



National Audit Office



Improving the UK's science capability for managing animal diseases

Department for Environment, Food & Rural Affairs

REPORT

**by the Comptroller
and Auditor General**

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Improving the UK's science capability for managing animal diseases

Department for Environment, Food & Rural Affairs

Report by the Comptroller and Auditor General

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Gareth Davies
Comptroller and Auditor General
National Audit Office

1 June 2022

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Contents

Key facts 4

Summary 5

Part One

Why the Weybridge site
needs redevelopment 14

Part Two

Developing the Science Capability
in Animal Health programme 21

Part Three

Managing risks to the
Science Capability in Animal
Health programme 34

Appendix One

Our audit approach 44

Appendix Two

Our evidence base 46

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report in an alternative format
for accessibility reasons, or
any of the figures in a different
format, contact the NAO at
enquiries@nao.org.uk


The National Audit Office study
team consisted of:


Jemma Dunne, Angelise Karanja,
Chris Loveridge,
Munawar Mannan and
Dan Varey under the
direction of Keith Davis.

For further information about the
National Audit Office please contact:

National Audit Office
Press Office
157-197 Buckingham Palace Road
Victoria
London
SW1W 9SP

 020 7798 7400

 www.nao.org.uk

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Key facts

£2.8bn

estimated implementation costs for the Science Capability in Animal Health programme (the Programme) as at November 2021

£1.2bn

funding for the Programme approved by HM Treasury in March 2020, part of the investment in the animal health science estate announced in the March 2020 Budget

15 years

estimated duration of the Programme, as at November 2021

Very high

rating given to the risk of failure of the Weybridge site in the Department for Environment, Food & Rural Affairs' corporate risk register

November 2021

date Programme Business Case was approved by HM Treasury with seven conditions

June 2024

date of next major milestone for the Programme – approval of revised Programme Business Case

£198 million

funding approved by HM Treasury for Tranche 1, to cover the first four financial years of programme implementation (2021-22 to 2024-25) following the Programme Business Case in November 2021. This is included within the £1.2 billion funding approved for the Programme

17

risks out of 25 in the Programme's strategic and programme risk registers as at May 2022 that have a risk score of high or very high

Summary

Introduction

1 Animal diseases have major impacts on the UK food industry and trade, demonstrated by outbreaks such as Bovine Spongiform Encephalitis (BSE), Foot and Mouth disease and most recently, Avian Influenza. Our 2002 report on *The 2001 Outbreak of Foot and Mouth Disease* estimated that the outbreak cost the public sector over £3 billion and the private sector over £5 billion based on prices at the time of the report (respectively over £4.6 billion and £7.7 billion in 2020-21 prices).¹ COVID-19 has highlighted the breadth of impact a zoonotic disease outbreak (diseases that can be transmitted from animals to humans) can have.

2 The Department for Environment, Food & Rural Affairs (Defra) leads government policy on animal health in England. The Animal and Plant Health Agency (APHA) is an executive agency of Defra and is responsible for the delivery of Defra's policy objectives in this area. It aims to investigate and respond quickly to emerging animal disease outbreaks, as well as undertaking long-term research into animal diseases. It supports the trade in plants, animals and associated products through certification, audit and inspection. APHA supports import controls on animals, plants, seeds and products of animal origin.

3 APHA's Weybridge site (Weybridge) houses the UK's primary science capability for managing threats from animal diseases. It has 98% of APHA's high containment laboratories. It is APHA's main site for running long-term animal health studies and is the only facility equipped to deal with most zoonotic diseases. Because the work at Weybridge involves hazardous biological agents and has potential for high consequence but low frequency accidents, the Health and Safety Executive (HSE) regulates APHA in line with its Major Hazard Regulatory model.

4 Weybridge is an important site nationally. Any failure in the facilities could have potentially significant impacts on the UK. In November 2021, we highlighted the need to strengthen national resilience in our report *The government's preparedness for the COVID-19 pandemic: lessons for government on risk management*.²

¹ Comptroller and Auditor General, *The 2001 Outbreak of Foot and Mouth Disease*, Session 2001-02, HC 939, National Audit Office, June 2002.

² Comptroller and Auditor General, *The government's preparedness for the COVID-19 pandemic: lessons for government on risk management*, Session 2021-22, HC 735, National Audit Office, November 2021.

5 Defra Group Property manages the physical infrastructure at the Weybridge site including maintenance and capital projects on the site. Weybridge is in poor condition, with ageing buildings that need major repair and replacement, and a lack of capacity to carry out science work. Defra estimated in 2019 that the ongoing decline at Weybridge could lead to a total loss of capability within the next five to 10 years. This would leave the UK vulnerable to future animal disease outbreaks.

6 Defra began the Science Capability in Animal Health programme (the Programme) to redevelop Weybridge in 2017. Its scope has increased from a programme focused on the construction and consolidation of Weybridge, to one which encompasses transformation incorporating science, digital, estates and sustainability transformation. The Programme is part of the Government Major Projects Portfolio.

7 The Programme is at an early stage. HM Treasury agreed Defra's first Programme Business Case with conditions in November 2021. The Programme is composed of phases, with Tranche 1 covering the period up to the next Programme Business Case in 2024. Construction of the main science hub is forecast to start in 2027. As well as the Programme, Weybridge has a critical works programme to ensure continued regulatory compliance and to maintain capability.

Scope of this report

8 This report examines how the Weybridge site has reached such a poor condition, and whether Defra is well placed to deliver value for money from the Programme to redevelop and transform the site. Our evaluative criteria are based on what we would expect to see in programmes at a similarly early stage, drawing on insights from our work looking at major programmes across government. We focus on:

- Defra's management of and investment in the Weybridge site over the past 20 years and why the site needs redeveloping (Part One);
- whether Defra has set up the Programme in line with good practice (Part Two); and
- how Defra is managing the Programme's risks, highlighting specific risks Defra will need to manage as it progresses to the next tranche of the Programme (Part Three).

9 We do not cover the extent to which the Programme is taking account of the government's sustainability and net-zero objectives, for example in its building designs. Both the Infrastructure and Projects Authority (IPA) and HM Treasury have already highlighted that more progress is needed in developing the Programme's sustainability and net-zero plans. Defra is working to respond to their recommendations. We also do not assess Defra's management of its critical works programme.

Key findings

Why the Weybridge site needs redevelopment

10 Defra has not had a long-term asset management strategy for Weybridge over the past 20 years. The site has been developed in a piecemeal way, sometimes reacting to major animal disease outbreaks. While there is evidence of recent work to improve asset registers and survey the condition of buildings, there remain gaps in the site's documentation. Defra's estate-wide facilities management contract does not have appropriate key performance indicators for a high containment site such as Weybridge. There have been serious weaknesses in Defra's management of the contract, including under-resourcing (paragraphs 1.12 to 1.16).

11 Defra has under-invested in Weybridge, and the current short-term 'patch and repair' approach is not sustainable. Investment to update the Weybridge facilities largely stopped following the 2008 financial crisis. There has also been under-investment in ongoing maintenance at Weybridge, resulting in a large maintenance backlog. There is currently a substantial shortfall in laboratory capacity. Weybridge is becoming increasingly costly to keep running through Defra's 'patch and repair' approach with an estimated £197 million required over the five years from 2020-21. For the 11 years from 2025-26, Defra expects its critical works programme to cost, on average, around £80 million a year (paragraphs 1.7 to 1.9).

12 The condition and capacity of the buildings is negatively affecting APHA's work and could limit APHA's response in the event of a major disease outbreak. APHA and Defra's corporate risk registers rate failure of Weybridge as a 'very high' risk, with Defra highlighting the old and poorly maintained facilities. The shortage of laboratory capacity is holding back the overall productivity and output of research programmes. In addition, APHA told us that the current condition and configuration of Weybridge would reduce its ability to respond effectively to disease outbreaks. There are aspects of the design and site layout that are not efficient. There have also been instances of core facilities breaking down and buildings unfit to be used. Some buildings are only usable because APHA has obtained exemptions from HSE from certain containment and control measures by demonstrating that risks will be adequately controlled by equally effective means (paragraphs 1.17 to 1.19).

Developing the Programme

13 Despite the increasing urgency to redevelop Weybridge, it has taken Defra several years to set up the Programme. Defra identified the need for substantial investment in urgent reactive maintenance at Weybridge in 2015, as part of its Spending Review submission. This reactive work highlighted that significantly more work was required. In 2017, Defra started work on the Strategic Outline Case for the redevelopment of Weybridge. However, following development of the Outline Business Case and HM Treasury's confirmation of funding in March 2020, it became clear to Defra that the cost estimates in the Outline Business Case were too low and it had not recognised the need for the Programme to incorporate wider transformation elements in addition to construction work. Defra needed to undertake considerable further work before the Programme Business Case was agreed by HM Treasury in November 2021. A full-time senior responsible owner for the Programme was only appointed in November 2020 (paragraphs 2.2 to 2.5).

14 Defra does not yet have a clear enough view of expected outcomes to be able to make informed investment decisions. Defra has set out a vision and clear case for the Programme, which has buy-in from a range of stakeholders, including APHA and Defra ministers. However, while Defra has set out five objectives for the Programme, it has not quantified the level of performance it is aiming to achieve. Defra has set out convincing evidence in its Programme Business Case for the overall benefits of the Programme. However, quantifying and valuing the benefits is challenging. Given this, Defra took a cautious approach using the lower bound of benefits estimates in the benefit-cost analysis, resulting in a benefit-cost ratio of only 0.5. The IPA raised concerns about the level of uncertainty of the benefits estimates and that understating the benefits case could lead to suboptimal investment decisions. Defra is planning further work to enhance the benefits case and understand the links between outputs, outcomes and benefits, and to develop a plan to realise these benefits (paragraphs 2.7 to 2.15).

15 Defra has improved its weak early cost estimates, including better reflection of risk and uncertainty, as well as a wider scope. Defra carried out detailed work to estimate costs for the Programme Business Case, although some elements were more mature than others. The work resulted in an increase in cost estimates from £1.2 billion in the Outline Business Case to £2.8 billion in the Programme Business Case. The estimates include a substantial allowance for risk, optimism bias and cost sensitivity, making up 34% of the estimated cost, excluding VAT and inflation. The IPA highlighted the cost plan and supporting detail as good practice. However, the estimate is based on an immature design brief and should be viewed as indicative (paragraphs 2.4 and 2.16 to 2.18).

16 Defra has made good progress in establishing governance structures within the Programme. The Programme has established a clear board structure with regular reporting from programme workstreams. Defra has taken action to strengthen governance and has identified areas for further work, such as improving the clarity around decision-making accountabilities and responsibilities. Key stakeholders (APHA and Defra Group Property) feel integrated into the governance structures. Defra is developing its Integrated Assurance and Approval Plan, which sets out the assurance arrangements for the Programme (paragraphs 2.20 to 2.23).

17 Defra has made clear efforts to learn from similar programmes and projects. Our *Framework to review programmes* highlights the importance of learning lessons within and across programmes.³ Defra has looked for opportunities to engage with other departments and programmes to learn lessons including: developing a network of contacts with experience of major projects on high containment sites; learning lessons from other major construction programmes; and learning from similar international sites (paragraph 2.25).

Defra's risk management approach

18 Defra has processes in place to manage the Programme's risks but needs to do more to integrate this with risk management across the entire Weybridge site. The Programme is high risk due to a range of factors including: the specialist nature of the construction, involving high containment engineering; and the complexity of managing a major construction programme while maintaining the business-as-usual operations of APHA. The weaknesses in the management of the site have increased the Programme's risk further by leaving it in such a poor condition. There has been an on-going process over the past three years to identify the Programme's risks since the development of the Outline Business Case. Defra has put in place the core risk management structures we would expect to see at this stage, and there are indications that it is developing a strong risk management culture. However, there is no process or individual with responsibility for assessing and managing risk across the entire Weybridge site covering the Programme, critical works, facilities management and APHA's business-as-usual operations. For example, construction work as part of the Programme could have health and safety implications and disrupt APHA's day-to-day operations (paragraphs 1.17 and 3.2 to 3.5).

³ National Audit Office, *Framework to review programmes, Update April 2021*, April 2021, available at: www.nao.org.uk/report/framework-to-review-programmes-update-april-2021/

19 In line with good practice, Defra is investing time upfront to help manage risk and reduce the uncertainty in the Programme. Defra has designed the Programme in phases, with Tranche 1 the important planning phase, running to 2024. The aim is to reduce risk and uncertainty through: moving ahead with work that would be needed on the site regardless; re-testing, as information improves, the core assumptions in the delivery plan (such as the extent of use of temporary buildings); fine-tuning the cost and schedule estimates; and reducing uncertainty, for example, through site surveys. At the end of Tranche 1a in April 2022, Defra had completed most of its planned deliverables. The main area of work yet to be completed was revisions to the Programme's commercial strategy (paragraphs 3.6 and 3.7).

Risks to the Programme

20 HM Treasury has not approved funding to cover the current estimated cost of the Programme. Defra has highlighted the risk that it fails to get sufficient funding to cover the full cost of the Programme and has to reduce its scope and hence the outcomes and benefits. HM Treasury approved funding of £1.2 billion for the Programme in March 2020 but has not formally agreed to fund the Programme at the revised cost estimate of £2.8 billion. Additional funding approval will be subject to further scrutiny of costs and benefits as the Programme moves to the next stage (paragraph 3.8).

21 The next major milestone for the Programme is HM Treasury's approval of a further iteration of the Programme Business Case in June 2024. Following this, Defra will begin procuring the main construction contracts, and expects construction of the science hub to start in 2027. From our experience of auditing other major programmes across government, we identify four risks that Defra will need to manage over the next two years to help ensure it is well set up for the next tranche of the Programme:

- **Unrealistic costs and schedules lead to unachievable plans:** Defra recognises there is still substantial uncertainty in its cost and schedule estimates but has not fully reflected this in its Programme Business Case estimates, which are expressed as single points. Best practice is to express estimates at this early stage as a range, to communicate the level of risk and uncertainty in the programme clearly to decision-makers. Not being clear about the level of uncertainty could lead to unrealistic expectations among stakeholders and result in, for example, decision-making being dominated by achieving a fixed completion date (paragraphs 3.10 to 3.12).
- **Not having appropriate staff capability:** Defra may not be able to recruit staff with appropriate skills for its 'intelligent client function' due to: a limited pool of people with the specialist skills required; civil service salary limits; and headcount limits in Defra. Failure to recruit the necessary skills (such as specialist technical and engineering skills) could impact on the pace and quality of delivery and increase costs. Defra is taking action to try to mitigate this risk (paragraphs 3.13 and 3.14).

- **Ineffective contractual arrangements:** The Programme will have a range of contracts covering professional services and construction. Failure to ensure contractors are working together with appropriate delivery incentives could result in higher programme costs. Following a recommendation from the IPA and Cabinet Office's Government Commercial Function, Defra is expecting to complete revisions to its commercial strategy in September 2022. Defra is also concerned about the level of contractors' appetite to bid for the main construction contracts (paragraphs 3.15 to 3.18).
- **Not managing external and internal dependencies:** Ineffective management of the range of external and internal dependencies could cause delays to the Programme. For example, delays to the critical works programme could delay clearing areas of the site for the Programme. Defra is still developing some of the processes to manage these dependencies. The link between construction design and transformation design is important, with transformation vital to delivering improvements in science capability. Some elements of transformation are not yet well developed such as science and digital. If this continues it could result in buildings not meeting the needs of APHA's scientists (paragraphs 3.19 and 3.20).

Conclusion on value for money

22 Defra has allowed its Weybridge site to deteriorate to a state where some of the facilities are no longer fit for purpose. The level of under-investment and poor strategic management of the site has greatly increased the risk and complexity of the redevelopment programme. Any delays or difficulty completing the Programme may expose APHA's operations to greater risk, potentially limiting its ability to respond effectively to a major disease outbreak. Recognising and managing these risks from the start will be important to delivering value for money.

23 In this context, it has taken a long time for Defra to set up the Programme and to understand its scope, which is now reflected in the increased estimated costs of the Programme. Defra has recently put in place many of the right elements for successful delivery of the Programme. Given the current uncertainty, Defra is rightly investing time upfront to reduce this uncertainty and is trying to learn lessons from other programmes. Defra needs to use this time to further develop its cost, schedule and benefit estimates, to present a robust case which can secure funding and demonstrate value for money.

Recommendations

The Weybridge site

24 Defra should:

- a** **prioritise producing a long-term asset management strategy for the Weybridge site within the next year.** This should clearly set out responsibilities of all stakeholders reflecting current programmes and future changes. The strategy should be supported by underlying detailed asset management information; and
- b** **implement a system-level view of risk at the Weybridge site, with clear ownership and accountability.** This will improve visibility across APHA, Defra Group Property and the Programme of the aggregate risk, so that the impact of decisions on all work and operations across the entire Weybridge site is understood by all.

The Programme

25 Our recommendations are intended to help Defra create the necessary conditions to deliver the Programme and achieve value for money.

26 As soon as possible, Defra should:

- c** **monitor its progress in recruiting the right staff, and the impact of any headcount restrictions.** Defra should acknowledge the impact that this risk will have on the Programme, including on costs and schedule. This should be reflected in its reporting and submissions to the IPA and HM Treasury;
- d** **demonstrate that it is continuing to learn lessons from across government and is using best commercial practice in integrating contracts and in aligning contractual incentives to reduce costs and deliver to schedule; and**
- e** **ensure that science and digital transformation elements of the Programme are fully integrated within the Programme and defined before finalising construction contracts.** This is so all requirements are included, to minimise the risk of changes and increased costs.

- 27** Within the next Programme Business Case, Defra should:
- f** **clearly express uncertainty in cost and schedule estimates, to help decision-making and avoid setting unrealistic expectations.** Where possible costs and schedule should be presented as ranges, with a plan for how these will reduce over time; and
 - g** **set out robust estimates of the benefits of the Programme, to allow decision-makers to assess what can be delivered at what cost and the impact of any changes in scope.** Defra needs to improve its understanding of benefits in advance of this, including on how both Defra and APHA will realise the benefits.

Part One

Why the Weybridge site needs redevelopment

1.1 This part sets out how the Animal and Plant Health Agency (APHA) manages the threat from animal diseases and the importance of the Weybridge site (Weybridge). It then examines how Weybridge has reached such a poor condition, and the implications of this.

Background

The threat of animal diseases and the importance of Weybridge

1.2 Animal disease outbreaks have major impacts on the UK food industry and trade, demonstrated by outbreaks such as Bovine Spongiform Encephalitis (BSE), Foot and Mouth disease and most recently Avian Influenza. Our 2002 report, *The 2001 Outbreak of Foot and Mouth Disease*, highlighted the devastating effect the outbreak had on the rural economy and parts of the tourist industry.⁴ It estimated that the outbreak cost the public sector over £3 billion and the private sector over £5 billion based on prices at the time of the report (respectively over £4.6 billion and £7.7 billion in 2020-21 prices). COVID-19 has highlighted the breadth of impact a zoonotic disease outbreak (diseases that can be transmitted from animals to humans) can have. Our *COVID-19 cost tracker* shows the total estimated cost of measures put in place by government is £370 billion, for measures announced since February 2020 and on or before 31 July 2021.⁵

1.3 The Department for Environment, Food & Rural Affairs (Defra) leads government policy on animal health in England. APHA is an executive agency of Defra and is responsible for the delivery of Defra's policy objectives in this area, as well as providing services to the Scottish and Welsh Governments, other government departments and a range of other customers. It aims to investigate and respond quickly to emerging animal disease outbreaks, as well as undertaking long-term research into animal diseases. It supports the trade in plants, animals and associated products through certification, audit and inspection. APHA supports import controls on animals, plants, seeds and products of animal origin.

⁴ Comptroller and Auditor General, *The 2001 Outbreak of Foot and Mouth Disease*, Session 2001-02, HC 939, National Audit Office, June 2002.

⁵ National Audit Office, *COVID-19 cost tracker*, available at: www.nao.org.uk/covid-19/cost-tracker/

1.4 Weybridge is APHA's primary science capability for managing threats from animal diseases. It houses 98% of APHA's high containment laboratories. It is APHA's main site for running long-term animal health studies and the only facility equipped to deal with most zoonotic diseases. High containment laboratories include a range of safety features and procedures that enable scientists to work in a safe environment while handling and analysing laboratory samples and also ensuring diseases are not released into the outside world. Because the work at Weybridge involves hazardous biological agents and has potential for high consequence but low frequency accidents, the Health and Safety Executive (HSE) regulates APHA in line with its Major Hazard Regulatory model.

1.5 Weybridge is an important site nationally. Any failure in the facilities could have potentially significant impacts on the UK. Our November 2021 report *The government's preparedness for the COVID-19 pandemic: lessons for government on risk management* concluded that the pandemic highlighted the need to strengthen national resilience, and the challenges the government faces in balancing the need to prepare for future events while dealing with day-to-day issues and current events.⁶

1.6 Defra Group Property manages the physical infrastructure at Weybridge including maintenance and capital projects on the site. As well as the Science Capability in Animal Health programme (the Programme), which is managed by a separate Defra programme team, Weybridge has a critical works programme to ensure continued regulatory compliance and maintain capability. Defra Group Property also manages the facilities management contracts across the whole Defra estate, including Weybridge. The contracts end in 2024 and Defra is developing a project for the Workplace and Facilities Management re-procurement across the estate.

Investment in Weybridge

1.7 In the early 2000s, Defra invested in a number of new buildings at Weybridge, including high containment laboratory capacity, often in response to specific disease outbreaks such as Foot and Mouth disease. Following the financial crisis in 2008, investment to upgrade facilities largely stopped. Defra highlighted an example where a proposal to increase the high containment laboratory capacity did not proceed. A consultant's report in 2018 found that, compared with the assessed current and future need, there was a substantial shortfall in laboratory capacity. As at 31 March 2021, 5% of buildings (by floor area) at Weybridge were less than 10 years old, highlighting the lack of recent investment to replace ageing buildings; 22% of buildings were more than 50 years old (**Figure 1** overleaf).

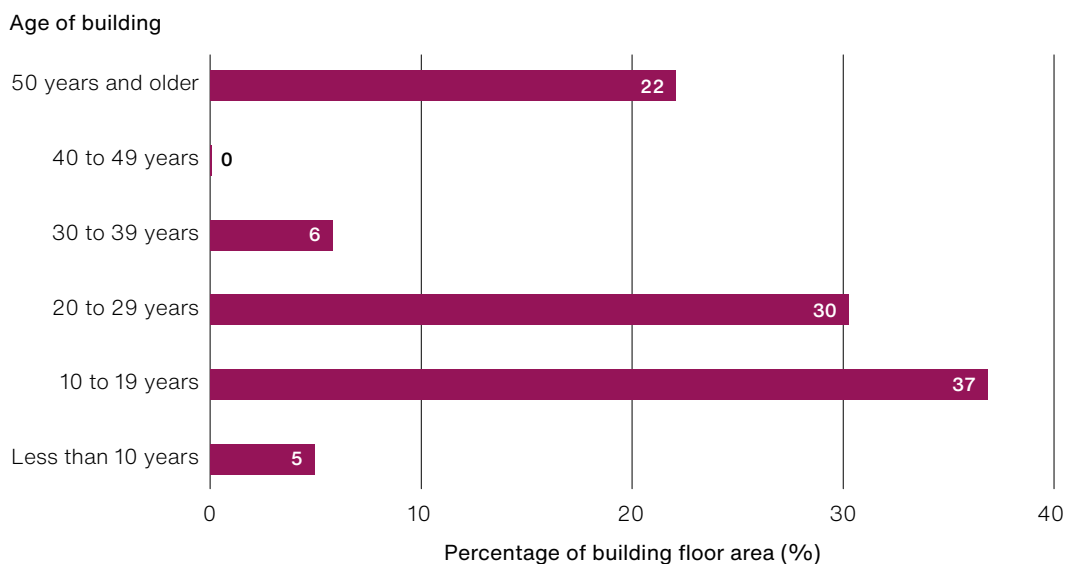
1.8 Defra has not been able to provide a comprehensive picture of the level of investment at Weybridge over the past 20 years, because financial information has not been recorded on a consistent basis.

⁶ Comptroller and Auditor General, *The government's preparedness for the COVID-19 pandemic: lessons for government on risk management*, Session 2021-22, HC 735, National Audit Office, November 2021.

Figure 1

The age profile of buildings at the Weybridge site as at 31 March 2021

The Weybridge site has seen little investment in new buildings in the 10-year period to March 2021



Notes

- 1 The percentages are based on total m² of buildings rather than the number of buildings.
- 2 The total m² used is 62,391 and excludes buildings located on the farms on the wider Weybridge site and those used by the Veterinary Medicines Directorate.
- 3 Since 31 March 2021, there has been some demolition work on the site. No new buildings have been built.
- 4 Build dates have been assumed as being the mid-point in the year (end of June) as the date of construction did not include months.
- 5 Data labels for percentage of building floor area are presented as whole numbers.

Source: National Audit Office analysis of the Department for Environment, Food & Rural Affairs' valuation report 2020-21

1.9 There has also been under-investment in the ongoing maintenance at Weybridge. Defra told us there has been a shortfall in maintenance spend since 2009, resulting in a maintenance backlog. Defra's Spending Review 2015 bid included a request for urgent investment at Weybridge to address the backlog and avoid closure of laboratory capacity on health and safety grounds. HM Treasury approved funding of £63 million over the period 2016-17 to 2020-21. However, the need for further additional reactive maintenance work was identified, and in 2019 there was still a maintenance backlog of £40 million. Funding of £197 million for critical works was approved for the period 2020-21 to 2024-25 to address the continued maintenance backlog of biosafety and regulatory compliance issues.⁷ For the 11 years from 2025-26, Defra expects its critical works programme to cost, on average, around £80 million a year (including allowance for optimism bias), although this work may be constrained by the Programme and APHA's business-as-usual operations.

⁷ The Spending Review 2015 funding for the year 2020-21 was superseded by the funding settlement for the period 2020-21 to 2024-25.

1.10 There has been no formal assessment of the reasons for this lack of investment, but stakeholders we spoke to suggested reasons including: the general state of government finances following the financial crisis in 2008; not having a ringfenced budget for the Defra science estate, with investment competing with other areas; a lack of prioritisation across Defra and APHA senior management; a lack of focus by Defra and wider government on the risks from animal disease; and a lack of understanding among some stakeholders of the long-term consequences of under-investment.

Strategic management of Weybridge

1.11 HM Treasury's *Managing Public Money* states that all public sector organisations need to have an appropriate asset management strategy to ensure their assets are being used efficiently and are delivering value for money.⁸ It also states that the strategy should be reviewed at least annually by the organisation's board to assess progress in delivering the strategy.

1.12 Given its importance, we expected to see a specific asset management strategy for Weybridge. However, Defra has not had an appropriate strategy in place over the past 20 years, or regular consideration of the strategic management of Weybridge at its board. Defra was aware that strategic decisions needed to be made about Weybridge, as highlighted in the Spending Review 2015 funding application. Defra Group Property has a Strategic Asset Management Plan covering the whole Defra estate that is updated annually. While this does not include specific plans for Defra's science estate or Weybridge it does mention the Programme and the ongoing critical works at Weybridge.

1.13 *Managing Public Money* also sets out that public sector organisations need to have good information on the assets they own and manage. Defra does have an asset register for Weybridge and told us it has been developing and improving the information it has on the condition of buildings in recent years. For example, we saw evidence that assets are rated according to their condition. Defra is also undertaking a programme of building condition surveys to inform its forward maintenance register, the critical works programme and the Programme. However, the November 2021 Programme Business Case points to significant weaknesses in asset information and plans covering Weybridge. Defra acknowledges there remain gaps in its asset register and a Government Internal Audit Agency (GIAA) report in September 2021 found that there were issues with the completeness of asset information covering Weybridge. We also heard in interviews with the programme team about concerns with the poor level of documentation for Weybridge and the risk this is adding to the Programme, for example the extent of asbestos in buildings.

⁸ HM Treasury, *Managing Public Money*, March 2022, available at: www.gov.uk/government/publications/managing-public-money.

1.14 Defra's lack of long-term strategic management of Weybridge has led to it developing in a piecemeal way. Newer buildings at Weybridge were designed to handle a single pathogen, sometimes in reaction to a specific animal disease outbreak such as Foot and Mouth disease, and lacked flexibility to handle multiple pathogens. In addition, the buildings lacked resilience in areas such as emergency power, incineration and steam generation. Illustrating this lack of resilience, a critical asset review undertaken in 2021 by Mitie Group (Mitie), who are responsible for facilities management at Weybridge, found more than 1,000 examples across Weybridge of "single points of failure – where loss of the system or asset will cause major catastrophic disruption to operations".

Managing the ongoing maintenance at Weybridge

1.15 Another illustration of Defra's lack of strategic management of Weybridge is the poor design and management of a facilities management contract, which has contributed to the current poor condition of Weybridge. In 2009, Defra outsourced the facilities management of part of its estate, including Weybridge, to Interserve under a 15-year contract.⁹ Between 2015-16 and 2020-21, figures provided by Defra show the annual average value of the contract has been £30 million, with approximately one-third relating to Weybridge (**Figure 2**). A GIAA report in September 2021 highlighted that the key performance indicators in the contract were not suited to a high containment site such as Weybridge.

1.16 At the time of awarding the contract, Defra maintained only a small team to manage the contract. In 2015, Defra's internal audit team reported significant weaknesses in how Defra and its agencies had been managing the contract including: a lack of clear ownership of contract management processes; insufficient specification of jobs; poor assurance of completed jobs; and late invoicing. There were specific weaknesses at Weybridge, with consistently poor performance around planned and reactive maintenance and a number of failures that exposed APHA to serious risk. Defra put in place a recovery plan for the contract in 2014 and staff resources to manage the contract were increased. Mitie bought Interserve's facilities management business and took over the contract in December 2020. The current performance of Mitie is outside the scope of this report.

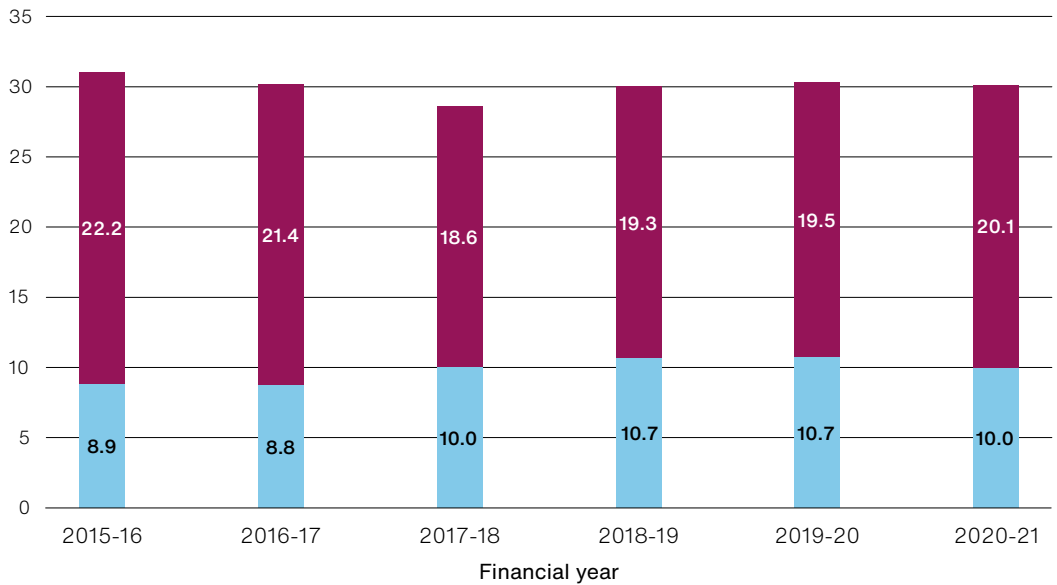
9 A second contract covers a significant proportion of the Environment Agency estate.

Figure 2

Annual cost of the Department for Environment, Food & Rural Affairs' (Defra's) facilities management contract including the Weybridge site (Weybridge) 2015-16 to 2020-21

Weybridge makes up approximately one-third of the cost of the contract

Spend on facilities management (£m)



- Other Defra estate
- Weybridge

Notes

- 1 Figures are shown in nominal terms and not adjusted for inflation.
- 2 The 15-year contract commenced in 2009-10, with the above representing years seven to 12 of the contract.
- 3 Figures are based on summary information provided by Defra.

Source: National Audit Office analysis of the Department for Environment, Food & Rural Affairs' internal information

Impact on APHA's operations

1.17 Weybridge is in poor condition, with ageing buildings requiring major repair and replacement, and a lack of capacity to carry out scientific work. Survey work commissioned by Defra cited in its 2019 Outline Business Case showed that 18% of buildings at Weybridge had a serious risk of imminent breakdown. A further 41% were operational but required major repair or replacement within the next five years. The Outline Business Case also highlighted the shortfall in both high and low containment laboratory capacity. At that time, Defra estimated that the ongoing decline at Weybridge could lead to a total loss of capability within the next five to 10 years. This would leave the UK vulnerable to future animal disease outbreaks.

1.18 Defra told us that there are examples where laboratories have had their level of containment classification downgraded due to safety concerns, reducing capacity. There have also been incidences of a breakdown of facilities and buildings unable to be used. Some buildings are only usable because APHA has obtained exemptions from HSE from certain containment and control measures by demonstrating that it will control the risks adequately by equally effective means.¹⁰ Both APHA and Defra's corporate risk registers include a risk of failure at Weybridge and rate the risk as 'very high' based on its probability and impact. Defra states this is due to old and poorly maintained facilities.

1.19 The lack of laboratory capacity and piecemeal development of Weybridge is affecting APHA's operations and its ability to:

- **respond to animal disease outbreaks.** Defra issues an annual commission to APHA setting out APHA requirements against its policy objectives. One requirement is to effectively manage animal disease outbreaks up to a Category 3 outbreak.¹¹ APHA told us that current site conditions and configuration, and staff capability and capacity, limit the extent to which it could respond to multiple significant outbreaks simultaneously. Inability to respond effectively to disease outbreaks is listed as a risk on APHA's corporate risk register and is rated as 'very high' with laboratory capacity at Weybridge listed as one factor;
- **carry out ongoing research programmes.** APHA told us that the lack of laboratory capacity affects the design of research programmes. There are examples where research programmes have been delayed (such as on Bovine Tuberculosis) because of extended periods of laboratory downtime. Lack of laboratory capacity means research programmes are run sequentially instead of in parallel, reducing the site's overall productivity and output; and
- **work efficiently.** There are aspects of the design and site layout that reduce productivity and efficiency and make it difficult for multidisciplinary teams to work together effectively.

¹⁰ Under the *Specified Animal Pathogens Order 2008* and the *Genetically Modified Organisms (Contained Use) Regulations 2014* legislation a derogation from the requirement to apply certain containment and control measures for work with biological agents is allowable. Duty holders apply to the HSE for such derogations by providing appropriate justification as to why that control is not required or what alternative equally effective measures will be applied. HSE assesses such applications and, where it is satisfied that derogation requests are adequately justified on the basis of risk, it would grant the derogation.

¹¹ A Category 3 outbreak is defined as: two concurrent disease outbreaks of the scale of Category 2; single outbreak with up to 33 infected premises with a geographic spread in several different regions or administrations; end-to-end duration of six to 12 months; heightened political, public and/or media interest.

Part Two

Developing the Science Capability in Animal Health programme

2.1 This part examines whether the Department for Environment, Food & Rural Affairs (Defra) has set up the Science Capability in Animal Health programme (the Programme) in line with good practice. It looks at the scope of the Programme, the time taken to develop the Programme, some core elements of the Programme Business Case, and whether Defra has established appropriate governance structures.

Programme scope

2.2 Defra has changed the scope of the Programme over time. Its Strategic Outline Case (2018) and Outline Business Case (2019) were focused on a construction programme to replace ageing buildings at the Weybridge site (Weybridge), with little consideration of wider transformation of operations on the site. A review by the Infrastructure and Projects Authority (IPA) in August 2020 highlighted that not enough attention had been paid to the non-construction elements of the Programme, such as science and digital transformation. Defra's Programme Business Case (2021) increased the scope to cover transformation. The main construction elements include: building a new science laboratory hub; refurbishing some other existing laboratories; upgrading infrastructure, including utilities, waste management and roads; and other refurbishment, decommissioning and demolition of buildings. While the final design and configuration of buildings is still to be determined, Defra estimates that approximately 50% of the current Weybridge facilities (by internal area) will be updated. The transformation elements of the Programme cover:

- science – optimisation of science operations including processes and equipment, for example, expanding capability and a consolidated workspace;
- digital – improving science and engineering digital capabilities, for example, by using automation;
- estates – refurbishment and new-build programmes, and a new approach to facilities management; and
- sustainability – initiatives to reduce emissions in line with Defra's net-zero ambitions and policy.

The time taken to develop the Programme

2.3 Defra highlighted in its 2015 Spending Review bid the need for urgent investment in reactive maintenance at Weybridge to maintain capability and also the need to make strategic decisions about its future (**Figure 3**). This reactive work highlighted that significantly more work was required. Defra began work on a Strategic Outline Case for the redevelopment of Weybridge in early 2017 by beginning to develop user requirements. It also put in place a programme team. The Strategic Outline Case was finalised in June 2018, setting out the case for change and a shortlist of viable options.

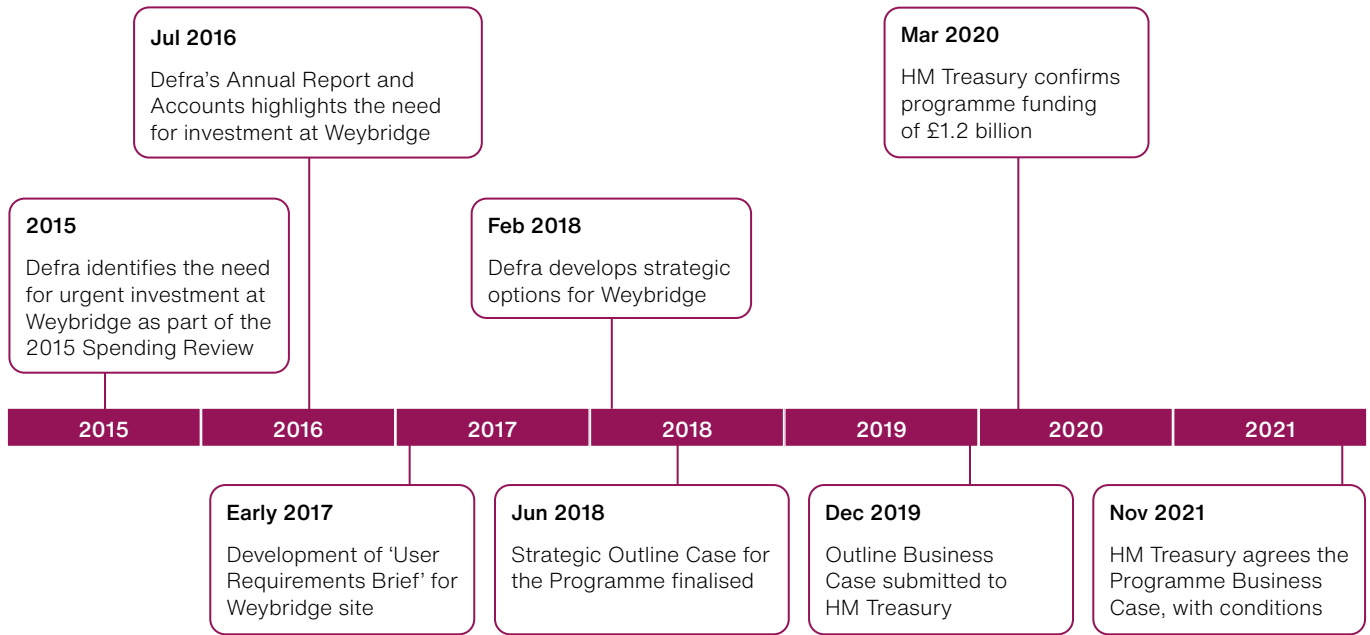
2.4 Defra developed its Outline Business Case during 2019 and HM Treasury confirmed funding in March 2020. Defra realised within a few months, following validation work, that the cost estimates in the Outline Business Case were, at £1.2 billion, too low and the Programme could not be delivered at these costs. The IPA recommended, following its review in August 2020, that a programme business case be developed, setting out the overall ambition, cost and schedule for the Programme. HM Treasury agreed the Programme Business Case with conditions in November 2021. The approval was subject to seven conditions covering a number of areas including: developing the commercial strategy; improving the maturity of transformation plans; and developing plans for benefits realisation and net-zero.

2.5 It has taken six years to progress from identifying the need for urgent investment at Weybridge in 2015 to approval of the Programme Business Case in November 2021. During this time, the need for the Programme has increased, with growing levels of investment required to maintain Weybridge's capability and an increasing risk of site failure. A full-time senior responsible owner (SRO) for the Programme was only appointed in November 2020. Prior to this, the Programme had a part-time SRO, who was also Defra's chief operating officer. In addition, the inadequate cost estimates and construction focus of the Outline Business Case meant significant additional work was needed to develop the Programme Business Case. Between 2016-17 and 2021-22, Defra estimates the Programme has cost £37.5 million.

Figure 3

Timeline for the development of the Science Capability in Animal Health programme (the Programme)

It has taken the Department for Environment, Food & Rural Affairs (Defra) several years to set up the Programme



Notes

- 1 The figure shows major milestones in the development of the Programme.
- 2 Weybridge – refers to the Animal and Plant Health Agency's site at Weybridge.

Source: National Audit Office analysis of the Department for Environment, Food & Rural Affairs' internal documents

Programme Business Case

2.6 This section reviews core elements of Defra's Programme Business Case approved by HM Treasury in November 2021.

Vision

2.7 HM Treasury guidance on developing business cases sets out the need for the programme business case to demonstrate how the programme provides a strategic fit with wider departmental and government objectives and makes the case for change.¹² The Programme Business Case sets out the need for the Programme, within the context of the current poor condition of Weybridge, citing three key factors:

- The increasing threat from zoonotic diseases (diseases transmitted from animals to humans), especially following the COVID-19 pandemic and warnings from the World Health Organization of the continued threat.
- The need for the UK to have a standalone animal health science capability after EU Exit.
- The importance of investing in animal health science capability as part of the government's wider ambitions for UK science.

The Programme has a vision of "A world-class science centre which safeguards animal health for the benefit of people, the environment and the economy". This is supported by three priorities around delivery, transformation and future proofing.

Stakeholder support

2.8 In developing the Programme Business Case, Defra has engaged with a variety of stakeholders including Defra ministers, Defra non-executive directors and the Animal and Plant Health Agency (APHA). We spoke to two key stakeholders: APHA, who are the users of Weybridge; and Defra Group Property, who manage and maintain Weybridge. Both said they had been engaged in the development of the Programme. In addition, the IPA, in its September 2021 review of the Programme Business Case, highlighted the strong stakeholder alignment and support for the business case.

¹² HM Treasury, *Guide to developing the programme business case*, 2018, available at: www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-government.

2.9 We also spoke to a number of wider stakeholders, including the chief veterinary officers for the UK, Scotland and Wales. They expressed strong support for the Programme. We did hear some concerns about the engagement and communication wider stakeholders had received and a suggestion for how the wider science community could be engaged going forward. We also heard that Defra needs to work more closely with other providers of animal health sciences across the UK to ensure the design and eventual operations at Weybridge are coordinated with other providers to reduce overlap and improve value. Defra has developed a high-level Strategic Communications Framework for the Programme and undertaken an initial analysis of the stakeholder landscape. Defra told us that it is developing specific communication plans for each element of the Framework as the Programme matures. Defra highlighted in discussions with us the importance of maintaining strong stakeholder engagement and support, for example, from ministers and local planning authorities. There are clear risks to future funding and the Programme's schedule from not doing so.

Objectives and benefits

2.10 Our *Lessons learned from Major Programmes* report highlights the importance of having a clear understanding of the relationship between a programme's scope and its objectives, and how this is vital for decision-making throughout a programme.¹³ HM Treasury's *Green Book* further emphasises the importance of setting 'SMART' (specific, measurable, achievable, realistic, time-limited) objectives to aid decision-making and evaluation.¹⁴

2.11 Defra's Programme Business Case sets out five objectives for the Programme, with an appendix describing in detail the SMART elements of each objective. For four of the five objectives, Defra has yet to quantify the target level of performance it is aiming to achieve. Defra told us it recognises the importance of this work and is continuing to develop its thinking in this area for the next iteration of the Programme Business Case scheduled for June 2024. Without this, it will be difficult to assess potential trade-offs in the Programme's scope and understand how these choices will affect the objectives.

¹³ Comptroller and Auditor General, *Lessons learned from Major Programmes*, Session 2019–2021, HC 960, National Audit Office, November 2020.

¹⁴ HM Treasury, *The Green Book – central government guidance on appraisal and evaluation*, 2022, available at: www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-government.

2.12 Defra has undertaken work to identify and define benefits in its Programme Business Case. Benefits are assessed under three categories:

- Quantifiable (not annualised) – can be quantified but cannot be annualised to form part of the benefit-cost analysis including: reducing the probability and impact of future animal disease outbreaks and zoonotic pandemics; and supporting UK trade.
- Quantifiable (annualised) – can be quantified as an annualised benefit and used in the benefit-cost analysis including: improvements in staff productivity; and return on science investment.
- Qualitative – not easily quantifiable including: avoiding delays to research programmes; and improvements in the UK's science reputation.

2.13 Defra assessed four options in the Programme Business Case against a 'status quo' baseline, which reflects the costs of continuing to manage Weybridge using the current 'patch and repair' approach. While the overall benefits case is convincing, Defra has found it challenging to quantify and value the benefits. For example, estimating the value of Weybridge's role in reducing the probability of future animal disease outbreaks is difficult given the many complex elements that influence this, and uncertainty over the severity and timing of future outbreaks. For the annualised quantifiable benefits, there is significant uncertainty over, for example, the scale of potential social returns to public science investment due to limits of the available research on the benefits of science investment. Because of this uncertainty, Defra has taken a cautious approach using the lower bound of benefits estimates in its benefit-cost analysis for its preferred option, resulting in a benefit-cost ratio of only 0.5 (**Figure 4**).

2.14 The IPA raised concerns, in its September 2021 review, about the level of uncertainty in the benefits estimates and the risk that understating the benefits case could lead to suboptimal investment decisions and fail to create incentives to look for greater efficiencies or novel solutions. It recommended that Defra improves its confidence in its benefits estimates and continue to develop its methodology for assessing indirect benefits. One of HM Treasury's conditions when approving the Programme Business Case was for Defra to provide a benefits realisation plan, in particular, to demonstrate how the transformation elements of the Programme, such as optimising the efficiency of science operations, will contribute to the benefits.

2.15 Defra had already done some work to develop a high-level benefits realisation strategy, and initial work mapping programme outputs to benefits. In our discussions with Defra, it said it planned further work including: validating the current benefits estimates to ensure clear links between outputs, outcomes and benefits; quantifying the benefits of digital transformation; and engaging with other bodies to learn lessons from their science investment.

Figure 4**Benefit-cost ratio for the Science Capability in Animal Health programme (the Programme) as at November 2021**

The Department for Environment, Food & Rural Affairs has used the lower bound of benefits estimates in its benefit-cost analysis

Benefit description	Incremental benefits estimates compared with the 'status quo'	
	Lower bound (£m)	Upper bound (£m)
Attracting and retaining commercial and research income	33	49
Improved staff productivity	27	67
Social returns to public science investment	575	3,400
Total	635	
Total Programme cost	2,820	
Incremental cost of the Programme compared with the 'status quo'	1,275	
Benefit-cost ratio (£635 million/£1,275 million)	0.5	

Notes

- 1 Benefits are assessed and discounted over a 40-year period.
- 2 The 'status quo' baseline reflects the costs of continuing to manage the Weybridge site using the current 'patch and repair' approach. This includes building replacements but no site consolidation or upgrade of facilities to meet new requirements.
- 3 Attracting and retaining commercial and research income: additional research and commercial income through additional capacity and increased science throughput.
- 4 Improved staff productivity: time saved as a result of the investment enabling more efficient working and facilities better suited to the scientists' requirements.
- 5 Social returns to public science investment: social returns unlocked by science-enabling public capital investment; research indicates a range in the average annual return of between 14% and 82%.

Source: National Audit Office analysis of the Department for Environment, Food & Rural Affairs' Programme Business Case (November 2021)

Cost estimates

2.16 Defra carried out more detailed work during 2020 and 2021 to estimate programme costs for the Programme Business Case. This included refining its 'User Requirements Brief' and developing a 'Client Brief Reference Scheme' (CBRS) outlining the specification of buildings to meet user needs. Defra employed specialist consultants to produce a cost estimate report based on the CBRS, which included benchmarking the costs of the main construction and transformation elements where possible. Defra told us it also performed validation work both internally and using a consultant. Cost estimates for the new science hub were based on detailed bottom-up analysis. However, other areas were less mature. For example, the costs of the transformation elements of the Programme were less detailed as Defra had not developed a model for how Weybridge will operate following the Programme. The estimates also included substantial allowance for risk, optimism bias and cost sensitivity, with the approach validated by the IPA. The IPA, in its September 2021 review, highlighted the cost plan and supporting detail as good practice.

2.17 Defra's cost estimation work resulted in an increase in cost estimates from £1.2 billion in the Outline Business Case to £2.8 billion in the Programme Business Case (**Figure 5**). This increase resulted from three main developments:

- A more mature building design to estimate construction costs and professional fees.
- The inclusion of missing elements of the Programme including science and digital transformation, and sustainability.
- A re-assessment of quantified risk, optimism bias and cost sensitivity.

2.18 There remains substantial uncertainty around costs given the early stage of the Programme. For example, at the time of developing the cost estimates, Defra had not finalised the configuration of the science hub. A Defra-commissioned external review of the cost estimates undertaken in June 2021 concluded that they were based on immature requirements and early design proposals (RIBA 0-1) and that this was reflected in the substantial allowance for risk, optimism bias and cost sensitivity included in the estimates.¹⁵ This allowance makes up 34% of the cost of the Programme, excluding VAT and inflation. Given this, the cost estimates should be viewed as indicative. A key element of Tranche 1 will be to validate the cost estimates (see paragraph 3.6).

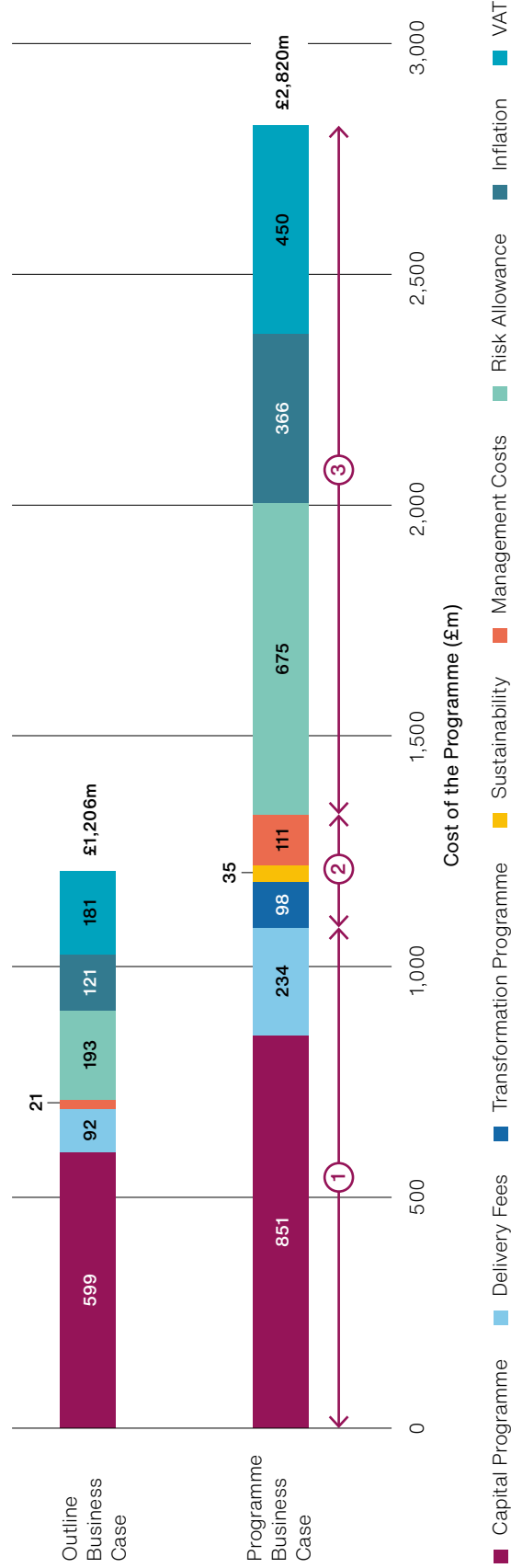
2.19 We set out the risks Defra will need to manage in Part Three including a further discussion of the risks around cost and schedule uncertainty (paragraphs 3.10 to 3.12).

Programme governance

2.20 Defra has established a clear board structure for the Programme, as set out in **Figure 6** on page 30. As the Programme is at an early stage, Defra is still testing the governance structure and looking to strengthen it where weaknesses are identified. Examples of recent changes include: increasing independent external membership on the Programme Board; establishing the Transformation Programme Board; and ensuring Defra's Digital, Data & Technology Services are represented on the main boards. Defra told us that a main area of focus was to improve clarity around accountabilities and responsibilities for decision-making. Defra's review of progress, undertaken in January 2022, also highlighted that more work is needed on the change control and impact assessment processes.

¹⁵ The Royal Institute of British Architects (RIBA) *Plan of Work* is an industry standard framework which organises the process of briefing, designing, constructing and operating building projects into eight stages. Stages 0 and 1 are the pre-design stages.

Figure 5
 Change in cost estimates for the Science Capability in Animal Health programme (the Programme)
 Cost estimates for the Programme increased by £1,600 million between the Outline Business Case and the Programme Business Case



The cost estimate for the Programme has increased by £1.6 billion between the Outline Business Case and the Programme Business Case. The three main reasons are:

- ① Capital programme and delivery fees: More mature design to estimate construction and fees. Total: £1,085 million.
- ② Transformation programme, sustainability, management costs: Including previously missing elements, for example, science and digital transformation, sustainability and management costs. Total: £244 million.
- ③ Risk, inflation and VAT: A re-assessment of quantified risk, optimism bias and cost sensitivity and increases in VAT and inflation. Total: £1,491 million.

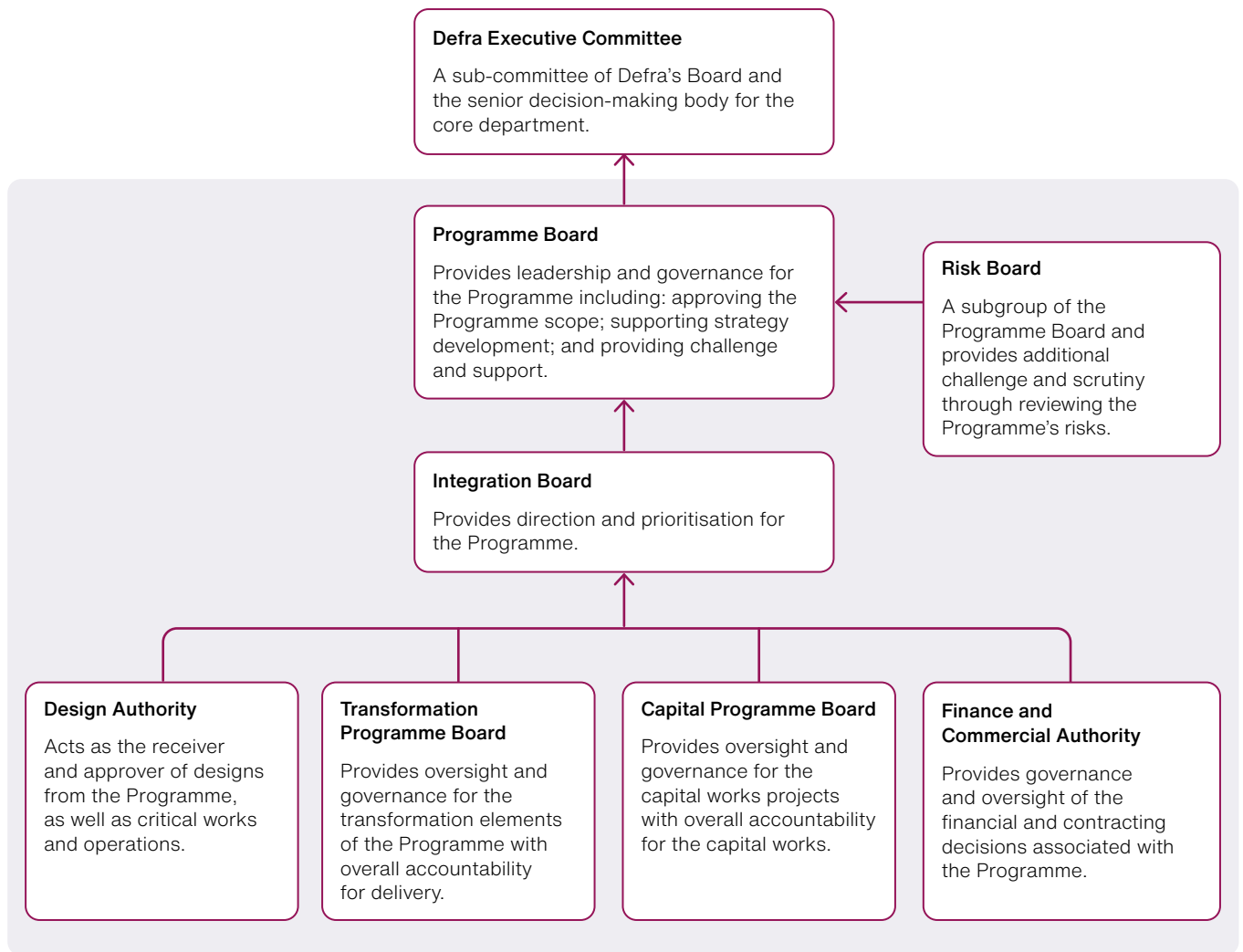
Notes

- 1 Figures may not sum due to rounding.
- 2 Outline Business Case – December 2019. Programme Business Case – November 2021.
- 3 The Programme Business Case figure of £450 million for VAT includes £1 million of recoverable VAT.

Figure 6

The Science Capability in Animal Health programme (the Programme) board structure as at March 2022

The Department for Environment, Food & Rural Affairs (Defra) has established a clear board structure for the Programme



→ Reporting line

Source: National Audit Office analysis of the Department for Environment, Food & Rural Affairs' internal documents

2.21 Representatives from APHA and Defra Group Property we spoke to think their organisations are integrated into the governance and decision-making structures and have representation on the appropriate boards. However, we heard concerns that there remains a lack of clarity over who has overarching responsibility across the entire Weybridge site. For example, this included whether APHA might have some responsibility for health and safety incidents resulting from the Programme or whether this was entirely held by Defra Group Property.

2.22 Defra has established regular reporting from programme workstreams up through the board structure. There is a weekly meeting between workstream leads and the SRO and programme director. Workstreams also produce a monthly report on the main risks across each workstream, which is presented to the Integration Board. The Programme Board receives a monthly summarised version of the report together with progress against key milestones and the Programme's current financial position. There is also quarterly reporting to Defra's Executive Committee.

2.23 Defra produced an Integrated Assurance and Approval Plan alongside the Programme Business Case, which shows how and when assurance will be undertaken within the Programme and externally. It was updated and presented to the Integration Board in January 2022. Defra plans another update in summer 2022 including further information on programme controls and change control processes.

2.24 The Programme is part of the Government Major Projects Portfolio. HM Treasury and the IPA are represented on the Programme Board. The IPA and the Government Internal Audit Agency are providing regular assurance. The IPA has undertaken four assurance reviews and one critical friend review of the Programme (**Figure 7** overleaf). Following its approval of the Programme Business Case, HM Treasury asked for a 'stocktake' in spring 2022 and for the Programme to provide an update on progress against its approval conditions in autumn 2022.

Figure 7

Infrastructure and Projects Authority (IPA) reviews of the Science Capability in Animal Health programme (the Programme)

The IPA has undertaken four assurance reviews and one critical friend review of the Programme

Date of review	Review type	Delivery Confidence Assessment
December 2018	Critical friend	Amber/Red
June 2019	Gate Zero	Amber
August 2020	Gate Zero	Amber/Red
December 2020	Assurance of Action Plan	Amber/Red
September 2021	Programme Assurance Review	Amber

Notes

- 1 The IPA's Delivery Confidence Assessments changed from a five-point scale to a three-point scale in April 2021. It moved to a Red/Amber/Green rating removing the Amber/Red and Amber/Green ratings.
- 2 Amber/Red (before April 2021): Successful delivery of the project/programme is in doubt with major risks or issues apparent in a number of key areas. Urgent action is needed to ensure these are addressed and establish whether resolution is feasible.
- 3 Amber (before April 2021): Successful delivery appears feasible but significant issues already exist requiring management attention. These appear resolvable at this stage and, if addressed promptly, should not present a cost/schedule overrun.
- 4 Amber (after April 2021): Successful delivery of the programme/project to time, cost and quality appears feasible but significant issues already exist requiring management attention. These appear resolvable at this stage and, if addressed promptly, should not present a cost/schedule overrun.
- 5 Gate Zero review: IPA's strategic assessment of the programme which is applied at the start of a programme, is repeated at appropriate key decision points during the programme, and is applied at the end of the programme.
- 6 Critical friend review: IPA's snapshot review of a programme or project, reflecting the conclusions of an independent assurance review team. IPA no longer undertakes critical friend reviews.
- 7 Assurance of Action Plan review: IPA's re-assessment of a project or programme in the light of actions taken, following a previous assurance review.
- 8 Programme Assurance Review: IPA's tailored but strategic analysis of the programme. It provides findings and recommendations to the programme's senior responsible owner and provides an assurance report to inform investment board and/or HM Treasury approval point/Major Project Review Group panel meeting discussion.

Source: National Audit Office analysis of Infrastructure and Projects Authority review documents

Learning lessons from other programmes

2.25 Our *Framework to review programmes* highlights the importance of learning lessons across similar programmes.¹⁶ Defra has looked for opportunities to engage with external experts and other departments and programmes to learn lessons with the aim of reducing risk. These include:

- developing a network of contacts with experience of major projects or high containment facilities;
- engaging with departments on their commercial lessons learned from other major construction programmes;
- commissioning consultants to research lessons learned from major construction programmes; and
- learning from similar international sites in the United States and Canada.

¹⁶ National Audit Office, *Framework to review programmes, Update April 2021*, April 2021, available at: www.nao.org.uk/report/framework-to-review-programmes-update-april-2021/

Part Three

Managing risks to the Science Capability in Animal Health programme

3.1 This part focuses on risk management. We examine whether the Department for Environment, Food & Rural Affairs (Defra) has put in place appropriate structures and processes to manage the Science Capability in Animal Health programme (the Programme) risks and has secured funding for the Programme. We then draw on our experience of auditing other major programmes across government to highlight a number of risks Defra will need to manage as it progresses to the next tranche.

Defra's risk management approach

3.2 The Programme is high risk, partly as a result of the lack of strategic planning and long-term under-investment, and a range of other factors including: the specialist nature of the construction, involving high containment engineering; the poor documentation of the site; the complexity of managing a major construction programme while maintaining the business-as-usual operations of the Animal and Plant Health Agency (APHA); and the significant impact of APHA's operations being disrupted. Defra's Risk Potential Assessment for the Programme reflects this high level of risk, with a high-risk rating for both the complexity of the Programme and the impact of programme failure.¹⁷ As at May 2022, the Programme's strategic and programme risk registers contained 25 risks with 17 categorised as 'high' or 'very high' risk. In line with HM Treasury's *Orange Book* guidance, the Programme Board has determined its appetite to risk and adopted a 'cautious' approach.¹⁸

¹⁷ A Risk Potential Assessment is designed to provide a standard set of high-level criteria for assessing the strategic risk potential of programmes and projects. It is used in advance of an Infrastructure and Projects Authority (IPA) review to help determine who should arrange and manage a review and decide on the make-up of the review team.

¹⁸ HM Government, *The Orange Book: Management of Risk – Principles and Concepts*, 2020, available at: www.gov.uk/government/publications/orange-book.

Risk management structures

3.3 Defra started identifying risks to the Programme as it developed the Outline Business Case and continued this work as it developed the Programme Business Case. This process has involved a range of stakeholders from across the Programme with support from consultants. Defra has now established a structured set of risks across risk registers covering, for example, strategic, programme and workstream risks (**Figure 8** overleaf). This process has enabled Defra to identify a range of key risks to the Programme.

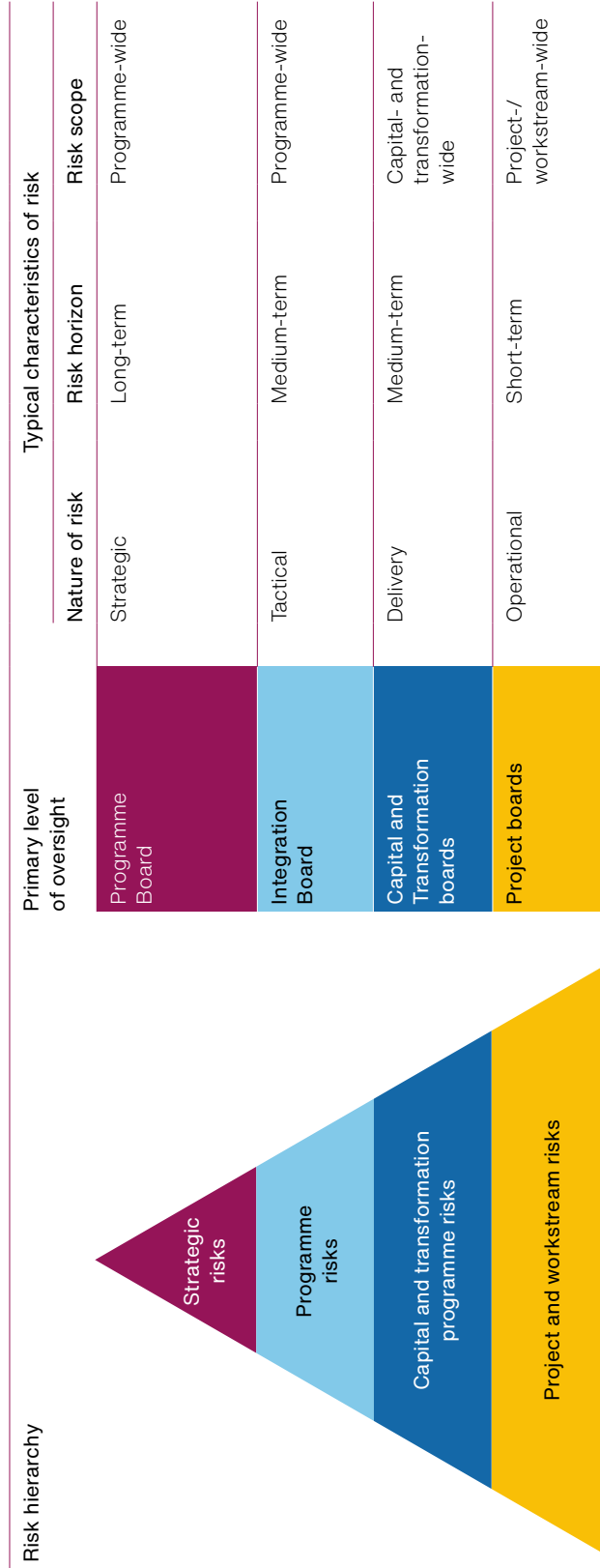
3.4 Defra has the risk management processes in place for the Programme that we would expect to see at this stage. This includes a risk management strategy and risk registers aligned to the level at which it is most appropriate for the risks to be managed. Our review of the Programme's strategic and programme risk registers showed that, for each risk, Defra has assigned a risk owner and undertaken a risk impact and likelihood assessment. Some risks still require specified mitigation actions and action due dates. Defra has established a risk board, a sub-board of the Programme Board, to provide additional challenge and scrutiny through a detailed review of the Programme's risks. There are also indications that Defra is developing a strong risk management culture across the Programme with evidence of:

- senior management leadership on the importance of risk management;
- clear accountability and ownership of specific risks;
- transparent and timely risk information flowing through the Programme's governance structures; and
- recognition that a diversity of perspective is important to ensure the 'status quo' and 'group thinking' are consistently challenged.

3.5 Defra has made good progress in developing its risk management structures for the Programme. However, further work is required to integrate risk management across the Weybridge site (Weybridge). For example, there are specific risk registers covering the Programme and APHA's business-as-usual operations, but no process or individual with responsibility for assessing and managing risk across Weybridge covering the Programme, critical works, facilities management and APHA's business-as-usual operations. For example, construction work as part of the Programme could have health and safety implications and disrupt APHA's day-to-day operations. In addition to this, Defra needs to develop its risk management for the Programme further in some areas, for example, improving its understanding of the potential impact of multiple risks materialising simultaneously.

Figure 8
The Science Capability in Animal Health programme’s (the Programme’s) risk hierarchy

Risks across the Programme are managed at a number of levels



Note

1 Capital and transformation programme risks include sub-programme risks which are managed at a sub-programme board level.

Source: National Audit Office analysis of the Department for Environment, Food & Rural Affairs’ internal documents

Using a phased approach to manage risk

3.6 The Programme is composed of phases, with Tranche 1 covering the period up to the next Programme Business Case scheduled for June 2024 (**Figure 9** overleaf). The purpose of Tranche 1 is: moving ahead with work that would be needed on the site regardless; re-testing, as information improves, the core assumptions in the delivery plan (such as the extent of use of temporary buildings); fine-tuning the cost and schedule estimates; and reducing uncertainty, for example, through site surveys. In its *Principles for project success*, the Infrastructure and Projects Authority (IPA) highlights the importance of getting things right from the start.¹⁹ One of its criteria for setting up a project for success is to plan realistically, including investing time in thorough upfront planning to ensure the project is deliverable and affordable.

3.7 Within Tranche 1, Tranche 1a ran from October 2021 to April 2022 and had a number of planned outputs, including confirming the masterplan for the site, transition plan, capital and transformation programme design briefs, and commercial strategy. At the end of Tranche 1a Defra had completed most of its planned deliverables. The main area of work yet to be completed was revisions to the Programme's commercial strategy. IPA told us that it would support Defra taking longer than planned to complete Tranche 1a to ensure Defra got things right, for example, on designing the commercial model.

Funding for the Programme

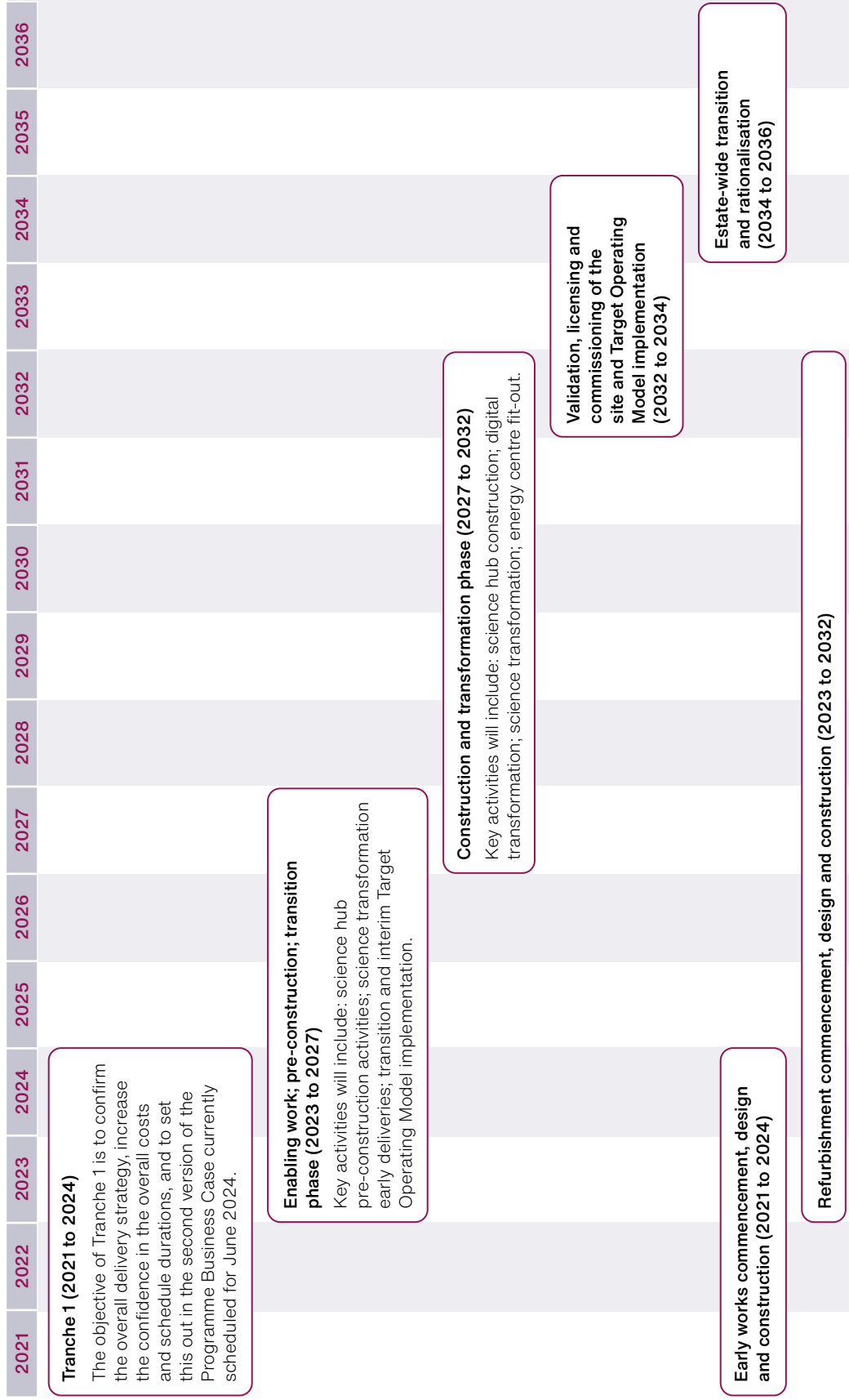
3.8 Defra's strategic risk register for the Programme includes the risk of insufficient funding and rates this risk as 'very high'. Failure to secure funding to cover the estimated cost of the Programme would mean changes to the Programme's scope, which would affect outcomes and benefits. The Programme's senior responsible owner (SRO) highlighted to us the importance of maintaining the 'buy-in' of senior decision-makers to the scope and ambition of the Programme. Following development of the Outline Business Case, HM Treasury approved funding of £1.2 billion for the Programme in the March 2020 Budget, based on the Programme cost estimates at that time.²⁰ The Programme Business Case in November 2021 included a re-baselined cost estimate of £2.8 billion over 15 years. HM Treasury has confirmed that it has not formally agreed to fund the Programme at the revised cost estimate and that additional funding approval will be subject to further scrutiny, for example, at the next Programme Business Case scheduled for June 2024. HM Treasury's approval of the Programme Business Case in November 2021 included funding of £198 million for Tranche 1 of the Programme covering the period 2021-22 to 2024-25. This forms part of the headline commitment of £1.2 billion.

¹⁹ Infrastructure and Projects Authority, *Principles for project success*, July 2020, available at: www.gov.uk/government/publications/principles-for-project-success.

²⁰ The funding announcement in March 2020 was for £1.4 billion, which incorporated £1.2 billion for the Programme and £197 million for critical works at the Weybridge site. HM Government, 'The Animal and Plant Health Agency receives £1.4 billion budget boost for world-leading Weybridge Laboratory', press release, 16 March 2020. Available at: www.gov.uk/government/news/the-animal-and-plant-health-agency-receives-14-billion-budget-boost-for-world-leading-veybridge-laboratory.

Figure 9
Main phases of the Science Capability in Animal Health programme (the Programme)

The Programme is composed of different phases between 2021 and 2036



Note

1 The dates shown are approximate and are being reviewed by the Department for Environment, Food & Rural Affairs (Defra) during Tranche 1.

Source: National Audit Office analysis of the Department for Environment, Food & Rural Affairs' Programme Business Case (November 2021)

Risks to the Programme

3.9 Defra will be asking HM Treasury to agree to fund the majority of the Programme's costs at the next iteration of the Programme Business Case. This will be before starting procurement for the main construction contracts, with construction of the science hub forecast to start in 2027. Based on our experience of auditing other major programmes across government and the common issues they have faced, we have identified four risk areas which will be particularly important for Defra to manage over the next two years based on the stage the Programme is at and its complexity. While this is not an exhaustive list of the risks faced by the Programme, the areas identified have caused significant issues to other government programmes.

Unrealistic costs and schedules lead to unachievable plans

3.10 As the Programme is at an early stage there will be substantial uncertainties that could influence the Programme's cost and schedule. These include, uncertainty over:

- the site condition;
- supplier appetite to bid for the main construction contracts;
- securing planning permission due to the possibility of local objections; and
- whether works would be impacted by a major animal disease outbreak.

3.11 As highlighted in paragraphs 2.16 and 2.18, Defra's cost estimates have included a significant allowance for risk and uncertainty. Defra's work on the schedule did include some high-level benchmarking against similar programmes, although it was limited due to the lack of suitable comparisons. Defra told us that the main area of uncertainty in the schedule is the transition phase, incorporating the main clearance of the site and temporary relocation of staff until new buildings are completed, and that it is not possible to benchmark this element due to the unique circumstances at Weybridge. It also stated that it planned to incorporate allowance for risk and optimism bias into its schedule estimates during Tranche 1, as recommended by HM Treasury.²¹

²¹ HM Treasury, *Guide to developing the programme business case*, 2018, available at: www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-government.

3.12 While Defra recognises there is substantial uncertainty in its cost and schedule estimates, the uncertainty was not reflected in the Programme Business Case, which uses single point estimates for both cost and schedule estimates rather than a range. Presenting single point estimates in this way suggests greater certainty over the cost and schedule than is the case and than would be expected at this stage of a programme. Defra should be cautious about providing point estimates, which could lead to misinterpretation and unrealistic expectations among stakeholders and potentially inappropriate decisions. Our work has shown that using early estimates to set delivery targets can drive behaviours that are detrimental to the successful delivery of the programme. In our 2019 *Completing Crossrail* report, we found that decision-making had been dominated by achieving a fixed completion date which proved unrealistic.²² Some of these decisions introduced unnecessary cost into the programme. The IPA's *Cost Estimating Guidance* highlights the use of ranges as best practice.²³

Not having appropriate staff capability

3.13 Defra is aiming to build an 'intelligent client function' of 126 staff to oversee the delivery of the Programme and develop and manage the range of professional services and construction contracts required. As at the end of March 2022, Defra had recruited 88 staff against its plans of 95 staff at that point. Challenges remain over the recruitment of some of the more specialist technical, engineering and programme delivery roles.

3.14 The Programme's programme risk register rates the risk of not being able to recruit skilled and experienced staff as 'high'. The reasons for this include: a limited pool of people with the specialist skills required; civil service salary limits; and headcount limits in Defra. Failure to recruit the right specialist staff would affect the pace and quality of delivery and increase costs as more contractors and consultants would be required. Defra's recent pay review, which examined options for increasing pay flexibility, did not include engineering and specialist roles at Weybridge. Defra is exploring other options to provide salary flexibility. In addition, while Defra has an overall headcount limit, the Programme's SRO has received assurances that Defra is committed to resourcing the Programme in line with the requirements set out in the Programme Business Case.

Ineffective contractual arrangements

3.15 The Programme will have a range of contracts covering professional services and construction. For example, Defra planned to award around 20 contracts during Tranche 1 including for a range of professional services. The main construction contracts will follow after Tranche 1 and approval of the revised Programme Business Case in 2024.

²² Comptroller and Auditor General, *Completing Crossrail*, Session 2017–2019, HC 2106, National Audit Office, May 2019.

²³ Infrastructure and Projects Authority, *Cost Estimating Guidance*, 2021, available at: www.gov.uk/government/publications/cost-estimating-guidance.

3.16 The IPA review of the Programme Business Case in September 2021 highlighted the need for Defra to review its commercial model informed by best practice. It questioned Defra's plans to award short-term contracts for the main professional services, and recommended Defra considers appointing long-term delivery partners, which could help manage risk and integration across contactors. The Cabinet Office's Government Commercial Function also highlighted the need for Defra to develop its commercial model. Our 2020 *Lessons learned from Major Programmes* report highlighted that we often see cases where it is unclear who is accountable for integration, with collaboration between delivery partners weakly incentivised or partners lacking the authority to execute integration.²⁴ Our May 2019 report on *Completing Crossrail* found that Crossrail Ltd chose a contractual model that was complex and costly to deliver, and that between 2015 and 2019 there was little pressure on key contractors to deliver the programme efficiently.²⁵

3.17 Following the IPA and Government Commercial Function's recommendation, Defra is expecting to complete revisions to its commercial strategy in September 2022. This is later than the original plan of April 2022. Defra told us that this is dependent on the capital programme delivery model being completed and decisions about the configuration of the science hub. This has meant delays to Defra's planned procurement schedule.

3.18 Defra has also highlighted the risk of a lack of contractor appetite to bid for the main construction contracts due to factors including a limited pool of contractors with the specialist skills required and contractor availability due to competing work. Defra's market engagement has been limited so far and has been delayed due to the further work on the commercial strategy. Defra's commercial approach will need to adapt as it understands more about the level of competition in the market. If competition is limited it will need to determine how it can ensure value for money.

²⁴ Comptroller and Auditor General, *Lessons learned from Major Programmes*, Session 2019–2021, HC 960, National Audit Office, November 2020.

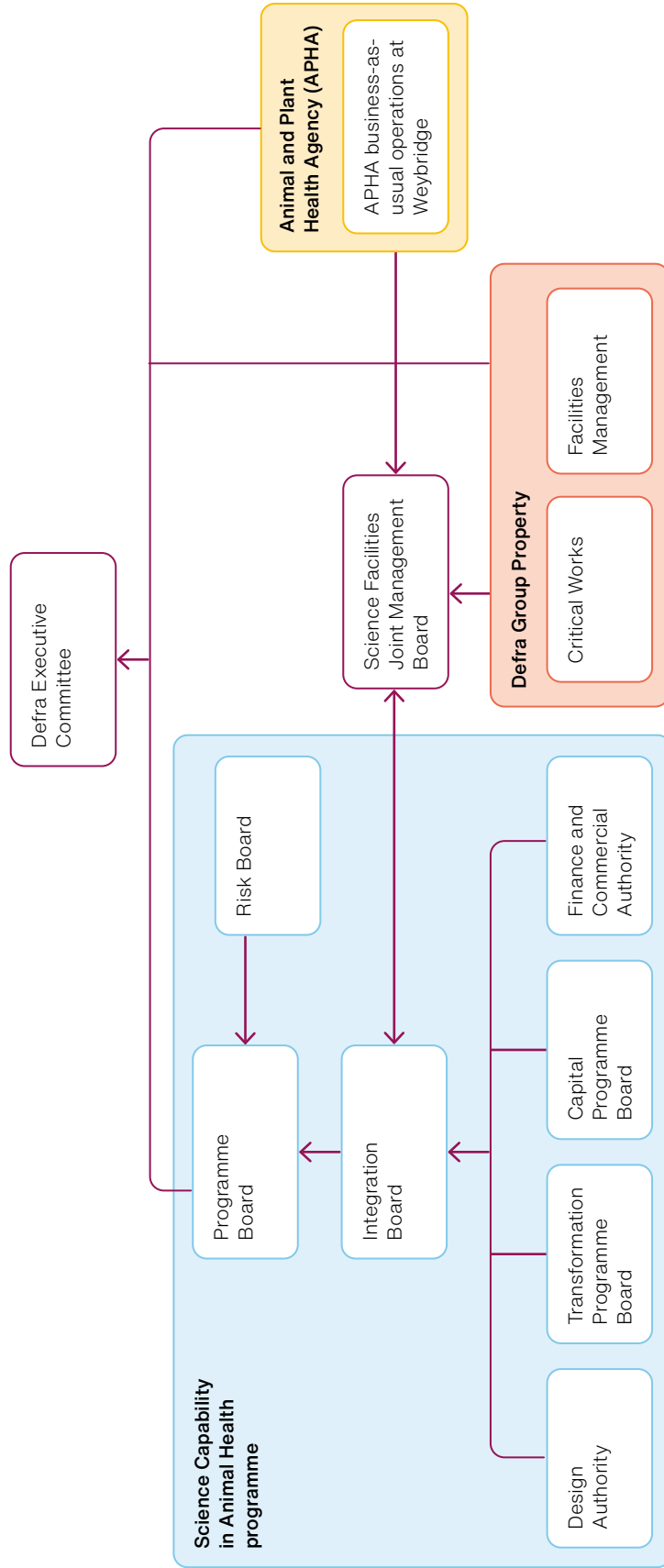
²⁵ See footnote 22.

Not managing external and internal dependencies

3.19 Weybridge is an operational site for APHA; has an ongoing programme of critical works; and routine maintenance work undertaken through its facilities management contract. These all have the potential to affect the Programme and cause delays if not managed well. For example, delays to the critical works programme could delay clearing areas of the site for the Programme. The Science Facilities Joint Management Board (SFJMB) has responsibility for coordinating the work programmes at Weybridge (**Figure 10**). The Programme has been incorporated within the SFJMB to help mitigate the risk of delays to works across Weybridge. We heard that the SFJMB was still transforming from more tactical management of critical works to a more strategic overview of works across the entire Weybridge site. The programme team is monitoring its dependencies with the critical works programme and has developed network dependency maps. As set out above (paragraph 3.5), Defra needs to do further work to integrate risk management across the entire Weybridge site.

3.20 Defra will also need to manage important internal dependencies such as between the construction elements of the Programme and the transformation elements. While the construction element is central to the Programme, the transformation element will be vital to delivering the desired improvements in science capability and in realising benefits. If transformation design lags behind construction design, this could reduce or delay the benefits of the Programme and result in costly retrofitting to meet the needs of APHA's scientists. Transformation design is lagging behind. The IPA review in September 2021 highlighted that transformation, sustainability and security were less mature elements of the Programme Business Case and that it was important that they matured quickly, to ensure user requirements (such as the needs of APHA scientists) could be captured before detailed design work begins. Defra has recently established its Transformation Programme Board to oversee the transformation elements of the Programme, but it recognises that some elements of transformation still lack maturity, such as science and digital.

Figure 10
 The wider governance structure for works at the Weybridge site (Weybridge) as at March 2022
 The Science Facilities Joint Management Board (SFJMB) has responsibility for coordinating the work programmes at Weybridge



Notes

- 1 This is a simplified illustration of the governance structures covering the works across Weybridge. For example, it does not include the sub-committees of the SFJMB: Safety, Health, Biorisk and Wellbeing Sub-Committee; Critical Works Portfolio; and Campus Management Sub-Committee.
- 2 The SFJMB's purpose is to provide leadership and a partnership approach to the operation of Weybridge. It assures alignment and a shared strategic direction for key investment programmes at Weybridge.
- 3 Defra – Department for Environment, Food & Rural Affairs.

Source: National Audit Office analysis of the Department for Environment, Food & Rural Affairs' internal documents

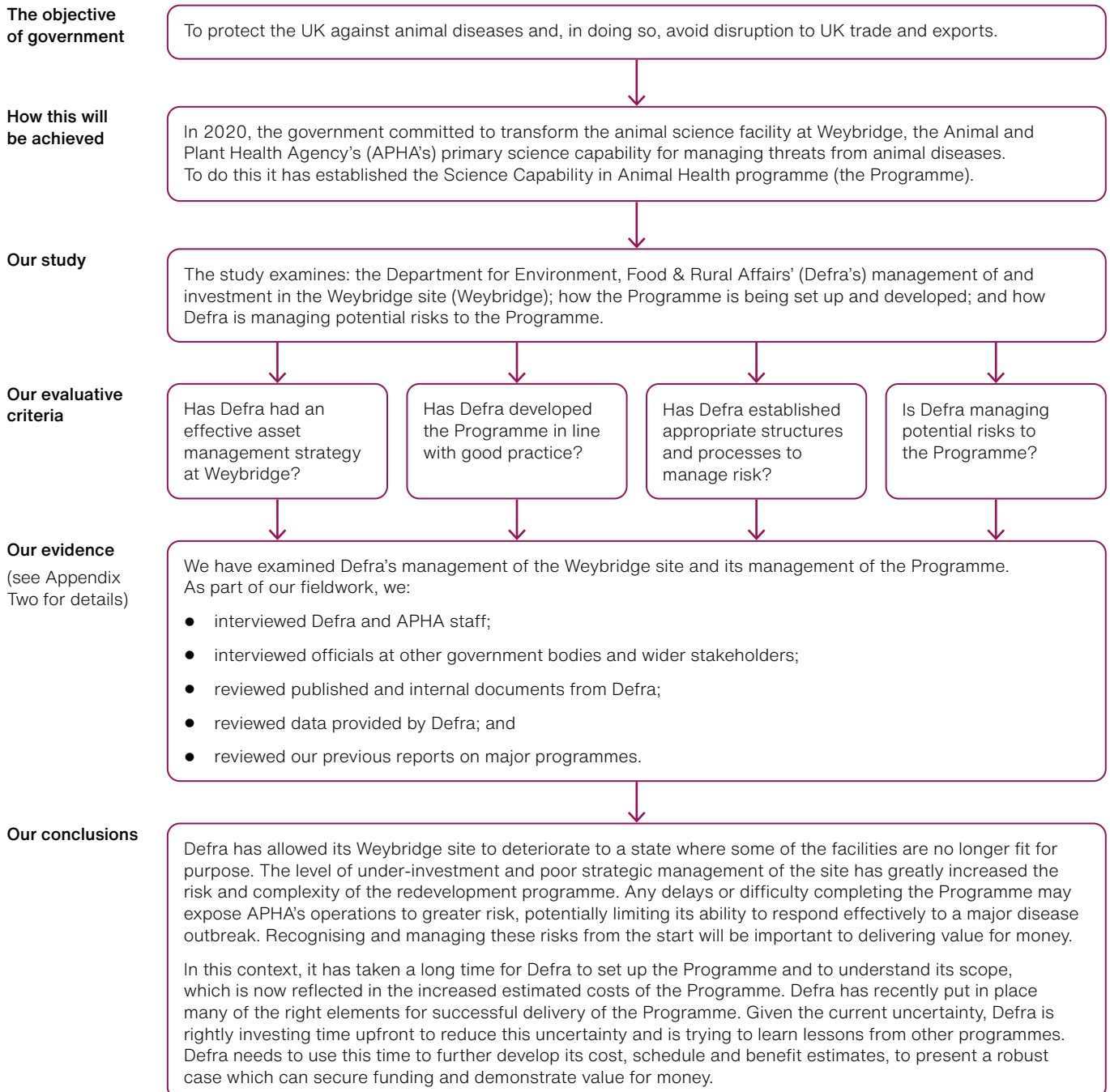
Appendix One

Our audit approach

- 1** This report evaluates how the Animal and Plant Health Agency's (APHA's) Weybridge site (Weybridge) has reached such a poor condition, and whether the Department for Environment, Food & Rural Affairs (Defra) is well placed to deliver value for money from the Science Capability in Animal Health programme (the Programme) to redevelop and transform the Weybridge site.
- 2** The report examines this in three parts:
 - Part One of the report provides background on how APHA manages the threat from animal diseases and the importance of the Weybridge site. It then examines how Weybridge has reached such a poor condition, and the implications of this.
 - Part Two of the report looks at whether Defra has set up the Programme in line with good practice. It looks at the scope of the Programme, the time taken to develop the Programme, some of the core elements of the Programme Business Case, and whether Defra has established appropriate governance structures.
 - Part Three of the report examines Defra's risk management approach. It looks at the structures Defra has put in place to manage risks and if it has secured funding. We then draw on our experience of auditing other major programmes across government to highlight a number of risks Defra will need to manage as it progresses to the next tranche.
- 3** The scope of the report is set out in the Summary (paragraphs 8 and 9). Our audit approach is summarised in **Figure 11**.

Figure 11

Our audit approach



Appendix Two

Our evidence base

1 We reached our independent conclusions on how the Animal and Plant Health Agency's (APHA's) Weybridge site (Weybridge) has reached such a poor condition and whether the Department for Environment, Food & Rural Affairs (Defra) is well placed to deliver value for money from the Science Capability in Animal Health programme (the Programme) after analysing evidence collected primarily between November 2021 and March 2022. Our audit approach is outlined in Appendix One.

2 In developing our evaluative questions, we drew on our November 2020 report, *Lessons learned from Major Programmes*, and our April 2021 *Framework to review programmes*.²⁶ In addition, we reviewed government guidance including: HM Treasury's *Green Book* and *Orange Book*; and the Infrastructure and Projects Authority's (IPA's) *Cost Estimating Guidance* and *Principles for project success*.²⁷

3 **We undertook a site visit to Weybridge.** This included a tour of the site and a number of presentations.

4 **We interviewed staff from Defra on various aspects of the Programme and its implementation, and the historical management and condition of Weybridge.** The interviewees covered a range of job grades and areas of responsibility, such as senior responsible owner, programme director, project leads responsible for specific work areas, Defra Property Group and Defra's Digital, Data & Technology Services. Interview topic areas included: the management of Weybridge; resourcing; programme costs and schedule; sustainability; the regulatory landscape; governance; risk management; and commercial arrangements.

5 **We interviewed the APHA, an executive agency of Defra.** As the user of Weybridge, we spoke to senior representatives from APHA to get their views on Defra's management of Weybridge and how Defra was engaging with APHA on the Programme.

26 Comptroller and Auditor General, *Lessons learned from Major Programmes*, Session 2019–2021, HC 960, National Audit Office, November 2020; National Audit Office, *Framework to review programmes, Update April 2021*, April 2021, available at: www.nao.org.uk/report/framework-to-review-programmes-update-april-2021/

27 HM Treasury, *The Green Book – central government guidance on appraisal and evaluation*, 2022, available at: www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-government; HM Government, *The Orange Book: Management of Risk – Principles and Concepts*, 2020, available at: www.gov.uk/government/publications/orange-book; Infrastructure and Projects Authority, *Cost Estimating Guidance*, 2021, available at: www.gov.uk/government/publications/cost-estimating-guidance; Infrastructure and Projects Authority, *Principles for project success*, July 2020, available at: www.gov.uk/government/publications/principles-for-project-success.

6 We interviewed a range of stakeholder organisations to get their views on Defra's management of the Programme and how Defra was communicating and engaging with them. The individuals and organisations we spoke to included:

- the Chief Veterinary Officer for the UK;
- the Chief Veterinary Officer for Scotland;
- the Chief Veterinary Officer for Wales;
- the Moredun Research Institute; and
- the University of Cambridge, Department of Veterinary Medicine.

7 We interviewed officials from other parts of government:

- HM Treasury;
- the Infrastructure and Projects Authority (IPA);
- the Government Internal Audit Agency (GIAA); and
- the Cabinet Office's Government Commercial Function (GCF).

8 We reviewed published and internal documents from Defra. The documents included business cases, strategy papers, board minutes, risk assessments, progress reports and papers relating to specific work areas.

9 We reviewed data provided by Defra, including total expenditure on the Programme from 2016-17 to 2021-22 and historical spend on one of Defra's facilities management contracts including expenditure at Weybridge.

10 We reviewed our previous reports on major programmes to identify potential risks to value for money that were relevant to the Programme.

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