

Witness Name: Dr Stuart

Wainwright OBE

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UK COVID-19 INQUIRY

WITNESS STATEMENT OF DR STUART WAINWRIGHT OBE

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Section 0: Introduction

I, Dr Stuart Wainwright OBE, will say as follows: -

1. I am the Director of the Government Office for Science (GO Science), a position which I have held since December 2019. The facts in this statement come from my personal knowledge or the records of GO Science. I am duly authorised to make this statement on behalf of GO Science, pursuant to a Rule 9 request from the Inquiry dated 18 November 2022.
2. As Director of GO Science, I am responsible for running the organisation in support of the Government's Chief Scientific Adviser (GCSA) – ensuring the Prime Minister and Cabinet receive the science advice they need and driving systemic improvements across His Majesty's Government (HMG) in how science is used.
3. I have a PhD in microbiology and a degree in genetics from the University of Sheffield.
4. I have been employed within the UK Civil Service for almost 20 years undertaking a wide range of strategy, science, policy and operational roles in the Cabinet Office, Department for Science, Innovation and Technology (DSIT), Department for Business, Energy and Industrial Strategy (BEIS), the Department for Environment, Food and Rural Affairs (Defra) and outside HMG. I have extensive experience of strategy and policy development, the provision of science advice, research systems, crisis management and organisational leadership.
5. This statement is in response to the Inquiry's Rule 9 request of 18 November 2022. As requested, I provide an overview of the role and remit of GO Science, including the GCSA in
 - The organisation and provision of science advice
 - Science advice in civil emergencies
 - Planning for a pandemic

in UK Government between 11 June 2009 and 21 January 2020. I have made reference to events outside of this date range where there is a specific reason to do so. I have provided a description of past arrangements where it's possible to do so, but much of the description of the working of SAGE (Scientific Advisory Group

for Emergencies) and GO Science I provide refers to current practice, or practice in recent years.

6. The Inquiry has also requested a statement on future risks identified, and reviews, reports and lessons learned exercises carried out by GO Science. I am providing this separately [SW/1].¹
7. As the Inquiry will be aware, I have provided two draft statements to the Inquiry to date in relation to Module 2. Whilst directly relevant parts of those statements are included here, my first statement which provides an overview of the role and remit of GO Science and the GCSA, may include information that is pertinent to matters related to Module 1 [SW/2].²
8. Before turning to the detail of GO Science's responses to the Inquiry's questions, I wish to make the following observations which are intended to assist in placing the role and remit of GO Science in preparedness and resilience of the UK in its proper context.
9. First, GO Science, the GCSA and SAGE are not the only sources of scientific advice to decision makers in government. Scientific advice, including advice relating to emergency response, can also be obtained from departmental Chief Scientific Advisers (CSAs), scientific and technical agencies (Non-Departmental Public Bodies and Public Sector Research Establishments), and members of the Government Science and Engineering (GSE) profession. Whilst I am able, as the Director of GO Science, to provide a detailed account of the roles and responsibilities of GO Science, the GCSA and SAGE, I am not in a position to speak to, or address questions about, the provision of scientific advice from these other governmental sources. As I explain further below the GCSA provides guidance and support to CSAs (in particular) but does not control the advice they provide, or the means by which it is provided.
10. It may be that the scale of the SAGE activation in response to the Covid-19 pandemic, together with the public visibility of SAGE advice (as explained in my Module 2 evidence), serves to give an inaccurate impression of the scope of SAGE's role and remit, and the position it occupies in the provision of scientific advice in an emergency. The SAGE activation in response to the pandemic was atypical both in terms of duration and number of experts involved (and range of

¹ Government Office for Science, Module 1, Lessons learned statement

² Government Office for Science, Module 2, first statement

their expertise). It is important to keep in mind, therefore, that the general description of how scientific advice is provided within government set out in this witness statement (and as requested by the Inquiry) needs to be considered alongside the specific account of the activities of GO Science, SAGE and the GCSA in response to the pandemic, as set out in my Module 2 evidence.

11. Second, GO Science and the GCSA do not have a specific or defined remit in relation to planning for, or responding to, a pandemic (or any other specific type of emergency) beyond giving science advice to the Prime Minister and Cabinet. For every emergency, the role of GO Science and the GCSA is to provide scientific advice, as required, to those parts of HMG responsible for the emergency response. The nature of the emergency will determine the identity of the lead department responsible for the emergency response. Each department and government organisation also has its own process, systems and methodologies by which scientific information, advice and analysis is provided to decision makers, and most departments have their own CSAs. The role of GO Science is to provide guidance on science advice processes and systems across government, and to support CSAs, not to prescribe the advice given to departments by their own scientific advisers.
12. Finally, flexibility is a necessary element of any effective plans and structures established to respond to civil emergencies. That is so when responding to a pandemic just as much as other emergencies relating to public health. The nature and extent of the need for scientific advice, from the GCSA and SAGE, changed through the course of the pandemic and it was necessary for the role of GO Science to adapt in order to meet the requirements for scientific advice as they arose. That being so, the descriptions I provide in this witness statement of GO Science's role and responsibilities are subject to the general qualification that they will depend upon the nature of the emergency response, and the specific need for scientific advice at each stage of that response.

Statement structure

13. I have structured this statement as follows: -
 - The first section (paragraphs 14-43) describes the role and remit of GO Science and the GCSA in the general provision of science in UK Government in recent years. This includes a description of key mechanisms and roles across government as far as we are able to provide this.

- The second section (paragraphs 44-96) covers the role and remit of GO Science and the GCSA in relation to provision of science advice in an emergency. This includes a description of GO Science's role as secretariat to SAGE, and contribution to the National Security Risk Assessment (NSRA) methodology in recent years.
- The third section (paragraphs 97-116) focuses on GO Science and the GCSAs involvement in both previous pandemic planning exercises, and relevant SAGE activations. Here, I also detail any relevant futures and foresight work carried out by GO Science.
- In the fourth section (paragraphs 117-124) I take the opportunity to address any outstanding questions not covered elsewhere in the statement. I also offer some high-level reflections on lessons we can learn in regard of planning for a pandemic. I am providing a separate and more detailed statement in regard of lessons learned since the start of the Covid-19 pandemic.

Section 1: GO Science role in provision of science in UK Government

1.1 Overview of roles and functions in GO Science

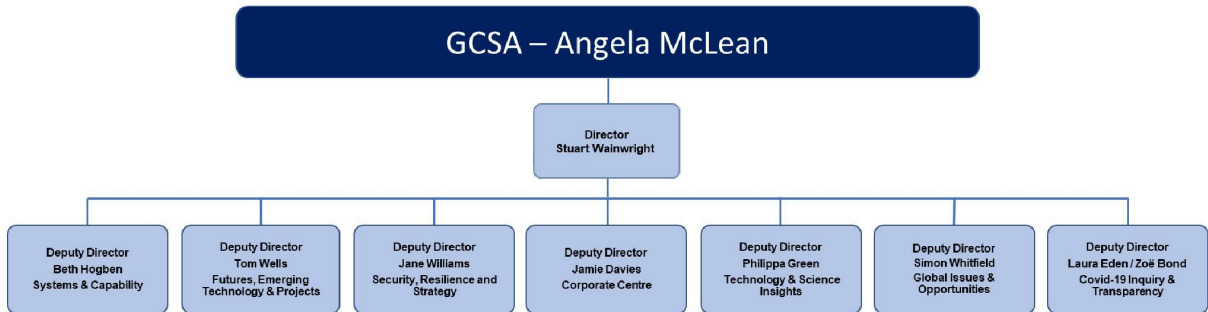
The Government Chief Scientific Adviser (GCSA)

14. The GCSA is responsible for providing scientific advice to the Prime Minister and members of the Cabinet, advising the government on aspects of science for policy and improving the quality and use of scientific evidence and advice in government. The GCSA is a permanent secretary level post and reports to the Cabinet Secretary. The GCSA is supported by GO Science, an office of DSIT. The GCSA is the head of the GSE profession and co-chair of the Council for Science and Technology (CST), an independent expert committee which provides advice to the Prime Minister. The former GCSA also held the role of National Technology Adviser from June 2021 until his departure in March 2023.

GO Science

15. GO Science is responsible for: giving scientific advice to the Prime Minister and when required Cabinet committees; improving the quality and use of scientific evidence and advice in government; providing scientific advice in the case of emergencies, through its secretariat role with SAGE; helping the independent CST to provide high level advice to the Prime Minister; supporting strategic long-term thinking in government through Futures and Foresight; and developing the GSE profession.
16. The two major missions for GO Science are: firstly, science advice mechanisms that are efficient, effective, speak truth to power and are embedded in government systems; and secondly, achieving visible impact through both proactive and demand-led science advice that is relevant, excellent, and delivered fit for purpose. GO Science and the GCSA have no specific remit in relation to planning for a pandemic.
17. As an office of DSIT, GO Science reports into DSIT for all operational matters such as Finance and Human Resources. However, the strategic direction of GO Science is set through the GCSA who reports to the Cabinet Secretary and therefore via the Prime Minister rather than DSIT Ministers. The GCSA meets with relevant ministers, including DSIT Ministers regularly, in an advisory role.

18. GO Science is currently split into seven deputy directorates as seen in the organisational chart below:



19. GO Science developed from the Office of Science and Innovation (OSI). OSI was formed in 2006, renamed from the Office of Science and Technology (OST) which was founded in 1992. For the date range specified by the Inquiry (2009 – 2020), a list of Senior Civil Servants from GO Science can be found below:

GCSAs

- Sir John Beddington (2008 – 2013)
- Sir Mark Walport (2013 – 2017)
- Sir Chris Whitty (interim) (2017 – 2018)
- Sir Patrick Vallance (2018 – 2023)
- Dame Angela McLean (from 1 April 2023)

GO Science Directors

- Jeremy Clayton – Deputy Head of GO Science (2003 – 2011)
- Dr Claire Craig – Director GO Science (2011 – 2016)
- Dr Rupert Lewis – Director GO Science (2016 – 2019)
- Dr Stuart Wainwright – Director GO Science (2019 – present)

GO Science Deputy Directors³

- Sandy Thomas – Director of Foresight (2006 – 2015)

³ Deputy Director role titles and dates in posts are estimates based on a combination of records we hold and information in the public domain.

- Miles Elsdon – Head Civil Contingencies, Health and Biotechnology teams (2008 – 2012)
- Tony Whitehead – Joint Head of Science in Government (2009 – 2011)⁴
- Judy Britton – Joint Head of Science in Government (2005 – 2011)⁵
- Stuart Sarson – Joint Head, Science in Government unit (2009 – 2013)
- Christopher Darby – Deputy Director (2014 – 2015)
- Elizabeth Surkovic – Deputy Director, Science (2011 – 2016)⁶
- Alan Pitt - Deputy Director, Science Capability, Energy & Climate Change (2015 – 2019)
- Samantha Harris – Deputy Director, Science, Resilience and Innovation (2016 – 2020)
- Chris Pook – Deputy Director, Science Innovation Systems and Capability (2019 – 2022)
- Jo Dally – Deputy Director Data Analysis, Horizon Scanning & Project Development (2015)
- Charles Jans – Head of Foresight (2015 – 2017)
- Simon Whitfield – Deputy Director, Futures, Emerging Technology and Projects (Dec 2015 – Mar 2020), Covid-19 Advice and Evidence (Mar 2020 – 2022)

1.2 Science across Government

20. There are many scientists and engineers within many areas of government, and multiple processes for the provision of scientific advice. This section will summarise the advice mechanisms in which GO Science is involved.
21. The Science Capability Review (SCR) [SW/3 - INQ000101614] was a comprehensive assessment of the role of science in government, commissioned by the Cabinet Secretary and jointly developed by GO Science and Her Majesty's Treasury and published in November 2019. The review states that science is crucial for the success of the country and plays a vital role in government, providing the evidence and support required to achieve impact in policy making and operations. The SCR aimed to put science and engineering at the heart of

⁴ approximate

⁵ approximate

⁶ approximate

government by providing strategic direction to address the capability of government science and engineering, making 15 recommendations which collectively aim to enhance the application of scientific solutions in policy making.

22. Each department and government organisation has its own process, systems and methodologies by which scientific information, advice and analysis is provided to decision makers. GO Science provides guidance on those processes and systems for use across government. Ongoing management of long term strategic and/or policy issues sits with individual Lead Government Departments (LGD), although GO Science can advise on related elements, including methodology and robustness of analysis (see Blackett Review 2011 [SW/4 - INQ000101600]) and provide cross-cutting strategic direction (see Science Capability Review 2020 [SW/3 - INQ000101614]).

Chief Scientific Advisers

23. GO Science aims to embed efficient and effective science advice mechanisms across Government, and this includes promoting the role of departmental CSAs. While we enable high quality science advice through encouraging departments to appoint and use CSAs, we do not control how science capability is applied – this is the responsibility of individual departments. CSAs are employed directly by Departments or Agencies.
24. CSAs perform an independent challenge function to their department to provide science and engineering evidence and advice that is robust, relevant and high quality. CSAs are responsible for ensuring mechanisms are in place to provide science and engineering advice for policy makers and ministers. They work together as part of the CSA Network to address cross-departmental issues. The CSA network is convened by the GCSA and managed by GO Science.
25. The majority of departments have a CSA. They are usually employed at Director General or Director level, the second or third most senior position for a civil servant in UK government departments, sitting just below a permanent secretary. GO Science advises that CSAs should usually be members of their departmental Executive Boards, and they will typically also advise the Strategic or main Board of their department.
26. CSAs are line managed within their own department, and currently receive pastoral line management from the GCSA, who works through GO Science to support their

recruitment, induction and performance management. CSAs are normally appointed for a fixed term from outside Government (academia or industry).

27. Most government departments also have a Deputy Chief Scientific Adviser (DCSA). DCSAs are full time civil servants who support their departmental CSAs and have their own network which holds separate meetings monthly. These meetings are a forum in which DCSAs can identify and discuss joint priorities, interests and challenges as well as sharing best practice, information, risks and opportunities between departments. There is no formal definition of a DCSA and the role varies between department. They are senior officials, often at Deputy Director level.
28. CSAs work alongside the other analytical disciplines (economists, operational researchers, social researchers, statisticians) and with ministers and senior teams, to provide evidence for decision making within departments and across government. CSAs also work together, and with Research Councils and others, under the GCSA's leadership, to address and advise on issues which cut across government. CSAs and the GCSA usually meet as a group weekly. In the CSA induction materials [SW/5 - INQ000101617], GO Science recommends to officials that CSAs should establish relationships within departments, but how individual CSAs work within their own department will vary.
29. CSAs are expected to work with the academic and broader scientific community, and since 2017 have done so through developing "Areas of Research Interest" (ARI) documents, which describe the key research issues of interest to their departments. CSAs also work in collaboration with academics and other scientists and engineers from outside government who form part of the Departmental Science Advisory Councils. Each of the UK Research and Innovation (UKRI) Research Council boards have a CSA member.
30. GO Science facilitates and monitors the progress of departments in producing and refreshing their ARI documents via regular meetings with officials in CSAs' offices. The recently updated ARI Guidance [SW/6 - INQ000101658], drafted jointly by GO Science and Cabinet Office, gives advice on how to write ARI documents and what to consider when identifying departmental research interests.
31. The GCSA meets regularly with CSAs to identify and discuss joint priorities, interests and challenges and to discuss interaction with GO Science and ways of working.

32. Departments are best placed to explain the function, roles and responsibilities of their specific CSA. The decision on whether to create a CSA post rests with the department, but the GCSA encourages all departments to appoint a CSA. Not every department has a CSA and in some departments, there have been gaps between CSAs. A table of departmental CSAs during the Covid-19 SAGE activation is provided below, to provide the Inquiry with an indication of the cohort of CSAs in post at the beginning of 2020.

Table 1 – Summary of departmental CSAs during Covid-19 SAGE activation

<u>Department</u> ⁷	<u>CSA</u>	<u>Start date</u>	<u>End date</u>
Department for Business, Energy and Industrial Strategy	Professor Paul Monks	Oct-20	Feb-23 ⁸
Department for Business, Energy and Industrial Strategy	Professor John Loughhead CB OBE	Oct-14	Sep-20
Department for Digital, Culture, Media and Sport	Professor Tom Rodden	Jan-19	Feb-23 ⁸
Department for Education	Osama Rahman	Apr-18	Sep-22
Department for Environment, Food and Rural Affairs	Professor Gideon Henderson	Oct-19	Present
Department for International Trade	Dr Mike Short CBE	Dec-19	Feb-23 ⁸
Department for Levelling Up, Housing and Communities ⁹	Professor Alan Penn	Jul-19	Dec-22
Department for Transport	Professor Sarah Sharples	Jul-21	Present
Department for Transport	Professor Phil Blythe CBE	Jun-15	May-21

⁷ Department titles and remit during SAGE Covid activation

⁸ Moved department due to machinery of government change

⁹ Previously Ministry of Housing, Communities & Local Government

Department for Work and Pensions	Trevor Huddleston	Aug-17	Present
Department of Health and Social Care	Professor Lucy Chappell	Aug-21	Present
Department of Health and Social Care	Professor Sir Chris Whitty	Jan-16	Aug-21
Food Standards Agency	Professor Robin May	Aug-20	Present
Food Standards Agency	Professor Guy Poppy	Aug-14	Jul-20
Foreign and Commonwealth Office	Professor Carole Mundell	Oct-18	Sep-20
Foreign, Commonwealth and Development Office	Professor Dame Charlotte Watts ¹⁰	Sep-20	Present
Health and Safety Executive	Professor Andrew Curran	Mar-15	Present
His Majesty's Treasury	Philip Duffy	May-20	Present
Home Office	Professor Jennifer Rubin	Jan-21	Present
Home Office	Professor Sir John Aston	Sep-17	Dec-20
Met Office	Professor Stephen Belcher	Dec-16	Present
Ministry of Defence	Professor Dame Angela McLean	Sep-19	Mar-23
Ministry of Defence Nuclear	Professor Sir Robin Grimes	Oct-17	Nov-21

¹⁰ The Foreign, Commonwealth and Development Office was created in September 2020. Previously Charlotte Watts was the CSA for the Department for International Development

National Police Chiefs' Council	Professor Paul Taylor ¹¹	May-21	Present
National Security	Alex van Someren	Jul-21	Present
National Security	Sir Anthony Finkelstein CBE	Dec-15	Jun-21

The CSA Network

33. The CSA Network consists of the GCSA and departmental CSAs. The purpose of the network is to bring together CSAs to share information, support and learn from each other and undertake work that is relevant to more than one department.
34. The network usually meets weekly to hear from external experts and government officials, share updates on current work and good practice, and use collective expertise to resolve cross-departmental problems.
35. The CSA Officials' Network comprises officials from each CSA's private office and exists to support CSAs. The CSA Network Steering Committee (CNSC) was briefly established (Nov 2018-Nov 2019) as a subgroup of the CSA Network that focused on delivery of the Network's objectives.

The Government Science and Engineering (GSE) Profession

36. I am only in a position to comment on behalf of GO Science, so I will give a brief overview of the GSE profession but cannot comment on individual members. The GSE profession [SW/7 - INQ000101660] [SW/8 - INQ000101659] covers over 10,000 civil servants with a background or interest in science and engineering who work in a range of specialist, policy, analytical and operational roles. Membership is by self-determination. Public and Crown servants are also able to join the GSE profession. The GCSA is chair of the GSE Profession Board whose members include departmental Heads of Science and Engineering Profession (HoSEP). The Board meets every two months to oversee the delivery of the cross-government GSE Profession Strategy published in 2021.
37. The Head of Science and Engineering Profession is the senior lead on science and engineering capability within their department or organisation. HoSEPs represent the GSE profession and GSE members within their department or organisation,

¹¹ New position, no previous Police CSA

and work with the GSE profession team to co-ordinate the participation of their department or organisation in cross-profession activities [SW/9 - INQ000101629].

38. The remit of scientific advisory roles in government varies between departments but could include: reviewing existing data and research sources; collecting and analysing new scientific data; interpreting research from different sources; applying expert judgement where data is lacking or inconclusive; identifying and analysing policy options based on data and research evidence; and providing expert scientific and engineering advice on policy options. There are different types of scientific advisers in government and the extent to which they are demarcated from policy and operational decision-making roles varies. 'Principles of scientific advice to government' published by GO Science in 2010, describes how independent scientific advisers and government departments should work together [SW/10 - INQ000101649].
39. Within the 'Guidelines on the Use of Scientific and Engineering Advice in Government', GO Science recommends that departments clarify the roles and remits of scientific advisers in relation to policy and operational colleagues [SW/11 - INQ000101601]. Specific government departments are best placed to advise on what happens within each department.

Science Advisory Committees and Councils

40. Science Advisory Committees and Councils (SACs) provide independent, expert advice to government to inform policy and decision making or to advise on the methods used to carry out analysis. Some government organisations have Science Advisory Councils which advise across the whole of their sponsoring organisation's science remit, offering strategic direction and review. Science Advisory Councils advise the higher levels of the organisation, often through the CSA. Science Advisory Committees tend to have a narrower remit, focusing on a particular topic or issue. They often provide their advice directly to their sponsoring policy or delivery team. GO Science updated the Code of Practice for SACs in December 2021 which provides guidance on the establishment, management and conduct of SACs and sets out their relationship with the bodies they advise [SW/12 - INQ000101646].

Public Sector Research Establishments

41. Public Sector Research Establishments (PSREs) and other Non-Departmental Public Bodies (NDPBs) play an important role in the UK's science, research,

development, and innovation landscape. PSREs are a diverse collection of public bodies carrying out research, and they report into departments. The scientific and technical work undertaken by PSREs and NDPBs supports a range of government objectives, including informing policy making, statutory, regulatory and monitoring functions and providing a national strategic resource in key areas of science and engineering. Some also provide emergency response services. GO Science published the PSRE Framework in January 2022 to provide a broad framework and a set of common principles to support departments in assessing the value and performance of the PSREs they sponsor [SW/13 - INQ000101648].

Research and Development policy

42. DSIT is responsible for UK-wide Research and Development (R&D) policy. It is the responsibility of individual departments to develop R&D strategies to increase their own science capability. GO Science provides scientific advice across government, but does not produce R&D strategies or policies, or undertake operational science activities. Some departments have research budgets and undertake and/or procure research themselves – it is for individual departments to set out their approach.
43. More information on how science and evidence is used in decision making can be found in the code of practice for scientific advisory committees [SW/12 - INQ000101646].

Section 2. GO Science's role in provision of science advice in civil emergencies

2.1 The Scientific Advisory Group for Emergencies (SAGE)

44. GO Science's primary role in provision of science advice in civil emergencies is to act as secretariat to SAGE and support the GCSA who usually chairs the group. GO Science, the GCSA and SAGE provide scientific advice, and do not formulate policy or provide operational responses.

SAGE Advice

45. SAGE's role is to provide coordinated, independent science advice to support decision makers for UK cross-government decisions in Cabinet Office Briefing Room (COBR) meetings. SAGE provides an assessment of science evidence and information relating to the specific emergency, including but not limited to providing advice on: scientific and technical concepts and processes, scenarios and their implications, risks and scientific and/or technical mitigations, the degree of consensus among experts, and the degree and causes of uncertainty. The exact nature of the questions and role SAGE plays is determined by the specifics of the emergency.
46. When SAGE has been called the GCSA usually attends COBR meetings to present SAGE advice and answer questions.
47. SAGE provides high-level science advice during emergencies at the UK level. Scientific and Technical Advisory cells (STACs) are responsible for providing science advice to the Strategic Coordination Group (SCG) at a local level as part of the Local Resilience Forum (LRF) Framework for dealing with emergencies, including in the Devolved Administrations (DAs). Scientific and technical information is exchanged between SAGE and STACs in the event that they are both activated (for example where strategic SAGE advice requires interpretation at a local level to inform local decisions). Depending on the emergency (and as outlined in the enhanced SAGE guidance [SW/14 - INQ000101595]), Devolved Administration CSAs, Chief Medical Officers (CMOs) and Chief Veterinary Officers (CVOs) will be part of SAGE.
48. SAGE was created shortly before its first activation, for the 2009 Swine Flu epidemic, to meet the requirement of providing science advice once an emergency had occurred. Reference to SAGE in the 'Scientific advice and evidence in

emergencies Third Report of Session 2010–11' House of Commons Science and Technology Committee states that the original iteration of SAGE, the Scientific Advisory Panel on Emergency Response (SAPER), was an informal committee designed to provide science advice as part of resilience and preparation for emergencies [SW/15 - INQ000101594].

49. SAGE advice is designed primarily for decision makers in COBR. As such, the information it provides relates to cross-cutting issues for an emergency where there is need for independent science advice from a range of participants across government, academia and industry. The degree of consensus and level of uncertainty in the advice is provided as part of the SAGE minutes in line with Professional Head of Intelligence Analysis (PHIA) guidance on the use of words of estimative probability (the PHIA probability yardstick).
50. This form of advice differs from other sources of government advice as it draws from a wide range of experts from within and outside government, with the explicit purpose of the provision of scientific information and advice during an emergency specifically to inform COBR.

Data sources and modelling

51. Modelling and data are often a key part of the evidence base that help policy makers understand the nature of problems they face and inform them as they make decisions on how to respond.
52. The GCSA, GO Science and SAGE have no role in the recording, capture or collection of data, or the development of models, instead drawing from a wide variety of evidence sources, including other government organisations, academia and sometimes industry. The evidence sourced, which will vary depending on the nature of the emergency and often includes data and modelling, is assessed as part of the process of developing science advice.
53. During emergencies relating to infectious diseases, modelling and data have been important inputs to SAGE. Examples during Covid-19 include data produced by the Office for National Statistics (ONS), Public Health England (PHE)/UK Health Security Agency (UKHSA), OpenSafely,¹² the National Health Service (NHS), academic groups and Covid-19 Clinical Information Network (CO-CIN). Modelling

¹² OpenSAFELY is a highly secure, transparent, open-source software platform for analysis of electronic health records data.

was produced by the Scientific Pandemic Infections Group on Modelling (SPI-M-O) during both the 2018 outbreak and Covid-19 pandemic.

Transparency and public communications

54. During civil emergencies, public communications and messaging are led by the No. 10 Press Office and relevant government departments and organisations. For example, these would usually be PHE/UKHSA, Department of Health and Social Care (DHSC) and the NHS during an infectious disease related emergency. The GCSA, GO Science and SAGE have no formal role in communications but may be asked to help explain scientific information to the public. When requested, SAGE or subgroups have provided advice on principles of effective communication.
55. In previous emergencies for which SAGE has been activated, the scientific advice produced by the group has been made public after the crisis has ended (unless publishing would have national security implications). However, given the potentially protracted nature of the Covid-19 pandemic, the former GCSA recognised the need to act in a different way and to publish the SAGE minutes and papers routinely to ensure public access to the Covid-19 scientific advice informing policy decisions. The details are set out in my first statement as part of Module 2 [SW/2].¹³

SAGE Activation

56. SAGE is activated by COBR in support of collective cross-government responses to and/or recoveries from serious or catastrophic emergencies. The question of whether SAGE is needed is considered when COBR is first activated and is reviewed throughout the emergency. It is possible that scientific and technical advice will be required in some but not all phases of response and recovery.
57. In the event of an emergency before COBR has been activated, a precautionary SAGE (pre-SAGE) can be activated by the GCSA. A pre-SAGE can form to look at emerging hazards and assess risks. A pre-SAGE constitutes a meeting of experts chaired by the GCSA in the same way as a standard SAGE. The advice and outputs of a pre-SAGE meeting would not necessarily be fed directly to COBR, however, the advice generated would usually be shared with the LGD or relevant teams across Government.

¹³ Government Office for Science, Module 2, first statement

58. The triggers for SAGE activation are a need for:
- scientific and technical advice to help inform UK cross-government decision making at COBR;
 - the coordination of scientific advice at UK Government level for a serious emergency; and
 - the cross-government coordination of scientific and technical advice for serious and catastrophic emergencies affecting the DAs.
59. Once activated, SAGE reports to, and is commissioned by, the ministerial and official groups of COBR. One or more SAGE representatives will attend the ministerial and/or official group meetings to explain scientific and technical issues discussed and agreed at SAGE.
60. This approach was followed to activate SAGE for what became the Covid-19 pandemic. The former GCSA activated an internal GO Science team to monitor the SARS-situation in Wuhan on 3 January 2020. Several scientific meetings took place during January. Subsequently, a precautionary SAGE was activated on the 22 January 2020 ahead of COBR to present a situation update of the virus internationally, and the scientific understanding of the virus. This was later referred to as SAGE 1 [SW/16 - INQ000061509].
61. As an emergency progresses, there comes a point where COBR or the Civil Contingencies Secretariat (CCS) determines that SAGE advice is no longer required. This may be because the emergency has ended or because its intensity has subsided, and individual departments can meet their needs through their own science advisory mechanisms.

Previous SAGE activations

62. From 11 June 2009 to 21 January 2020, SAGE has been activated on ten occasions (see Table 2).

Table 2 – List of previous SAGE activations¹⁴

Activation	Duration of activation	No. of meetings
Swine Flu pandemic	5 May 2009 - 11 Jan 2010	22
Volcanic ash emergency (Eyjafjallajökull volcanic eruption)	21 April 2010 - 24 June 2010	4
Japan nuclear incident (Fukushima)	13 March 2011 - 13 April 2011	10
Winter flooding	14 February 2014 - 25 February 2014	3
Western Africa Ebola outbreak	16 October 2014 - 8 December 2014	3
Nepal earthquake	27 April 2015 - 27 April 2015	1
Salisbury and Amesbury incidents ¹⁵	2018	
Zika outbreak - precautionary SAGE	3 February 2016 - 2 August 2016	5
Democratic Republic of the Congo (DRC) Ebola outbreak - precautionary SAGE	18 May 2018 - 16 May 2019	3
Toddbrook Reservoir	6 August 2019 - 6 August 2019	1

SAGE Chairs

63. SAGE is usually chaired by the GCSA. When an existing scientific advisory group (SAG)¹⁶ that considers relevant issues already exists, it may be incorporated into SAGE and the chair of this SAG may be asked to act as Deputy Chair to SAGE.
64. Where a departmental CSA has specific knowledge of a risk area, the GCSA can delegate to them the role of SAGE chair. Co-chairing can also occur; for example,

¹⁴ SAGE minutes to be included in general disclosure schedule, as requested by the Inquiry

¹⁵ Details of SAGE meetings during this activation, including dates and number of meetings, are not in the public domain.

¹⁶ SAG is general term used to describe a group that supports a Government department or departments by providing expert scientific or technical advice, usually limited to a specific subject area.

the swine flu SAGE was co-chaired by the GCSA and the chair of the Scientific Pandemic Influenza Advisory Committee (SPI), Sir Gordon Duff. During the Covid-19 pandemic SAGE was co-chaired by the GCSA and CMO. The GCSA and SAGE secretariat always have an alternate chair identified in case the GCSA or nominated SAGE chair become incapacitated during an emergency. In all situations, a contingency plan is agreed so that the GCSA can be covered by alternative SAGE chairs drawn from departmental CSAs. For example, in early 2019, nominated potential alternate SAGE chairs if needed were Chris Whitty (then DHSC CSA), John Aston (Home Office CSA), Charlotte Watts (DfID CSA) and Ian Boyd (Defra CSA).

65. The SAGE secretariat maintains an availability log of the GCSA and the alternate SAGE chairs for the year, including details of when they are out of the country or uncontactable. Key contact details of SAGE secretariat team members, SAGE duty phone numbers, alternate SAGE chairs, GCSA and private office, and GO Science senior leadership team are printed on 'contact cards' and distributed to these people, to be used if a SAGE meeting is required. Availability logs are also prepared for GO Science secretariat team members and GO Science senior leadership team for periods of above average team absences, or to ensure preparedness if it looks like SAGE may activate.

SAGE Participation - Experts

66. SAGE is not a membership body and there are no standing invitations to attend SAGE. When identifying experts, the SAGE secretariat looks for individuals with relevant expertise who are willing to advise on certain emergencies and to attend meetings. The SAGE secretariat seeks experts for risks identified in the NSRA. During an emergency, the SAGE secretariat may seek additional experts to provide advice where previously unanticipated gaps in expertise are identified. This may include inviting participants from overseas as happened during Covid-19. Guidance on participation is available in the 'Enhanced SAGE Guidance' document available on GOV.UK [SW14 - INQ000101595].
67. Experts are identified through recommendation from expert bodies including learned academies, science bodies and professional associations, and via scientists within government, academia and industry. The SAGE secretariat also identifies experts based on their research outputs by using open source and government databases.

68. The SAGE secretariat maintains lists of experts for risks where science advice may be required, and routinely checks that contact details and individuals' research expertise are up to date.
69. The following principles are applied when defining and reviewing SAGE participation:
- SAGE should include the most appropriate, rather than the most accessible, experts (i.e., those experts that are best placed to provide high quality, trusted, well-respected strategic advice rather than those that are the easiest to contact). The selection of experts should match the nature of the issues requiring advice.
 - SAGE should include representatives from a wide range of appropriate scientific and technical specialities, to ensure its advice is well-rounded. This should include both government and external experts.
 - SAGE should not overly rely on individual experts – some flexibility is required in case experts are not available and consideration should be given to avoiding the overburdening of particular experts during any prolonged SAGE activations.
 - Chairs and participants from relevant advisory committees (for example on modelling, or behavioural science in the case of Covid-19) may be asked to join SAGE meetings.
70. Since SAGE was established, the secretariat has worked to improve diversity at meetings and, since 2020, explicitly consider the background of individuals it invites to join its expert list (e.g., age, institutional affiliation, gender, ethnicity).
71. Prior to the Covid-19 pandemic, physical meetings made attendance difficult for participants from across the UK. During the pandemic, the need for virtual meetings meant that it became much easier to recruit from across the UK, further improving diversity at SAGE meetings.
72. During the pandemic, the time commitment and high level of engagement that was required from SAGE participants necessitated a further measure: reimbursement to academic institutions for SAGE participants' time. Institutions were eligible for payment to back-fill teaching and administrative duties, where their staff met a minimum threshold of hours spent working on SAGE and were therefore unable to carry out their regular duties. This money was sent to the host institution, not the academics themselves.

SAGE Participation - Officials

73. Departmental CSAs will be invited to participate in relevant SAGE meetings should their individual expertise (as a subject matter expert or as the CSA for their department) be required or if the subject matter is specifically relevant to the Department. Other senior government officials and scientists will be invited to attend SAGE as a participant where their subject matter expertise would benefit the discussion or where they are required to provide SAGE with information. On occasions where SAGE is not called, departmental CSAs may be asked to feed advice directly into COBR.
74. The only department with a standing invitation to attend SAGE is the Cabinet Office but in practice the LGD for the particular emergency is usually represented, sometimes by more than one attendee (e.g., DHSC during the Covid-19 pandemic).
75. DAs can be represented by their CSA, CMO or an appropriate senior official, depending on the circumstances of the SAGE activation. This may be as a participant or observer and will be agreed with the SAGE secretariat prior to the meeting.

SAGE Subgroups, and input from expert groups

76. SAGE has often been supported by subject specific subgroups and received evidence and input from a variety of additional expert groups or organisations. For example, during Covid-19, this included those groups listed in paragraph 21 of the Inquiry's R9 request.¹⁷ My understanding is that GO Science did not provide secretariat or other support to any of the groups listed during the specified date range, only providing secretariat support to the Scientific Pandemic Insights Group on Behaviours (SPI-B) during the Covid-19 Pandemic.
77. SAGE subgroups are more likely to feature during longer running or slower moving emergencies. Generally, subgroups are convened on a time limited basis and will seek to provide advice on a specific set of scientific questions and areas.
78. During the Covid-19 SAGE activation, SPI-B was formally established as a subgroup in February 2020. Other subgroups were existing committees of government departments, including the Scientific Pandemic Infections Group on Modelling, Operational subgroup (SPI-M-O) and the New and Emerging

¹⁷ Such as SPI-B, SPI-M, NERVTAG, JCVI etc

Respiratory Virus Threats Advisory Group (NERVTAG), or were established *de novo* by other government departments.¹⁸ DHSC has provided a full description of the roles and operation of SPI-M-O and NERVTAG as part of their witness statement.

SAGE Secretariat

79. The role of the SAGE secretariat is to support SAGE and its subgroups in coordinating and providing scientific advice to inform ministers. Secretariat staff are typically drawn from the GO Science resilience team. The secretariat's role includes, but is not limited to:

- activating and deactivating SAGE at the request of COBR;
- arranging and managing meetings;
- providing a bridge between SAGE and other elements of COBR;
- note taking, minutes and publications;
- identifying, coordinating and managing the SAGE work programme;
- supporting SAGE participants and
- facilitating information flows between SAGE and other advisory groups.

80. The SAGE secretariat is responsible for recording the minutes of SAGE meetings. SAGE minutes are written in non-technical language as far as possible to help government decision makers without scientific expertise interpret potentially complex scientific evidence.

81. For the period from 2009 to 2019, GO Science maintained a team (most recently titled the National Security and Resilience team (NSAR)) comprising roughly five civil servants with responsibility for all matters relating to resilience, including emergency preparedness, monitoring and response, and maintaining a state of readiness to convene SAGE in support of COBR.

SAGE meeting management

82. Upon becoming aware of an incident, the NSAR team alerts the GCSA and GO Science senior leadership team (and the CMO in a health-related emergency). There is provision for immediate response outside of regular working hours.

¹⁸ Government Office for Science, Module 2, first statement, includes a list of subgroups established during Covid SAGE activation

83. The NSAR team gathers information, identifies stakeholders, identifies key questions, and agrees roles and responsibilities, establishing the SAGE secretariat when required.
84. A SAGE meeting may need to be scheduled in as little as 4-6 hours from the identification of an emergency. In other cases, there may be slightly more time, though the first meeting (or pre-SAGE meeting) is likely to be within hours or days of an emergency being identified as requiring COBR.
85. A meeting hold is issued to attendees as soon as possible and this is updated to a full calling notice with full agenda in advance of the meeting. The secretariat is responsible for recording meeting minutes and actions, and sharing the outputs of meetings with Cabinet Office COBR Unit leads and other relevant departmental leads (usually within 48 hours of the meeting). Minutes are approved by the Chair or Co-Chairs for circulation and formally ratified at SAGE meetings.
86. SAGE Meetings may take place in person or virtually via Microsoft Teams, as in the 2019 Toddbrook Dam incident and during the Covid-19 pandemic. Prior to 2019 SAGE meetings were only held in person but participants sometimes joined by telephone.
87. The decision to hold a meeting in person or virtually is based on:
 - the subject of the crisis,
 - the necessary speed to expedite the SAGE meeting and relative distances of the chair and experts, and,
 - the accessibility of online tools.

2.2 The National Security Risk Assessment (NSRA) and other Government resilience functions

88. GO Science and GCSA have no formal role in assessing the content of the NSRA, and GO Science is not a LGD for any risks in the UK NSRA.
89. As part of their duties, GO Science and the GCSA comment on the methodology of the NSRA which is overseen and managed by the Cabinet Office. The NSRA is a classified document, although it is summarised in a public-facing version, the National Risk Register (the Register). The GCSA and CSAs review the NSRA methodology. Departmental CSAs review and comment on their departmental risk entries.

90. GO Science and the GCSA support Cabinet Office to ensure a robust process through:
- Helping Cabinet Office to identify and engage with relevant experts in academia and industry, drawing on its own list of experts and external networks
 - Supporting departments to identify experts for their own risk review work where they are not able to do so through their own networks
 - Bringing in expertise to support development of the NSRA methodology
 - Participating in cross-Whitehall governance structures during methodology and NSRA development.
91. The GCSA reviews the NSRA methodology, and as convenor of the CSA network, encourages all CSAs to take an active role in development of the NSRA risks in their department. The GCSA may advise Cabinet Office on areas of focus for future iterations of the methodology or document.
92. The GO Science National Security and Resilience team uses the NSRA as a tool to guide planning for potential SAGE activations, although it is not the only source of risks the team considers. For higher impact and/or higher likelihood risks, GO Science consults with science experts to produce short documents containing the most important initial science questions which are likely to need answering in the earliest, most uncertain part of a crisis.
93. The public sector bodies involved will depend on the nature of the risk in question. There are many public bodies that have scientific expertise across risks in the NSRA, for example: UKHSA, the Defence Science and Technology Laboratory (DSTL), the Met Office, the UK Intelligence Centre (UKIC), the Environment Agency.
94. Furthermore, there are occasional international meetings of the GCSA and their counterparts in the US, Canada, New Zealand and Australia at which concerns and respective planning for specific risks can be aired.
95. GO Science has a role in the overarching governance of the NSRA through the Resilience Steering Board (RSB), which provides high-level oversight of Government resilience and on which I sit, and through contribution to the Risk Assessment Steering Group (RASG), which provides high-level direction for resilience workstreams. However, GO Science and the GCSA are not involved in work on National Resilience Planning Assumptions (NRPAs) except tangentially,

for example through the RASG. GO Science and the GCSA are not involved in the Resilience Capabilities Programme. GO Science and the GCSA have no formal role in the development of the Orange Book.¹⁹

96. GO Science and the NSAR team provide input and critical reflections, such as advice on expert links and methodological changes, across a number of other resilience strategies in Government. These have included the Biological Security Strategy, the National Security Science and Technology Strategy, the Resilience Framework, and the Integrated Review.

¹⁹ High-level government guidance providing an introduction to risk management processes.

Section 3: GO Science role in preparing for a pandemic

97. GO Science and GCSA have no remit in regard to overall planning for a pandemic; this is managed alongside other civil contingency risks by the CCS. Responsibility for the provision of science advice in health emergencies usually rests with DHSC and UKHSA. Furthermore, DHSC is the lead department responsible for government's preparedness for pandemics. With respect to civil contingency and pandemic planning from 2009 to 2019, GO Science and GCSA supported preparedness for giving science advice. Pandemic preparedness work for science advice at GO Science occurred through SAGE exercises and activations described below. Lessons learned from previous emergencies and exercises are recorded in an action tracker, held by the NSAR team. I have provided a separate statement on Lessons Learned from 2020 (which includes the ongoing SAGE development work) to the Inquiry.

3.1 Epidemic and pandemic preparedness and response within GO Science

98. As part of its preparedness to provide science advice, GO Science organises tabletop exercises to test the SAGE process, these have included (but are not limited to) exercises based on emerging infectious diseases. Furthermore, to ensure SAGE is ready to mobilise at short notice, the SAGE secretariat team participates in working level meetings on preparedness risks, tracking risks, supporting government resilience planning and implementation, acting on lessons learned from previous emergencies and running or partaking in tabletop exercises to test the team, GCSA, CSAs and external experts.
99. Below is a chronological outline between 2009 to 2020 of the SAGE activations and exercises that have either directly related to pandemic preparedness, or produced lessons learned for pandemic preparedness. Exercises after 2020 are covered in the lessons learned statement.
100. Exercise Winter Willow was an influenza pandemic exercise held in 2007 (i.e., prior to the establishment of SAGE as a mechanism) [SW/17 - INQ000101592]. Stage 1 comprised a national-level tabletop exercise meeting of the Civil Contingencies Committee, whose secretariat is provided by the Cabinet Office. Stage 2 of the exercise followed up the decisions taken during Stage 1, with a full national

exercise held over several days. Science advice was provided by the Department of Health advisory committees. It does not appear that OSI (the forerunner to GO-Science) had a direct role in this exercise, but it had some communication with the Department of Health regarding the findings of the exercise in relation to science advice and advisory committees.

101. Between May 2009 and January 2010, 22 SAGE meetings were held to provide scientific advice on the 2009 H1N1 ('swine flu') pandemic. Following this pandemic, in 2010, Dame Deirdre Hine led an independent review into the Government's response to the H1N1 pandemic and published recommendations, which included the strengthening of the development and handling of scientific advice. Recommendations led to the publishing of improved Enhanced SAGE Guidance and contributed to GO Science's approach to the Covid-19 response [SW/14 - INQ000101595]. The Hine Review recommendations were also fed into SAGE Development work to improve SAGE processes. More information on the SAGE Development work can be found in the Lessons Learned statement.
102. SAGE was not activated during the 2012 MERS Outbreak. Following the outbreak, GO Science engaged in MERS-CoV preparedness initiatives, the GCSA attended and provided opening remarks at a workshop on emerging and persistent infectious diseases (EPID) run by DSTL in 2014 [SW/18 - INQ000101597; SW/19 - INQ000101596; SW/20 - INQ000101599; SW/21 - INQ000101598].
103. In 2014, SAGE was activated in response to the Ebola outbreak in West Africa. Three meetings were held and co-chaired by the GCSA and CMO. To ensure better preparedness in the event of a future Ebola emergency, GO Science organised two Ebola 'lessons learned' exercises [SW/22 - INQ000101635]. Attendees included key experts from the SAGE modelling group, the GCSA, CMO, DfID CSA, and representatives from Cabinet Office.
104. In June 2015, a precautionary-SAGE meeting was held to address the MERS outbreak in South Korea, as requested by Cabinet Office. Exercise Alice was a tabletop exercise held in February 2016 commissioned by the CMO and run by PHE to explore the challenges that a large-scale outbreak of MERS-CoV could present to the health system in England [SW/23 - INQ000101651; SW/24 - INQ000101652; SW/25 - INQ000101628]. GO Science had an observer role at this exercise. The most relevant actions in terms of science advice were to produce briefings based on the South Korea MERS outbreak and a summary of Ebola virus disease lessons learned. As GO Science's role was limited in this exercise, it does

not hold these briefings nor information as to which organisation was tasked with producing them. The expectation is that DHSC and PHE would ensure delivery against these actions.

105. Between February 2016 and August 2016, there were five pre-SAGE meetings discussing the Zika virus.
106. Exercise Cygnus was a cross-government Tier 1 Command Post Exercise for pandemic influenza, led by PHE on behalf of the Department of Health, and held from 18-20 October 2016 [SW/26 - INQ000101623]. Planning for Exercise Cygnus started in 2014, though there was a pause in the planning due to the Ebola response. As part of this planning, a national level tabletop exercise called Exercise Cygnet was run in 2016 to help the Department of Health, NHS England, and PHE prepare. This was a one-day discussion-based exercise that aimed to provide an opportunity for colleagues from the health and social care sectors to consider the national, strategic health and social care responses to a pandemic influenza outbreak ahead of the broader Exercise Cygnus. Professor Sir Mark Walport (GCSA at the time) chaired a mock SAGE in 2014 to inform Exercise Cygnet; the outputs from this meeting were used to develop the later exercise scenarios [SW/27 - INQ000101624; SW/28 - INQ000101632]. As this mock SAGE was part of the planning process, rather than embedded in the exercise, there is no record of any specific lessons for SAGE. Dr Rupert Lewis, as the Director of GO Science at the time (deputising for Prof Sir Mark Walport), attended Exercise Cygnus in 2016, briefing ministers in one COBR(M) alongside the CMO. There was no further formal SAGE exercising for Cygnus.
107. Following Exercise Cygnus, GO Science and SPI-M were involved in a review of planning assumptions relevant to workforce absenteeism during a pandemic, between June 2017 and February 2018 [SW/29 - INQ000101636; SW/30 - INQ000101638; SW/31 - INQ000101637; SW/32 - INQ000101653]. GO Science attended SPI-M meetings from 2016 onwards. GO Science attended the Pandemic Flu Readiness Board in 2018, run by CCS, Cabinet Office [SW/33 - INQ000101607; SW/34 - INQ000101608; SW/35 - INQ000101609; SW/36 - INQ000101610; SW/37 - INQ000101611; SW/38 - INQ000101612; SW/39 - INQ000101613; SW/40 - INQ000101614]. GO Science hosted a GCSA-chaired meeting in 2018 to assess UK vaccine capacity during an influenza pandemic [SW/41 - INQ000101645].

108. Following the House of Commons Science & Technology Committee “Science in emergencies: UK Lessons in Ebola” report published in 2016, GO Science held three precautionary-SAGE meetings between May 2018 and May 2019, to respond to the Democratic Republic of the Congo Ebola outbreak [SW/42 - INQ000101604].
109. To ensure better preparedness in the case of a future MERS-related pandemic, the GCSA and GO Science participated in Exercise Alice in 2016, and organised and partook in exercise Sombre Nightjar, a trilateral resilience exercise in 2019, mimicking the outbreak of a zoonotic disease (i.e. one which is transmitted between animals and humans) [SW/43 - INQ000101641; SW/44 - INQ000101639]. This aimed to build relations with, and learn lessons from, US and Canadian emergency science advice mechanisms.

3.2 Future analysis and horizons scanning

110. Information on futures analysis and horizon scanning within the UK Government should be gathered from lead departments – I can only respond on behalf of GO Science.
111. GO Science supports government with long term and futures analysis in three modes. Firstly, our long running Foresight Programme explores the implications of strategic future issues on behalf of government on a project basis. Each project report is published and GO Science would typically only return to an issue at the request of government or if the fundamental dynamics identified in the initial work had changed.
112. Secondly, GO Science supports futures and horizon scanning teams across government. This includes the provision of advice, training, expert procurement, foundational resources and a peer support network. For a period between 2013 and 2018 GO Science provided the secretariat, along with Cabinet Office, for the Cabinet Secretary's Advisory Group on Horizon Scanning.
113. Finally, GO Science has a specific focus on supporting government to understand the opportunities and risks of emerging technologies.
114. Relevant foresight work on infectious diseases is provided below:
 - OSI (the forerunner to GO Science) published a Foresight project in 2006 entitled “Infectious Diseases: preparing for the future”. This was undertaken as part of the organisation’s Futures and Foresight capability, which

provides the Government with analysis on a range of future cross-cutting issues, as well as providing advice, resources and training in order to support other teams in Government on using futures methods. All previous GO Science Foresight projects have been published and are available online.

- A 2019 paper GO Science produced for the NSRA on Demography & Urbanisation that highlighted the related risk of infectious disease [SW/45 - INQ000101615]. This was an update to a 2015 version.
- A 2015 audit of departmental horizon scanning activities commissioned for Cabinet Secretary's Advisory Group, including identifying responsibility for scanning for emerging diseases [SW/46 - INQ000101603].
- A deck of long-term trends – various iterations of this had been used within government, and GO Science published this for the first time in 2021 [SW/47 - INQ000101657].

115. The Blackett review on high impact, low probability risks, was published in 2011 by GO Science, having been requested by the Cabinet Office and the Ministry of Defence [SW/4 - INQ000101600]. This is in line with GO Science's role in advising on the quality of science and evidence, with decisions owned by the individual government departments and teams.
116. In 2021 the former GCSA chaired the 100 Days Mission for pandemic preparedness on behalf of the G7 [SW/1].²⁰

²⁰ Government Office for Science, Module 1, Lessons Learned statement

Section 4: Additional information

4.1 Additional information regarding GO Science and GCSA role and remit

117. It will be apparent from the account I have set out above of the role and remit of GO Science and the GCSA that a number of the matters raised by the Inquiry in its Rule 9 Request fall outside the scope of GO Science's responsibilities. I provide a summary below of the particular aspects of the Rule 9 Request which I am unable to address in detail on behalf of GO Science which I hope may be of assistance to the Inquiry in the event that it wishes to seek further information in respect of those matters.
118. As I have explained, GO Science and the GCSA have no specific role in relation to overall planning for a pandemic, or more general public health matters. Individuals identified in paragraph 38 of the Inquiry's request would expect to be involved in any SAGE activation as and when required, but I am not in a position to provide a substantive description of their role and remit. Having now had the opportunity to read the Statement provided by DHSC on matters relating to Module 1, I would refer the Inquiry to that document for a full description of these roles.
119. Similarly, whilst data and surveillance were critical components of the response to the Covid-19 pandemic, as previously stated in paragraph 52, the work of the individuals and organisations identified in paragraph 39 of the Inquiry's request do not fall within the remit of GO Science, and I am not in a position to provide a description of their role and remit.
120. Economic analysis is not part of the remit of GO Science, and I am not in a position to provide an account of how science advice is balanced against other analytical disciplines by decision makers as requested by the Inquiry (paragraph 35). As I have already observed, while there were great benefits to being transparent in our approach to science advice during the Covid-19 response, it also meant that this advice was subject to particularly intensive media scrutiny. The science advice provided by the GCSA, the CMO and SAGE was an important element of the advice being provided to HMG during the pandemic but inevitably it was only one of a number of constituent parts that fed into decision making.
121. As part of his foreword to the SCR, the former GCSA highlighted the value and potential of public laboratories [SW/3 - INQ000101614]. The SCR forms part of an

effort to improve science across government, and the SCR programme that GO-Science has in place to track the progress of these recommendations is referred to as part of my separate statement on lessons learned [SW/1].²¹ GO Science and the GCSA do not, however, have managerial responsibility for laboratories but retain a strategic interest, which means I am unable to provide a substantive statement in response to questions posed in paragraphs 80 and 81 of the request from the Inquiry.

4.2 Reflections on planning for a pandemic

122. I am providing a separate statement dealing with future risks, review, reports and lessons learned exercises relating to GO Science's role in the response to the Covid-19 pandemic, including the specific issues raised in Part 5 of the Inquiry's Rule 9 request. This statement includes details of several internal reviews of performance and lessons learned. I note, however, that GO Science has been requested to provide a 'high-level overview' of its perspective in respect of a number of matters and I deal in this section of my statement with those aspects of the Inquiry's request.
123. In general terms, I consider the speed and scale of the SAGE response to the pandemic to have been unprecedented. As I explained at the outset, the demand for scientific advice during the pandemic meant that the SAGE mechanisms were activated to a scale far beyond that which any of us at GO Science had experienced before, both in terms of the number of SAGE participants and the range of different areas of expertise. The willingness of large numbers of eminent members of the scientific community to contribute to this process was impressive and GO Science was able to cope well with the very significant administrative demands that arose as a result. If this ability is to be replicated in response to future emergencies, it will require enduring readiness in GO Science, academia and the wider civil service to be able to staff and support a large scale and long-term SAGE activation.
124. As to the question of preparedness of the UK for the Covid-19 pandemic in terms of the processes, systems, and methodologies for the provision of relevant of scientific and technical advice, there is no doubt that the scale of the demand for advice, in terms of both scope and duration was unprecedented and went well beyond any of the planning exercises that had been undertaken previously.

²¹ Government Office for Science, Module 1, Lessons learned statement

However, the flexibility of the SAGE model proved to be well suited to the provision of advice in these circumstances and, in general terms, I regard a system which is capable of drawing on a wide range of expertise from various different sources in order to meet each specific request for advice as continuing to provide the most effective template going forward.

Statement of Truth

I believe that the facts stated in this witness statement are true. I understand that proceedings may be brought against anyone who makes, or causes to be made, a false statement in a document verified by a statement of truth without an honest belief of its truth.

Personal Data

Signed.....

Dated..... 13/04/2023