reach more ports and users, with higher search volumes, and increased functionality, far exceeding the scale and pace of rollout it achieved with Border Crossing (version 0.4), although its approach to rollout has been informed by that previous version. Border Crossing (version 1.0) will change the screens available to front-line users with some increased functionality but will not replace the entire system, which will require the Department to deliver its long-term solutions for storing Secret level data and watchlist management.

3.8 The Department has set a requirement for Border Crossing to be available 24/7 from April 2021 with 99.93% availability, although its launch in November 2020 was designed to provide an initial 94% availability from 8am to 8pm with Border Force officials reverting to Warning Index during any downtime. The Department has made contingency arrangements for once Warnings Index is decommissioned in case Border Crossing cannot meet its planned 99.93% availability. If Border Crossing were not available there would be a risk of disruption at the border.

Figure 12

Comparison of the scale and pace of rollout for the Home Office's (the Department's) Border Crossing system

The Department has set a challenging rollout plan for Border Crossing (version 1.0)

Border Crossing (version 0.4) (actual)		Border Crossing (version 1.0) (planned)
30 September 2019 to 4 March 2020	Timing	30 November 2020 to June 2021
16	Ports upgraded	56
28%	Ports using Border Crossing	100%
12 weeks	Rollout time per port	12 weeks ¹
8am to 8pm	Availability	24/7 (from April 2021)
783	Users	7,000
600 (target not achieved)	Required search per minute	1,050
The ability to check the face, fingerprint or other biometric data of a person against the Department's biometric watchlist in real time at the border or other intervention point.	New functionality since the previous Border Crossing release	Checks for whether an EU passenger has settled status in the UK or the right to travel on an identity card, eGates compatibility and FIND connection to Interpol. ²

Notes

1 Ports which have previously used Border Crossing will have an accelerated rollout time of eight weeks.

2 These features are not available through the Warnings Index system.

Source: National Audit Office analysis of Home Office data

Upgrading of Semaphore

3.9 The Department's emerging plans for the modernisation of Semaphore are not yet fully developed and are slipping. Despite the complex dependencies of the work and the data flows between the Department and carriers, the Department noted in August 2020 that it lacked a detailed plan or governance for managing these dependencies, their prioritisation and escalation. It is attempting to move Semaphore to a cloud-based environment and to stabilise the system, but this work is delayed.

Replacement of the watchlist

3.10 The Department plans to deliver its long-term storage solution for Secret level data by mid-2021, which it has previously found technically challenging (paragraph 1.19). The Department is now planning how it will deliver the full simultaneous search capability allowing border systems to search data held directly by data owners in law enforcement and other agencies without holding data in a central system. In August 2020 the programme board asked for greater certainty on any gaps in delivery of full functionality by March 2022 and for information on the volume of work to complete beyond this date. The Department has decided to introduce a two-phase solution to support its objective to replace Warnings Index by the end of March 2022 which should act as a contingency as completion of the first phase alone will be sufficient to decommission Warnings Index.

Managing interdependencies

3.11 In addition to the interdependencies within the programme, the Department has significant interdependencies to manage with other programmes (**Figure 13** on pages 44 and 45). It will need to complete the rollout of Border Crossing and the related dependencies on time if it is to meet its EU Exit policy objectives in July 2021 and cease using Warnings Index by the end of March 2022. These interdependencies include:

- improving resilience of a Department-owned network at ports through its Port Office Infrastructure programme, to enable Border Crossing and eGates to cease using the Warnings Index network; and
- its eGates upgrade covering all 298 eGates used at 15 ports: upgrading software, changing connection to the Department-owned network and moving onto the Border Crossing system during 2021.

3.12 From July 2021, the Department's EU Exit policy objective is to check at the border whether EU passengers have settled status in the UK ('status check'). From October 2021 it also plans to prevent people travelling to the UK on identity cards rather than a full passport except where they have, until at least 31 December 2025, a protected right to do so. The Department will need to have Border Crossing in full operation with the ability to check passenger status, otherwise Border Force officers will need to make additional checks on existing systems, which might cause disruption and delays at the border.

Performance of the overall system

3.13 In building the systems to be delivered by the Digital Services at the Border programme (the programme), the Department has taken responsibility for the end-to-end performance of the overall system. However, while it has set baselines from which to improve overall efficiency, it has not yet done so for performance. Until it has set requirements and targets for how the new system should operate, it will be difficult for the Department to manage the new system effectively.

3.14 The Department will take on responsibility for end-to-end system integration and maintenance across the many systems that comprise its programme. It will need to develop capability to fulfil this role to ensure the new systems work well together and provide a seamless service that users require. We have previously seen programmes such as the Emergency Services Network¹⁰ where the Department found taking on such a new role challenging. While the programme has started to bring together the various individual technical elements required for the programme at the delivery board, it needs to deliver the necessary integrity, resilience and performance of the overall end-to-end system, with documented standards, across the portfolio of interdependent programmes which together comprise the Digital Services at the Border programme.

Improving data quality

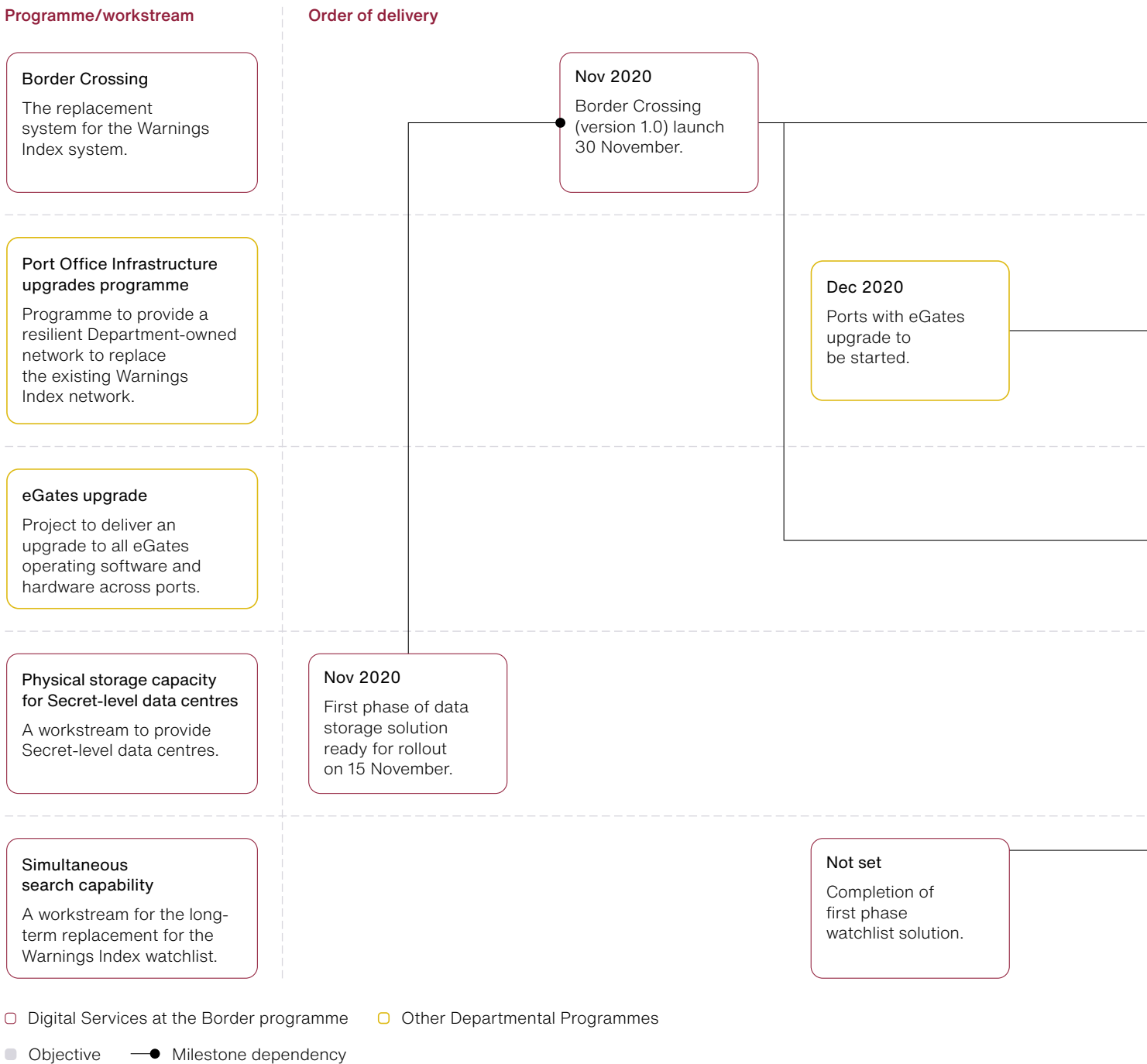
3.15 Improving the quality of data on the watchlist is fundamental to enhancing information used for border management. The Department has no map of the current data landscape and whilst it has set data principles, it has not set common data standards governing how data are collected and added to the watchlist. It has work to do to improve the quality of existing watchlist data and it has not yet secured the resources it needs for this task.

¹⁰ Comptroller and Auditor General, *Progress delivering the Emergency Services Network*, Session 2017-2019, HC 2140, National Audit Office, May 2019.

Figure 13

The Home Office's (the Department's) management of interdependencies to meet its objectives

The Department will need to manage five significant interdependencies to meet its objective to decommission Warnings Index

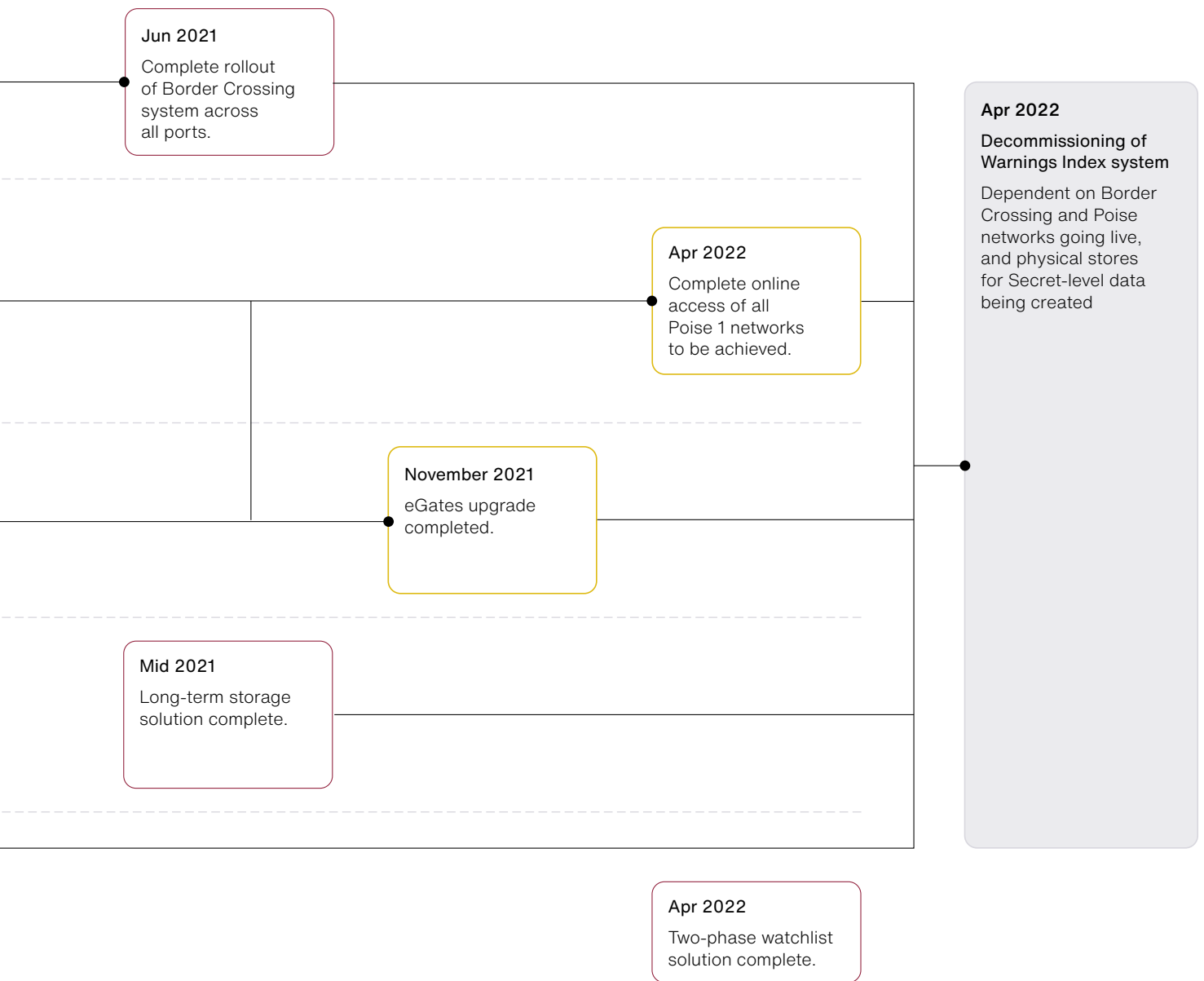


Note

1 Poise is the Home Office network which will be used to access Border Crossing.

Source: National Audit Office analysis of the Home Office data

Order of delivery continued



Satisfying the needs of users

3.16 After it reset the programme, the Department developed a new plan for communicating with its stakeholders. However, we found that the majority of law enforcement stakeholders depending on the programme's watchlisting services remained unclear how and when their requirements would be met. The Department will face changes to data sources it currently uses to construct the watchlist, which it will also need to explain to users. After the end of transition following EU Exit, the UK may not have access to data from SIS II (paragraph 3.2). The Department, together with partners across law enforcement and government, is working through the implications of not using SIS II, and when its alternative to accessing SIS II will be included in Border Crossing searches.

3.17 Border Force officers had been embedded in the programme team during the design and development of the Border Crossing system and have remained so. However, after the Department suspended Border Crossing 0.4 in March 2020, most front-line officers had not received communications about future plans for the system for several months. In August 2020, the Department re-engaged with users, with some front-line officers attending workshops outlining changes to the system. The Department scheduled for its embedded officers to undertake user testing between 16 and 22 November 2020 before the planned launch of Border Crossing (version 1.0) on 30 November 2020. The Department describes its programme management approach as 'agile', but agile programmes require a high frequency of user visibility, testing and feedback.¹¹ Releasing a major update of Border Crossing after what will be an eight month absence presents risks of technical issues and instability only emerging during live use and with limited time to remedy them. This could require the Department to deliver numerous fixes and improvements, which was the trigger for its decision to suspend Border Crossing (version 0.4) in March 2020, although the Department considers that embedding front-line officers in the programme team will help mitigate these risks.

¹¹ As expected by Government Digital Service Agile Service Manual, August 2016. Available at: www.gov.uk/service-manual/communities/agile-delivery-community

Leadership and governance

3.18 Since March 2020, the board's and external reviewers' confidence about programme delivery has increased as a result of the reset, but significant risks remain. In June 2020, the Infrastructure and Projects Authority improved its rating of delivery confidence to Amber from Amber-Red in February 2020. It reported that, since February, significant progress had been made, with the leadership team and delivery capability strengthened dramatically. It observed that the issues and challenges facing the programme were well understood and being addressed but also observed that significant risks and uncertainties remained including: development capability; Border Crossing service availability; and delivering secure software, servers, storage and networking. In August 2020, the Department rated its own delivery confidence as Amber. Of the eight risks it reported on, it rated one as Red – scope risk – and seven others, such as insufficient resource and capabilities to deliver the programme, as Amber.

3.19 The Department has been developing dashboards tracking the programme's progress and performance for the programme board and its delivery board has also made improvements in reporting. For example, in July 2020 it introduced reporting against milestones to its dashboards. More recently it has provided technical updates against all the core components of the programme as part of its standard monthly reporting to the programme board in line with what we would expect to see in order for the programme board to assess whether the programme is on track.¹² Given the past shortcomings with the Department's oversight and management of the programme, it is of particular importance for the Department to be able to sustain developments in its ability to keep track of delivery progress, including visibility of the management of these remaining risks, and to understand the overall performance of the many systems that comprise the programme.

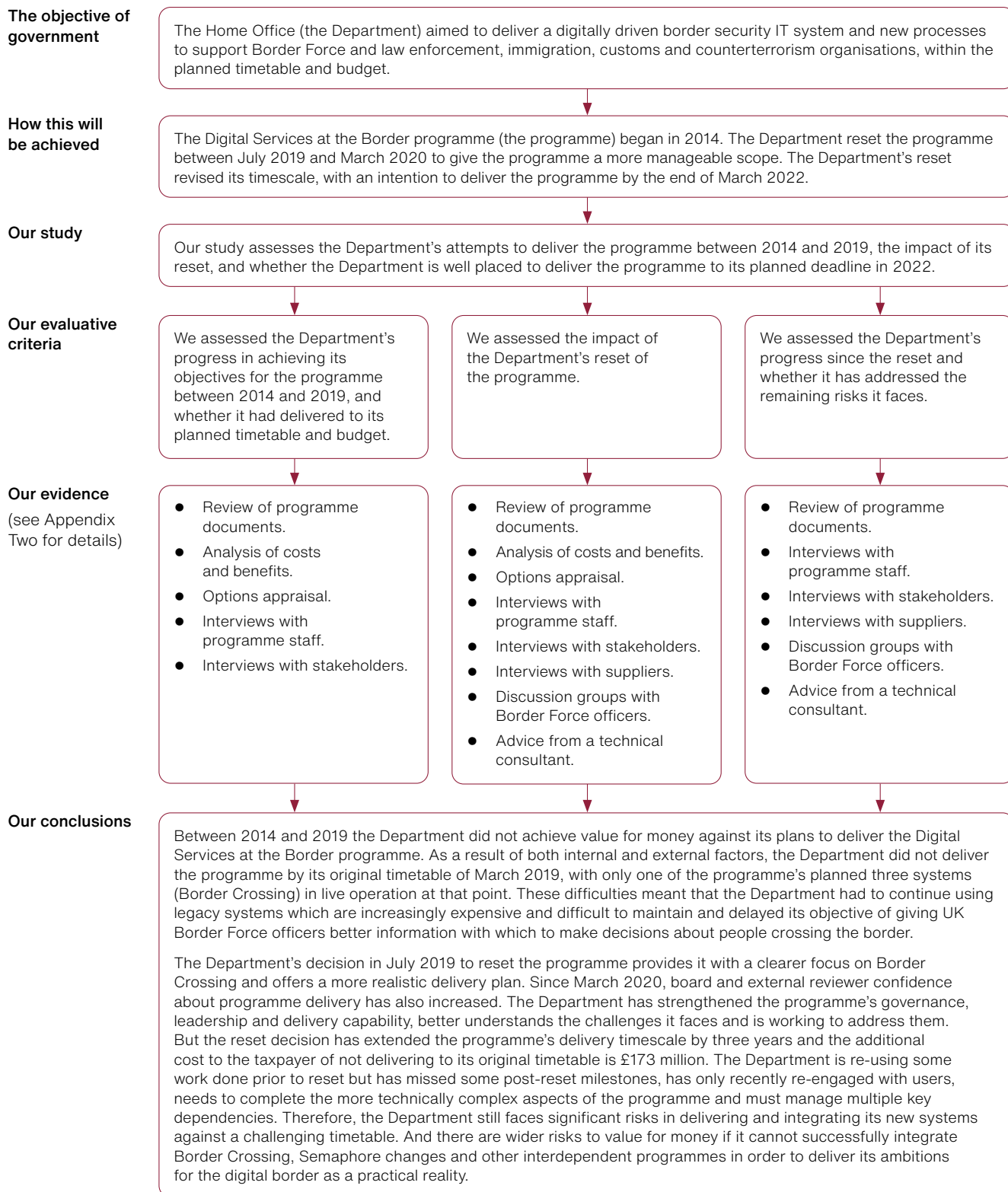
¹² See footnote 11.

Appendix One

Our audit approach

1 This study examined the Home Office's (the Department's) Digital Services at the Border programme (the programme) to assess whether it has delivered value for money. Our audit approach is summarised in **Figure 14**. Our evidence approach is described in Appendix Two.

Figure 14
Our audit approach



Appendix Two

Our evidence base

1 We reviewed documents from the Home Office (the Department).

These included: business cases, programme board minutes, Stakeholder Board minutes, Operational Delivery Group minutes, programme dashboards and risk logs.

2 We analysed programme costs and benefits. These were set out in various programme business cases, which we examined in discussions with Departmental teams.

3 We analysed contracts the programme has with IBM and Fujitsu, private companies who hold third party supplier contracts to operate the existing legacy systems. We also identified the Department's other contractual arrangements in respect of the programme (Appendix Three).

4 We interviewed staff from IBM and Fujitsu, about the legacy services their companies provide.

5 We engaged a technical consultant with significant experience of central government IT projects to advise us on the technical aspects of the programme.

6 We analysed the options considered in the programme business cases.

To support this we applied the National Audit Office's Options Appraisal Framework, considering whether the programme had followed relevant Treasury guidance.

7 We interviewed programme staff at all levels of the organisation including the senior responsible owner, programme director and technical director.

8 We interviewed key stakeholders of the programme from central government, the police and other agencies.

9 We held discussion groups with Border Force officers responsible for using legacy and programme systems at the border. We held five discussion groups at five different entry points covering four of the five Border Force regions, including airports and seaports. The groups were designed to be illustrative to inform our understanding of officers' experience of the systems rather than to be representative.

Appendix Three

Contractual arrangements

1 **Figure 15** on pages 51 and 52.

Figure 15

Digital Services at the Border (DSAB) programme contracts

The programme does not yet have all the contracts it needs to replace Warnings Index and Semaphore

Contract	Description	Providers	End	Estimated value (£m) ¹
Warnings Index²				
Applications	Software that builds the main watchlist from around 30 data sources	Fujitsu Services Ltd	30 April 2022	22
Central infrastructure	Servers, and infrastructure to run the applications	Fujitsu Services Ltd	30 April 2022	22
Port infrastructure	Network infrastructure and equipment within ports	Fujitsu Services Ltd	30 April 2022	19
Semaphore²				
Managed service	Software to match data from carriers against the Warnings Index and other watchlists	IBM UK Ltd	30 April 2022	45
IBM Software support	Software licences (2019 to 2022)	IBM UK Ltd	30 April 2022	5
Hardware support	Maintaining the servers and network infrastructure needed to run Semaphore	Specialist Computer Centres plc	30 April 2022	6

Figure 15 *continued*

Digital Services at the Border (DSAB) programme contracts

Contract	Description	Providers	End	Estimated value (£m) ¹
Main contracts to replace Warnings Index				
Software	Border Crossing system	CACI Ltd	30 July 2021	5
	Security architecture	6point6 Ltd	31 January 2021	3
	Additional development after 2021	TBD ³	TBD	TBD
Support	Help and advice for users of pilot system	Leidos plc	17 November 2021	6
	Support after 2021	TBD	TBD	TBD
Project management	Temporary staff to help run the programme	Capgemini plc	30 April 2021	3
		Methods Business and Digital Technology Ltd	31 October 2021	5
Commercial	Temporary staff to help manage the contracts	TBD	TBD	TBD
Contracts to replace Semaphore⁴				
TBD	TBD	TBD	TBD	TBD

Notes

- 1 Estimated value based on Departmental data from November 2020. We have not audited these estimates. Some contracts can be extended to 2023.
- 2 Does not show additional Departmental contracts managed outside the programme that support the current contracts. The programme does not have a single list of these contracts which includes data centres, some software licences and support contracts which are purchased direct from the manufacturer, and network infrastructure that connects Warnings Index to the ports. Some of these will continue to be used for the DSAB systems after April 2022.
- 3 Contracts for items marked 'TBD' are still to be determined.
- 4 The Department intends to replace Semaphore with multiple contracts, but it has not decided how to do this.

Source: National Audit Office analysis

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