

Witness Name: Dr Stuart

Wainwright OBE

Statement No.: 4

Exhibits: SW/48-SW/117

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UK COVID-19 INQUIRY

**WITNESS STATEMENT OF
DR STUART WAINWRIGHT OBE**

Introduction

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. 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, the 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.
4. This statement responds to part 5 of the Inquiry's Rule 9 request of 18 November 2022.

Activities as part of future risks, reviews, reports and lessons learned exercises

5. GO Science began work to produce reviews and lessons learned early into its role in the Covid-19 response with a view to continuous improvement in our approach. These activities were performed on an iterative basis from March 2020 and are continuing currently.
6. The purpose of these activities has been to ensure that SAGE and GO Science would, over the course of the Covid-19 emergency and future emergencies, be in a position to respond as efficiently and effectively as possible. GO Science also remained mindful of and responded to external activities where necessary; including relevant reports and Select Committee inquiries, and considered recommendations made, feeding into cross-HMG responses as appropriate. Improvements were actively implemented by GO Science throughout the pandemic.

7. The table below lists, chronologically, the internal or external reviews, information on lessons learned exercises and other reports involving, authored, overseen or responded to by the GCSA and GO Science and any initiatives or activities involving, overseen or responded to by GO Science concerning the making of changes to any of the entities, structures and processes relating to any of the issues.

8. The details below the table provide further information on GO Science's role in these workstreams, methods followed and the extent to which recommendations that were produced from those workstreams were implemented, referring to disclosed documents where appropriate.

Chronological List

Timeframe (approximate involvement of GO Science)	Activity	Internally driven or external activity	GO Science's role in activity
January 2020	Obscure Dawn Exercise	Internally driven	Led
February 2020	Ministerial Covid-19 Exercise	External activity	Attended by the GCSA
March 2020 - ongoing	SAGE Development Programme	Internally driven	Led
April 2020 - May 2020	Independent Observer for SAGE and Challenge Function	Internally driven	Commissioned and informed SAGE Development Programme
April 2020 - November 2020	The Royal Society: Data Evaluation and Learning for Viral Epidemics (DELVE)	External activity	Reports considered by and/or made available to SAGE participants
June 2020 - September 2020	Sir Adrian Smith review of the immediate lessons learnt from Covid	Internally driven	Commissioned, considered recommendations, informed SAGE Development Programme

June 2020 - October 2020	Internal Lessons Identification	Internally driven	Led and informed SAGE Development Programme
July 2020 - July 2021	Academy of Medical Sciences Winter Risks work	Internally driven	Commissioned
July 2020	Department of Health and Social Care (DHSC) COVID-19 Lessons Learnt Review	External activity	GCSA interviewed
July 2020	Written evidence to the Commons Science and Technology Committee - Institute of Development Studies	External activity	Considered recommendations
July 2020	Supplementary written evidence to the Commons Science and Technology Committee - Nuffield Council on Bioethics	External activity	Considered recommendations
August 2020	UK science, research and technology capability and influence in global disease outbreaks: a response to the house of commons science and technology committee - Royal Society of Edinburgh	External activity	Considered recommendations

September 2020 - March 2021	The British Academy - Shaping the COVID Decade: addressing the long-term societal impacts of COVID-19	Internally driven	Commissioned and considered recommendations
September 2020	Institute for Government: Decision making in a crisis: First responses to the coronavirus pandemic	External activity	Provided input and considered recommendations
December 2020	Institute for Government: Science Advice in a Crisis	External activity	Provided input and considered recommendations
January 2021	Science and Technology Committee - The UK response to covid-19: use of scientific advice	External activity	Considered recommendations
February 2021 - June 2021	100 Days Mission and the Pandemic Preparedness Partnership	External activity	Initially led by GCSA, provided support to Cabinet Office and other government departments
March 2021	Royal Academy of Engineering: Critical Capabilities: strengthening UK resilience	External activity	Considered recommendations
March 2021	Public Administration and Constitutional Affairs Committee (PACAC): Government transparency and accountability during Covid 19: The data underpinning decisions	External activity	Considered recommendations

April 2021 - August 2022	Covid Science Advice Legacy	Internally driven	Led and informed SAGE Development Programme
May 2021 - July 2021	National Core Studies (NCS) Lessons Learnt Exercise	Internally driven	Led
May 2021 - March 2022	SAGE Sub-group review	Internally driven	Led and informed SAGE Development Programme
July 2021-July 2022	Royal Academy of Engineering work on Infection Resilient Environments	Internally driven	Commissioned
September 2021	SAGE Participant Away Day	Internally driven	Led and informed SAGE Development Programme
October 2021	Royal Academy of Engineering (RAEng): External Review of the National Security Risk Assessment (NSRA) Methodology	Internally driven	Commissioned with the Civil Contingencies Secretariat (CCS)
October 2021	Health and Social Care Committee and Science and Technology Committee - Coronavirus lessons learnt inquiry	External activity	Considered recommendations
October 2021 - February 2022	Cabinet Office 'Embedding innovation and learning' from the response to Covid-19	External activity	Contributed

November 2021 - November 2022	DHSC UK CMOs and GCSA Pandemic Report	External activity	Contributed
January 2022 - September 2022	Cross-government Crisis Capabilities Review	External activity	SAGE practices drawn on
February 2022 - ongoing	Foresight Project: Resilience to long-term trends and transitions to 2050	Internally driven	Led
February 2022 - ongoing	Royal Society review to analyse impact of NPIs during the pandemic	Internally driven	Commissioned
February 2022	British Academy and Academy of Medical Science: Historic and Geographic Patterns of Health Inequalities	Internally driven	SAGE commissioned
March 2022	Institute for Government: lessons for public bodies from the pandemic response in health	External activity	Provided input and considered recommendations
April 2022	Sense about Science: What Counts report	External activity	Responded
June 2022 - October 2022	Covid-19: European Scientific Councils meeting	Internally driven	Suggested, participated and led write-up of agreed principles
November 2022	Exercise Mighty Oak Dress Rehearsal	External activity	Took part in exercise led by BEIS

March 2023	Exercise Mighty Oak	Externally driven	Took part in exercise led by BEIS
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Overview of Activities

9. Activities detailed in this statement are divided between internally driven (within GO Science) and externally driven and I deal with each activity separately. For ease of reference, I set out below in summary form, which activities fall into each category.

1. Internally driven activities

i.	<u>Activities to improve ways of working and process</u>	pg.
	a) Obscure Dawn Exercise	12
	b) SAGE Development Programme	12
	c) Independent Observer for SAGE and Challenge Function (informed SAGE Development Programme)	14
	d) Sir Adrian Smith review of the immediate lessons learnt from Covid (informed SAGE Development Programme)	14
	e) Internal Lessons Identification (informed SAGE Development Programme)	14
	f) Covid Science Advice Legacy (informed SAGE Development Programme)	15
	g) National Core Studies (NCS) Lessons Learnt Exercise	15
	h) SAGE Sub-group review (informed SAGE Development Programme)	16
	i) SAGE Participant Away Day (informed SAGE Development Programme)	16
	j) Foresight Project: Resilience to long-term trends and transitions to 2050	17
	k) Royal Academy of Engineering (RAEng): External Review of the National Security Risk Assessment (NSRA) Methodology	17
	l) Covid-19: European Scientific Councils meeting	18
ii.	<u>Activities to improve scientific understanding</u>	
	a) Academy of Medical Sciences Winter Risks work	18

b) Royal Academy of Engineering work on Infection Resilient Environments	19
c) The British Academy - Shaping the COVID Decade: addressing the long-term societal impacts of COVID-19	20
d) Royal Society review to analyse impact of NPIs during the pandemic	20
e) British Academy and Academy of Medical Science: Historic and Geographic Patterns of Health Inequalities	21

2. External activities that GO Science gave input and/or responded to

i. Activities to improve ways of working and process

a) Ministerial Covid-19 Exercise	22
b) Institute for Government, Sense about Science and Royal Academy of Engineering Reports	22
c) Recommendations from various sources: Select Committee reports, written evidence and correspondence and other reviews	23
d) DHSC Covid-19 Lessons Learnt Review	24
e) 100 Days Mission and the Pandemic Preparedness Partnership	24
f) Cabinet Office 'Embedding innovation and learning' from the response to COVID-19	25
g) DHSC UK CMOs and GCSA Pandemic Report	26
h) Cross-government Crisis Capabilities Review	26
i) Exercise Mighty Oak Dress Rehearsal	26

ii. Activities to improve scientific understanding

a) The Royal Society: Data Evaluation and Learning for Viral Epidemics (DELVE)	27
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1. Internally driven activities

i. Activities to improve ways of working and process

a) Obscure Dawn Exercise (January 2020)

10. GO Science ran Exercise Obscure Dawn on the 16 January 2020. This exercise was held with international observers, from the US and New Zealand. At the request of the Civil Contingencies Secretariat (CCS), the exercise was based on the scenario of a national power outage involving a failure of the National Electricity Transmission System (NETS) following a period of severe weather. The exercise involved two mock SAGE meetings. The science questions were primarily focused on water supply, sanitation and food. Subsequently the information from the exercise has fed into a wider cross-government programme looking at the preparedness for, and response more broadly to, a national power outage scenario (Programme Yarrow).
11. Tabletop exercises are designed to familiarise relevant people with the operation of SAGE, to test operational arrangements for SAGE responses, to understand the advice and expertise that would be needed in the scenario being tested and to identify, and if necessary address, any knowledge gaps.
12. Key actions for GO Science included:
 - to continue to identify industry and private sector experts to participate in future SAGE activations.
 - to contact key operational teams (including the Police) who could attend future SAGE meetings to be aware of and consider the behavioural issues which impact on the operational side of an emergency response.
 - to investigate the relationship between SAGE and local Science and Technical Advice Cells (STACs) in the event of a failure of the NETS.
13. A summary note of the exercise, including subsequent actions can be found in SW/48 - INQ000064645.

b) SAGE Development Programme (March 2020 - ongoing)

14. This programme evolved from an internal 'ways of working' improvement project from March 2020 to more formally the SAGE Development Programme from 2021. Recommendations for improvement of the SAGE mechanism were identified through a

number of external and internal reviews mentioned in this statement at different points during the pandemic. Such regularity of reviews as part of what became a singular programme of development allowed for a robust approach to continuous learning and improving.

15. Many of these recommendations were acted on during the response; some needed to be considered in more detail as part of a wider package of work due to timeframe of completion and the fact that some points included parties external to GO Science, primarily Cabinet Office. The SAGE Development Programme remains in place to build on these recommendations and to continuously improve the operation of SAGE and its secretariat for future emergencies.
16. By October 2021, the programme had set up processes for considering recommendations and suggested changes. This had three elements: a recommendation tracker, a triage process and a dashboard for other live internal activities that impacted the programme.
17. The second phase of the programme from October 2021 built on the external recommendations to improve the then current running of Covid-19 SAGE and focused on the following work strands to improve:
 - Transparency, quality and accessibility of SAGE advice
 - SAGE experts: recruitment, induction, diversity, support
 - SAGE doctrine and governance
 - GO Science as a Response Ready Organisation
 - SAGE secretariat and sub-group ways of working
 - SAGE-Covid evolution (only partially in scope, as focused on ensuring a transition of Covid-response responsibility to UKHSA and the eventual stand down of Covid-19 SAGE).
18. Further detail of the SAGE development at this stage can be found in SW/49 - INQ000064642.
19. From spring 2022 onwards, the next phase of the programme focused on the following work strands to improve SAGE for future activations:
 - GO Science as a Response Ready Organisation

- SAGE transparency
 - SAGE secretariat and sub-group ways of working
 - SAGE experts
 - Continuous Improvement and Audit Trail
20. Further detail of what has been implemented so far and what work is still ongoing can be found in SW/50 - INQ000064641.

c) Independent Observer for SAGE and Challenge Function (April 2020 - May 2020)

21. The former GCSA asked Professor Sir Ian Boyd (Professor in Biology at the University of St Andrews, Chief Scientific Adviser (CSA) at the Department for Environment, Food and Rural Affairs from September 2012 to August 2019) to observe SAGE from April 2020 and provide challenge on SAGE ways of working from SAGE 25 to SAGE 36, particularly to ensure the right level of debate and challenge was provided amongst the participants and any group think or optimism bias could be identified and challenged. Professor Ian Boyd was asked to fulfil this role because he understood the pressures of delivering science advice in an emergency context, he understood the process of providing scientific advice within government, and he was not involved in the Covid-19 response directly. An email thread containing his reflections to the SAGE co-chairs, the former GCSA and the Chief Medical Officer (CMO), can be found in SW/51 - INQ000064643.

d) Sir Adrian Smith review of the immediate lessons learnt from Covid (June - September 2020)

22. At the request of the former GCSA and the CMO, Sir Adrian Smith (the then incoming President of the Royal Society) undertook a short, targeted review of how SAGE had operated over recent months. Sir Adrian held a series of discussions with SAGE participants, with Cabinet Office and CCS colleagues. This review looked at what could be improved as GO Science moved into the next phase of the response. His review is found in SW/52 - INQ000062443.
23. An overview of the advice and agreed recommendations is at SW/53 - INQ000064436, alongside the GO Science response. This review directly informed the SAGE development programme.

e) Internal Lessons Identification (June - October 2020)

24. Linked closely to the review Adrian Smith conducted (details above), the purpose of this exercise was to gather staff feedback on the operational processes used during the first phase of the GO Science Covid-19 response (January - July 2020) and consider feedback on the ways of working, to enable the teams to build on this to continue to deliver our Covid-19 response effectively. The scope of this review was structured using the GO Science incident response standard operating procedure (SOP). Lessons learnt workshops (to gather GO Science staff feedback) took place with GO Science Covid-19 response colleagues of all levels of seniority (EO-SCS2). The outputs of the workshops were analysed internally. This work fed into the SAGE development programme. The resulting recommendations and actions produced can be found in SW/54 - INQ000064638 and SW/55 - INQ000062879.

f) Covid Science Advice Legacy (April 2021 – August 2022)

25. GO Science also identified wider learnings for science in HMG beyond the remit of SAGE. The learnings have been embedded and taken forward into GO Science's Science Capability Review (SCR) programme (GOV.UK website with further detail of the SCR and report can be found in SW/56 - INQ000061614) and wider GO Science governance. The learnings have been communicated to those who need to act on them and also fed into the Cabinet Office's '*Embedding innovation and learning from the response to Covid-19*' project.

Themes identified through this project included:

1. Delivery of science advice
 2. Science communication and transparency
 3. Structural capabilities
 4. The SAGE model (successes identified with more general applicability and transferability outside of an emergency response)
 5. GO Science operations
26. See SW/57 - INQ000064451 for a fuller report of progress against the Covid Science Advice Legacy project recommendations.

g) National Core Studies (NCS) Lessons Learnt Exercise (May - July 2021)

27. In May 2020, SAGE identified a series of priority scientific questions that needed to be addressed to coordinate the UK's response to the Covid-19 outbreak. The National Core

Studies (NCS) programme was established by the former GCSA in summer 2020 (with the programme formally established in October 2020) to ensure these questions could be answered. The GOV.UK website with further details can be found in SW/58 - INQ000064646. Although research to answer these questions was already ongoing, the NCS was set up to:

1. ensure the necessary infrastructure was in place to answer these questions efficiently
 2. ensure existing research was being done at the right scale to provide robust evidence
 3. ensure that priority datasets from existing and emerging Covid-19 studies were made available and linked so they can be used by researchers.
28. In July 2021, the NCS was transitioning to a business-as-usual funding model for co-ordinating interdisciplinary research to support rapid decision-making in government operations and policy. At this time, a legacy review was undertaken by GO Science to consider how the successes of the NCS were achieved, which components of the NCS needed to continue, and what we could learn from the perceived effectiveness of the NCS model. The recommendations from this work, including how GO Science implemented its assigned actions can be found in SW/59 - INQ000063977 and SW/60 - INQ000064155.

h) SAGE Subgroup review (May 2021 - March 2022)

29. GO Science led a project to examine the experience of SAGE subgroup participants during the Covid-19 response in their provision of science advice for SAGE, learn lessons and make recommendations for how we could improve the experience in future emergency response situations and celebrate successes. Participants from eight SAGE subgroups were interviewed to gather their reflections and perspectives from the first 18 months of the Covid-19 response. These reflections were organised into themes and main findings and lessons were drawn out from each theme. The lessons learnt and full report can be found in SW/61 - INQ000064446. This work fed into the SAGE development programme.

i) SAGE Participant Away Day (September 2021)

30. GO Science, with the support of Professor Dame Angela McLean (now GCSA, at the time CSA at the Ministry of Defence (MoD), SAGE participant, and SPI-M-O Co-Chair),

organised a discussion with over 30 SAGE and subgroup participants to reflect on major challenges and successes during the SAGE Covid-19 activation, to reflect on which data streams were needed to underpin SAGE and subgroup advice, how these data streams had been sourced and what blockers had to be overcome to access the data, and to consider how to prepare for and ensure access to data streams during emergencies.

31. Details of that discussion can be found in SW/62 - INQ000064199.

j) Foresight Project: Resilience to long-term trends and transitions to 2050 (February 2022 - ongoing)

32. As part of GO Science's Foresight Programme [SW/63 - INQ000064647], the Resilience Foresight project [SW/64 - INQ000064648] is developing an evidence base, methodologies, and tools to explore the interactions between long-term trends and a subset of acute risks in the National Security Risk Assessment (NSRA). The project aims to:

- support more holistic risk planning within and across government;
- upskill both policy and risk and resilience communities so that they can consider longer-term trends, manage related risks and maximise resilience to change;
- embed long-term thinking on resilience into policy development; and
- encourage better use of science to anticipate and develop responses to evolving risks

33. Output from this project is due to be published this year. Further detail can be found about GO Science's Foresight programme in SW/63 - INQ000064647 and SW/64 - INQ000064648.

k) Royal Academy of Engineering (RAEng): External Review of the National Security Risk Assessment (NSRA) Methodology (October 2021)

34. GO Science and CCS commissioned RAEng to undertake an external review of the NSRA methodology, to be completed in October 2021. The review was asked to deliver evidence-based, practical, and implementable recommendations for improvement. GO Science and the GCSA supports and advises CCS on the methodology of the NSRA. The NSRA itself and the methodology is owned by CCS. CCS are responsible for

implementing the recommendations of the report. The full report can be found in SW/65 - INQ000068403.

I) Covid-19: European Scientific Councils meeting (June - October 2022)

35. During the Covid-19 response, the former GCSA organised regular informal virtual meetings with lead Covid-19 scientific and medical advisers across Europe to discuss the latest scientific evidence on the virus and the interface between science and policy. All advisers agreed to meet in person when restrictions were lifted.
36. On the 10-11 June 2022, these advisers met at the Covid-19 European Scientific Councils meeting in Paris. This meeting was suggested by the former GCSA and CMO and organised by French officials. At the meeting, they discussed and agreed on principles important for the establishment and operation of independent expert groups or councils that provide timely and impartial scientific advice to governments and citizens based on the best available evidence. These principles were informed by advisers' experience of their relative government's Covid-19 response, as well as observations on the value of international peer-to-peer collaboration. GO Science officials led the drafting of a paper setting out these principles and observations, which is to be submitted for publication in the medical journal the Lancet. This paper can be found in SW/66 - INQ000064468.

ii. Activities to improve scientific understanding

a) Academy of Medical Sciences Winter Risks work (July 2020 - July 2021)

37. GO Science commissioned an Expert Advisory Group at the Academy of Medical Sciences (AMS) to produce two 'Preparing for a challenging winter' reports in 2020 and 2021 respectively.

Report 1 - Preparing for a challenging winter 2020/21 [SW/67 - INQ000062402]

38. The purpose of this report was:
 - To develop a clear understanding of what a challenging winter 2020/21 may look like – a likely mix of Covid-19, bad seasonal influenza and cold weather;
 - To understand what this would mean for deaths, NHS capacity and social care;
 - To understand what challenges this would present for surveillance; test, trace and isolate (TTI); and non-pharmaceutical interventions;

- To allow for plans to be developed by policy/operational colleagues to manage this.
39. The report was considered at SAGE 46 and can be found in SW/67 - INQ000062402.

Report 2 - COVID-19: Preparing for the future: Looking ahead to winter 2021/22 and beyond [SW/68 - INQ000064058]

40. The purpose of this report was to:
- Explore the health and social care challenges, including inequalities in health, that will be presented by winter 2021/22 in terms of Covid-19 and non-Covid-19 care.
 - Develop a range of scenarios for winter 2021/22 and, where possible, model health outcomes to inform planning.
 - Identify the priority areas for action and likely most effective interventions to manage these challenges, and stakeholders to address these.
 - Determine outstanding uncertainties that will require further investigation, including research, ahead of winter.
 - Explore the transition towards achieving lower circulation levels of SARS-CoV-2.
41. This report was made available to participants at SAGE 94 and can be found in SW/68 - INQ000064058.

b) Royal Academy of Engineering work on Infection Resilient Environments (July 2021 - July 2022)

42. The former GCSA commissioned the Royal Academy of Engineering (RAEng) to produce two reports published in July 2021 and July 2022 respectively. GO Science maintained awareness of work and advised on potential government experts to engage with, but had no role drafting reports or recommendations. Prior to publication, GO Science supported RAEng engagement with policy teams in CO and subsequently organised cross-government report dissemination and teach-in sessions.

Report 1 - Infection Resilient Environments: Buildings that keep us healthy and safe [SW/69 - INQ000064015]

43. This report looked at what should be done ahead of winter 2021/22 to operate buildings and transport in a way that reduces the risk of Covid-19 transmission, and makes them

acceptably safe, while enabling a degree of normality (the immediate focus). This report was made available to participants at SAGE 94 and can be found in SW/69 - INQ000064015.

Report 2 - Infection resilient environments: time for a major upgrade [SW/70 - INQ000064458]

44. This report looked at how buildings and transport can be redesigned and retrofitted to make them more infection resilient in the future (the strategic challenge). The former GCSA wrote to the Minister for Building Safety and Fire in the Department for Levelling Up, Housing and Communities (DLUHC) in June 2022 to highlight the report and GO Science have asked the DLUHC CSA to pick this up with new ministers.
45. This report can be found in SW/70 - INQ000064458.

c) The British Academy - Shaping the COVID Decade: addressing the long-term societal impacts of COVID-19 (September 2020 - March 2021)

46. GO Science commissioned the British Academy to conduct an independent review looking at the long-term impacts of Covid-19 on society in September 2020. The review intended to examine the wider effects of the 'Covid-19 decade', and how these effects may emerge differently across places and through time. The review has led to production of two reports, considering the effect and impact of Covid-19 on three areas:
 1. Health and wellbeing;
 2. Communities, culture and belonging;
 3. Knowledge, skills and employment.
47. The independent review details that there are long-term impacts on society, goals for policymakers and principles for recovery that must be considered in order to shape the Covid-19 decade to ensure recovery. GO Science involvement has been limited to considering the recommendations provided.
48. This report can be found in SW/71 - INQ000063552.

d) Royal Society review to analyse impact of NPIs during the pandemic (February 2022 - ongoing)

49. The former GCSA discussed the need with the Royal Society (RS) of an independent review to look at the evidence around the effectiveness and health impacts of NPIs, covering five areas:
1. Masks
 2. Diagnostics and contact tracing, isolation
 3. Environmental measures
 4. Travel measures, international
 5. Social distancing, lockdowns
50. The RS will be delivering two reports in mid-2023, the first an evidence review and the second detailing lessons for health resilience and pandemic preparedness. GO Science and GCSA's involvement has been limited to initial discussions and commenting on the project proposal. Correspondence between Sir Professor Mark Walport, the chair of the RS steering group for the report and the former GCSA, discussing approach and content can be found in SW/72 - INQ000101643.

e) British Academy and Academy of Medical Science: Historic and Geographic Patterns of Health Inequalities (February 2022)

51. Following a SAGE request in June 2021, the British Academy and the Academy of Medical Sciences convened a roundtable to discuss the geographic and historic patterns of health inequalities across the UK. Researchers from both academies, members of the public and medical patients attended the roundtable to discuss:
- How distinguishable are geographic Covid-19 infection spread and mortality rates from place-based health outcomes over the past 200 years?
 - What are the causes and consequences of this?
 - What needs to change?
52. The resulting report presents the summary of discussion, key findings and emerging themes. The five key areas discussed were:
1. Value of historical perspective;
 2. Looking beyond the pandemic;

3. The need for co-production in research;
4. The need for flexible and agile data; and
5. How inequalities should be addressed.

53. This report can be found in SW/73 - INQ000064441.

2. External activities that GO Science gave input and/or responded to

iii. Activities to improve ways of working and process

a) Ministerial Covid-19 Exercise

54. On 12 February 2020, the former GCSA took part in the tabletop exercise (called Nimbus) run by CCS. This exercise simulated a CCS Committee (COBR) meeting in which participants worked through the context, choices and consequences for a small number of difficult topics arising from a fictional scenario. The GCSA was briefed that the Chair may expect input from him for the following items of the agenda.

- Item 2: Caring for the sick
 - Outline the possible public behaviour response to a reduction in availability of healthcare provision.
- Item 3: Staff absences
 - Possible behavioural impacts on staff absences

55. During the 4th ministerial COBR meeting for Covid-19 held on the 18 February 2020, lessons learned from this ministerial exercise were discussed, according to the provisional agenda. GOS does not hold a record of the lessons learned for this exercise.

b) Institute for Government, Sense about Science and Royal Academy of Engineering Reports

56. The Institute for Government (IfG), Sense about Science, and the Royal Academy of Engineering (RAEng) have published the following reports regarding the government response to the Covid-19 pandemic. In each case, the authors engaged with GO Science officials during the research phase. IfG and RAEng gave early sight of their report, to invite comment from GO Science. These comments can be found in SW/75 -

INQ000062517, SW/76 - INQ000063001, SW/77 - INQ000064210 and SW/78 - INQ000064644.

1. Institute for Government: Decision making in a crisis: First responses to the coronavirus pandemic (*September 2020*) [SW/79 - INQ000062549]
2. Institute for Government: Science Advice in a Crisis (*December 2020*) [SW/80 - INQ000063070]
3. Royal Academy of Engineering: Critical Capabilities: strengthening UK resilience (*March 2021*) [SW/81 - INQ000063801]
4. Institute for Government: lessons for public bodies from the pandemic response in health (*March 2022*) [SW/82 - INQ000064443]
5. Sense about Science: What Counts report (*April 2022*) [SW/74 - INQ000064456]

c) Recommendations from: Select Committee reports, written evidence and correspondence and other reviews

57. Several external sources gave recommendations that were within GO Science's remit. This included the IfG's Science Advice in a Crisis report (above) and the listed sources below. GO Science took a view on all recommendations. Decision and rationale for recommendations can be found in SW/83 - INQ000064661. The implementation of the majority of these recommendations fed into the SAGE Development Programme, discussed in section 1(i)(b), above.

Select Committee Reports

1. Science and Technology Committee - The UK response to covid-19: use of scientific advice (*January 2021*) [SW/84 - INQ000064649]
 2. Public Administration and Constitutional Affairs Committee (PACAC): Government transparency and accountability during Covid 19: The data underpinning decisions (*March 2021*) [SW/85 - INQ000064652]
 3. Health and Social Care Committee and Science and Technology Committee - Coronavirus lessons learnt inquiry (*October 2021*) [SW/86 - INQ000064148]
58. GO Science contributed to the government response to these Select Committee reports through ministerial departments, usually DHSC. The former GCSA also appeared in

front of Select Committees to give oral evidence related to the government response to the Covid-19 pandemic on multiple occasions from 2020-2022. He appeared in front of the Science and Technology Committee for their Coronavirus lessons learnt inquiry in December 2020.

59. Furthermore, the former GCSA also sent correspondence to the Science and Technology Select Committee, [SW/87 - INQ000064454, SW/88 - INQ000064452, SW/89 - INQ000064455, SW/90 - INQ000064442, SW/91 - INQ000063862, SW/92 - INQ000063852, SW/93 - INQ000062857, SW/94 - INQ000062748, SW/95 - INQ000062704, SW/96 - INQ000062296, SW/97 - INQ000061961, SW/98 - INQ000061984, SW/99 - INQ000061820] which can be found on the UK Parliament website, Science and Technology Committee Correspondence [SW/100 - INQ000101644].

Other Sources of Recommendations

1. Written evidence to the Commons Science and Technology Committee - Institute of Development Studies (*July 2020*) [SW/101 - INQ000064651].
2. Supplementary written evidence to the Commons Science and Technology Committee - Nuffield Council on Bioethics (*July 2020*) [SW/102 - INQ000064656].
3. UK science, research and technology capability and influence in global disease outbreaks: a response to the house of commons science and technology committee - Royal Society of Edinburgh (*August 2020*) [SW/103 - INQ000064658].
4. Shaping the Covid Decade: addressing the long-term societal impacts of Covid-19 - The British Academy (*March 2021*) [SW/71 - INQ000063552].

d) DHSC Covid-19 Lessons Learnt Review (July 2020)

60. The Department of Health and Social Care (DHSC) undertook a review to gain a view on what went well and what could have been improved in the Health and Social Care Covid-19 response from December 2019 to June 2020. To inform this work, the former GCSA was interviewed on the 21 July 2020. Draft Terms of Reference for DHSC's review can be found in [SW/104 - INQ000062383].

e) 100 Days Mission and the Pandemic Preparedness Partnership (February 2021 - June 2021)

61. In February 2021, during the UK's G7 Presidency, the UK Prime Minister challenged the G7 to reduce the time to develop and make available safe, effective and affordable diagnostics, therapeutics and vaccines (DTVs) in a future health crisis. The former GCSA was tasked with leading this work, with support from GO Science, which resulted in the 100 Days Mission (100DM): a global public-private effort to harness scientific innovation for DTVs to be ready to be deployed within the first 100 days of a future pandemic threat being identified and be ready to do so equitably by 2026.
62. The 25 recommendations of the 100DM were produced by the Pandemic Preparedness Partnership of global industry representatives, regulators, academics and international organisations including the World Health Organization (WHO) and the Coalition for Epidemic Preparedness Innovations (CEPI). In June 2022, G7 leaders reiterated support for the 100DM.
63. Cabinet Office drafted both the 100 Days Mission Report (June 2021) and the first implementation report (December 2021). GOV.UK sites for the June 2021 report and the December 2021 report can be found in SW/105 - INQ000064653, SW/106 - INQ000064663 and SW/107 - INQ000064662 respectively. The UK Health Security Agency (UKHSA) is now responsible for domestic implementation of the 100DM recommendations and holds the secretariat.
64. The International Pandemic Preparedness Secretariat is being established to drive progress towards achieving the 100DM internationally. Sir Patrick Vallance, in an independent capacity, is the current Chair.

f) Cabinet Office 'Embedding innovation and learning' from the response to Covid-19 (October 2021 - February 2022)

65. GO Science is aware of Cabinet Office commencing work to 'Embed innovation and learning' from the response to Covid-19. This project intended to be forward-looking and designed to systematically:
 - a) identify learning relevant to public service policy making and delivery, and
 - b) embed these lessons across the Civil Service.
66. Cabinet Office made GO Science aware of this work in November 2021, and then had a discussion with GO Science officials in April 2022. GO Science shared Science Advice Legacy outputs to feed into the Cabinet Office project. GO Science are currently unaware as to whether this work is progressing in Cabinet Office. A slide deck from

October 2021 detailing possible project models can be found in SW/108 - INQ000064657.

g) DHSC UK CMOs and GCSA Pandemic Report (November 2021 - November 2022)

67. The CMO's Public Health Registrar in DHSC has led the development of a report to serve as guide for future CMOs and GCSAs and departmental CSAs in the event of a pandemic, based on experiences dealing with medical and scientific issues of the Covid-19 response. The former GCSA and senior GO Science officials contributed to this report by participating in initial conversations regarding the report's scope, providing feedback and inputting into drafts. This report was published in December 2022 and can be found in [SW/109 - INQ000101642].

h) Cross-government Crisis Capabilities Review (January 2022 - September 2022)

68. The National Security Adviser asked the Permanent Secretary at the Home Office and the Director General of Security Policy at MoD to review the way we centrally plan for and respond to crises. This work drew on GO Science's SAGE practices and the GCSA was interviewed. Further details of the review can be found in SW/110 - INQ000064639.
69. The recommendations of the review can be found in the National Security Adviser's letter in SW/111 - INQ000064640.

i) Mighty Oak Exercise Dress Rehearsal (November 2022)

70. Part of Programme Yarrow (as mentioned as part of the Obscure Dawn exercise in January 2020) and led by BEIS, Mighty Oak is an exercise scheduled to take place in Spring 2023 to support the development of the national response and recovery to a National Power Outage (NPO). A rehearsal for the exercise took place over two days in November involving GO Science amongst a small number of other participating organisations. The objective of the rehearsal was to:
1. Rehearse: the notification and activation arrangements of HMG, local response and industry partners in the event of an NPO.
 2. Explore: the development and use of shared situational awareness to support decision making within NPO response structures.
 3. Identify: areas for development in advance of, or validation during, Exercise Mighty Oak.

71. GO Science's role in the exercise and in a potential national power outage emergency will be to support the provision of science advice and feed into relevant updates to Situation Reports and senior official and ministerial meetings, as well as the activation of SAGE, if possible.
72. In preparation for the exercise, GO Science performed its own internal tabletop exercise to test its plans providing Situation Reports, updates and briefings. This exercise and the wider Mighty Oak exercise help to improve GO Science's operational ability to provide science advice through the SAGE mechanism.
73. The post exercise report which contains an assessment and recommendations from the Mighty Oak Exercise Dress Rehearsal can be found in [SW/112 - INQ000101630].
74. GO Science has not been involved in any other department's lessons learned or review exercises relating to any of the issues raised in the Provisional Outline of Scope for Module 1, other than those I refer to here.

i. **Activities to improve scientific understanding**

a) The Royal Society: Data Evaluation and Learning for Viral Epidemics (DELVE) (April 2020 - November 2020)

75. The Royal Society assembled the DELVE group to convene learnings from the different approaches adopted by other countries to manage the pandemic. Through its reports, DELVE contributed data driven analysis to complement the evidence base informing the UK's strategic response, by:
 - Analysing national and international data to determine the effect of different measures and strategies on a range of public health, social and economic outcomes;
 - Using emerging sources of data as new evidence from the unfolding pandemic comes to light;
 - Ensuring that the work of this group is coordinated with others and communicated as necessary both nationally and internationally.
76. The following reports were considered by or made available to SAGE participants:

- DELVE: Report on face masks for the general public, 21 April 2020 (SAGE 27) [SW/113 - INQ000061535]
- DELVE: Report on test, trace, isolate and support, 18 May 2020 (SAGE 37) [SW/114 - INQ000064659]
- DELVE: Technical Document 1 – Estimates concerning nosocomial COVID-19 infections in England, for the period between 26 April and 7 June, 30 June 2020 (SAGE 45) [SW/115 - INQ000064660]

Additional information

77. For further information regarding GO Science and GCSA's current involvement in and reflections on preparedness and resilience planning, including work to improve SAGE, GO Science's foresight and futures programme, and SAGE's readiness for a timely activation, I refer the Inquiry to my first statement provided in regard of Module 2 and to my other statement provided in response to this request from the Inquiry, addressing parts 1-4 of the Rule 9 request.
78. The Science Capability Review (SCR), published by GO Science in 2019, details the capability of government science and engineering and makes 15 recommendations which collectively enhance the application of scientific solutions in policymaking across Departments. The full review and recommendations can be found in SW/56 - INQ000061614. GO Science is leading a programme to implement these recommendations and as mentioned in paragraph 25, learning from the Covid Science Advice Legacy project was embedded into this programme. I understand that Sir Patrick Vallance, the former GCSA, has offered further reflections on the SCR in his witness statement to the Inquiry for Module 1. As set out in my earlier statement [SW/116¹], GO Science and the GCSA have a limited remit in relation to pandemic planning and response. As such, I have commented here on the specific work of GO Science in relation to the SCR and UK pandemic preparedness where I am able to do so, but am not in a position to provide a more general overview or critical perspective.
79. As of April 2023, of the 15 SCR recommendations, five have been completed (R1, R2, R3, R5 and R8), and 10 have projects on-going (R4, R6, R7, R9, R10, R11, R12, R13, R14 and R15).

¹ Government Office for Science, Module 1, Statement part 1-4

80. The former GCSA has also written personal reflections on the key features of the Vaccine Taskforce that led to its success. These can be found in [SW/117 - INQ000101626].

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 _____