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THE UNITED KINGDOM COVID 19 INQUIRY
FIRST WITNESS STATEMENT OF BEN WARNER

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I, BEN WARNER, WILL SAY AS FOLLOWS

1.   I make this statement in response to the request for evidence under Rule 9 of the Inquiry Rules 2006 made on behalf of Baroness Heather Hallett, the Chair of the UK Covid-19 Inquiry, by letter dated 12 December 2022. This statement is intended to set out the key aspects of my involvement in core political and administrative decision-making relating to the UK's response to Covid-19 from 1 January 2020 to 24 February 2022.

[A]   INTRODUCTION

Basis of this statement

2.   Although the Inquiry is addressing the period from 1 January 2020 to 24 February 2022, in this statement I address the period from 13 December 2019 to 18 May 2021. That is because it is the period during which I worked for Number 10. I have understood that the Inquiry is particularly interested in the period 1 January to 26 March 2020 and I provide more detail about this period.

3.   I make this statement based on information and documents within my personal knowledge.

4. To assist in making my statement, I have accessed or have been provided with access to and have refreshed my memory from electronic and hard copy documents. This documentation has included, in particular, the following.

4.1. Email correspondence.

I used two email addresses during my period working at Number 10: a cabinetoffice.gov.uk address and, the other, a no10.gov.uk address. I have had access to both in preparing this statement but, in practice, I used the no10.gov.uk email address for all substantive matters.

There have been difficulties in accessing my no10.gov.uk emails. Whilst arrangements were made for me to view these in person on a laptop at Number 10 during working hours, this proved to be a very slow process, with each email taking a matter of minutes to appear and, ultimately, this proved to be unworkable in the circumstances because I run a business during those hours. A pragmatic solution was reached whereby:

4.1.1. I asked for all my sent emails from my Number 10 account.

4.1.2. I asked for emails from: Patrick Vallance, Chris Whitty, Stuart Wainwright, Tom Shinner, Simon Case, Oliver Ilott, Oliver Munn, Angela McLean, Imran Shafi, Dominic Cummings, **NR** (a junior civil servant), Neil Ferguson, Ben Cropper, Emma Payne, Katharine Hammond, Rob Harrison, Simon Ridley and Mark Sweeney, and any emails that I sent to myself from my personal account (which I used to transfer files between Number 10 computers). For some of these accounts there are multiple email addresses. These accounts were chosen on the basis that I thought they were most likely to have content relevant to the Inquiry;

4.1.3. these emails were loaded onto a Number 10 laptop which I was permitted to take away to work on in my own time. I manually reviewed all these emails, tagging those which are potentially relevant for the construction of my statement. Those emails were then uploaded to Relativity so that, from those which were tagged,

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the key emails relating to the issues discussed in my statement could be exhibited to it.

4.2. Number 10 calendar.

Number 10 provided me with a PDF of my calendar [BWA1 - INQ000196048].

4.3. Documents sourced using bespoke searches of the Cabinet Office's material on Relativity. These searches were conducted on the basis of my recollection of key events or by following the cues within my emails.

The documents with which I have been provided in this respect are documents which I would have seen at the time. Key documents sourced in this way are exhibited to this statement.

4.4. Documents from computers.

I used two MacBook computers when working at Number 10. One of these computers, though provided by Number 10, did not have access to Number 10's IT systems. These computers have been located at Number 10 and I attended to view them. Number 10 transferred documents from them to Relativity. Where I refer to key documents from this source below, they have been exhibited to my statement. Most of the material to which I refer in this respect comprises my emails or documents attached to my emails.

4.5. Googledocs.

In my early days at Number 10, I wrote some documents in my personal googledoc accounts, likely because I had better access at home. I still have access to these googledocs. I have selected the most relevant for inclusion in my statement and I have exhibited iterations of their contents.

4.6. Personal notebooks and pages.

I took extensive notes in personal notebooks and on A3 pages which I retained. In the course of preparing my statement, Number 10 has been

asked to search for any notebook that I might have left behind, but none has been found. As to the notes themselves:

4.6.1. I take notes as a coping strategy for my dyslexia;

4.6.2. they may bear little resemblance to any meeting that was occurring and, for instance, they could record a statement that someone made with which I agreed or disagreed, or they could record a thought I had at the time;

4.6.3. sometimes, my notes were made when I was working alone and recorded my train of thought or analysis;

4.6.4. they are not, nor were they meant to be, a complete and reliable record;

4.6.5. due to my dyslexia, my notes may contain errors, missing words, or incomplete thoughts;

4.6.6. I did not always write things down;

4.6.7. although I tended to use one notebook at a time, at times I would use several at once;

4.6.8. I have tried my best to organise and contextualise what I wrote during the Inquiry's 'priority period', although I cannot be sure I have got this completely right, and my memory may not be perfect. Outside of the 'priority period' I have not generally relied on my notebooks for the purpose of making this statement although I have sometimes referred to them when the context was relatively clear.

4.7. Printouts.

In my search for my notebooks, I also found printouts of emails and documents. Key emails and key documents which I have identified as being relevant to the Inquiry in this way are exhibited.

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4.8. Material from the internet.

I note the Inquiry's direction not to provide internet links. However, some parts of my evidence refer to specific images which are publicly available electronically. To assist the Inquiry in identifying exactly which image I am referring to, copies of these images have been uploaded to Relativity and are exhibited.

5. I have made substantial personal efforts to secure access to the documentation which I needed to write this statement, such as attending in person at Number 10 on several occasions and making requests for documents to be uploaded so that I could see them. Given the process, I cannot be sure that I have considered every document that could be relevant.

6. As I considered the documents available to me, it became clear that there were some gaps in the electronic record. For instance, I have hard copies of emails that cannot be found in my Number 10 inbox.

7. I have identified two gaps in particular: one, an email exchange with Neil Ferguson (which I refer to below in section [C] of my statement) and two, a gap in emails from 30 September 2020 to 16 November 2020. I have queried this with Number 10 but as I understand it, they cannot recover these emails. My concern is that there may be other gaps of which I am unaware.

8. I have not relied on my WhatsApps in preparing this statement. I will provide these in accordance with my understanding of the Inquiry's request as soon as practicable.

9. Whilst I have taken time off work to prepare this statement, due to the fact that I have prepared this statement while working full time in the private sector, the relatively short period allowed, the difficulties I have had with access to documents, and the sheer volume of documents across the range of interactions I had with the Covid-19 response, I cannot have considered every potentially relevant document. This statement sets out my understanding and recollection based on documents to which I have had access and which I have had the opportunity to review in the time available. Should further documents become available, my recollection may be further refreshed or improved and I would appreciate the opportunity to supplement or revise my statement as necessary.

Overview of this statement

10. At times I worked very intensively in the UK Government's Covid-19 response, but at other times I was much less involved. I have divided this statement into sections which cover defined periods of time. I have tried to match the level of detail appropriately to the Inquiry's request for evidence. The headings of these sections and a brief description of what they contain appear below.

    10.1. **Appointment and early days at Number 10.** In this section, I provide information about joining Number 10 on 13 December 2019 and events up to 8 March 2020.

    10.2. **Lead up to lockdown**. Here, I provide information about events from 9 March 2020 to 23 March 2020, when the UK locked down.

    10.3. **Out of lockdown**. The information in this section covers the period from late March 2020 to August 2020.

    10.4. **We go again**. In this section, I provide information on events between September 2020 to 18 May 2021 when I left Number 10.

    10.5. **Conclusions and further thoughts**. Although I give my reflections throughout this witness statement, in this section I set out some further thoughts to assist the Inquiry. This is mainly based on documents I wrote while still in Government.

11. When I was working in Government, my role was focused on trying to solve problems that were occurring and therefore this makes up the majority of this witness statement. As such, my statement does not discuss the large number of talented officials whose hard work made a significant difference to the UK's response to the crisis.

[B] APPOINTMENT AND EARLY DAYS AT NUMBER 10

Education and background

12.   I studied at Oxford University and hold a MSci in Physics (2009). In 2013 I moved to University College London for my PhD, in which I investigated the influence of the surface on the magnetic properties of single molecules through the use of a scanning tunnelling microscope.

13.   I continued this research after my PhD as a postdoc and as an Engineering and Physical Sciences Research Council (EPSRC) Research Fellow. My work has been published in a number of leading academic journals including Nature Nanotechnology.

14.   In September 2015 I went to Faculty to study machine learning to apply to my physics career. At this time Faculty was called ASI Data Science. It is a company co-founded by my brother Marc Warner, who is still CEO there. I later commenced working there full time. During my time at Faculty, I worked both as a data scientist and then as a principal responsible for leading a data science team from 2016.

15.   During this time, I advised the Government, FTSE 100, 250, and leading fast growth start-ups on their use of Artificial Intelligence and data. My work with Government included helping to write "A guide to using artificial intelligence in the public sector" which was published jointly by Government Digital Service and Office for Artificial Intelligence.

16.   In September of 2019 I left Faculty, to work on polling at Hanbury Strategy. I held this role until joining Number 10.

My role generally

17.   I was appointed to the Civil Service, in a role at Number 10 on 13 December 2019 (the day after the election) as a Special Adviser. Dominic Cummings (then, Senior Adviser to the Prime Minister) suggested I join Number 10 because of his perception that it needed more expertise around digital, data and analysis. My title was 'Chief Adviser to the Prime Minister on Digital and Data', but I only discovered this from

interactions with HR in early 2021. I never used this title while in Number 10. The title I used was simply 'Special Adviser'.

18.   In many ways, appointing me as a Special Adviser was unusual. Special Advisers traditionally advise ministers on political matters, whether policy or communications. However, I am not a member of the Conservative Party, I have never had any involvement with political parties, and I have no expertise in the wider Westminster political ecosystem, although I had worked on the Vote Leave campaign as a consultant in data science while I was at ASI Data Science.

19.   The primary reason I was a Special Adviser as opposed to being appointed to another official role was that Special Advisers could be appointed quickly and easily. Secondary reasons included that it meant that I reported directly to Dominic Cummings and that it gave me freedom to work more broadly across Government. There were also plans for me to help improve how Number 10 used polling data, however these fell by the wayside because of Covid-19.

20.   The oddness of this was appreciated by the Civil Service, who attempted to switch me to an Expert Adviser role on or around 14 February 2020. I objected to the change being made in this way because my pay would be affected, but the amount of pay I would receive was unknown. The change was not made and so, for my time in Number 10, I remained a Special Adviser.

21.   During my time in Number 10 I reported to Dominic Cummings for around 12 months (December 2019 – December 2020) and then Dan Rosenfield (Chief of Staff to the Prime Minister) for around six months (December 2020 – May 2021). With both, I worked to a large extent autonomously, trying to push forward the use of analysis and technology in Government. Infrequently, I was asked to look at a specific area, for example High Speed Rail Two ('HS2'). Although I had some engagement with the Covid-19 response throughout my time in Government, the week-to-week engagement varied considerably.

22.   My remit was broad because I was responsible for 'data' generally, a term used in Government to mean many things. It can refer to data in its proper sense, that is, records. It is also sometimes used to describe analysis of those records, or it could mean the infrastructure by which means those records and/or analysis reach the end

user. It was often said that I led on data, or that I had been asked to look at data, but this term 'data' could mean any of the above.

23. This role was further broadened as my background in science and technology meant I was also involved in many discussions around Government policy in these areas, for example, data protection and ARIA (the Advanced Research Innovation Agency).

24. When I joined Number 10, the leadership of the Digital Data and Technology ('DDaT') profession sat in Government Digital Services ('GDS') which is part of the Cabinet Office. Data science sat within GDS as part of the DDaT function. GDS also had oversight of Government technology projects through spend controls, but the Department for Digital, Culture, Media & Sport ('DCMS') was the policy lead for the use of data in Government.

25. In my role at Number 10, I also interacted with the analytical function, which was and is headed by Ian Diamond who is also Chief Statistician. The analytical professions include, for example, the economist profession led by Clare Lombardelli (Chief Economist).

26. The last group which I interacted with on behalf of Number 10 was the science profession, which was led by the Government Chief Scientific Adviser, Patrick Vallance. He was Head of the Government Office for Science (often referred to as GO Science), which sat in the Department for Business, Energy & Industrial Strategy ('BEIS'). Patrick and GO Science led the Government science and engineering profession. He also led the network of Chief Scientific Advisers that sit in each department. It is worth noting that science in Government (to which I refer), is different from science policy (for example, research funding to universities) which was led by a different team in BEIS.

27. Within Number 10, there are a number of departments that support the Prime Minister. The main teams that I interacted with were press, policy, and private office.

   27.1. The press office is obviously responsible for dealing with the media.

   27.2. The private office is the set of officials that work closely with the Prime Minister advising on issues, minuting meetings, and following up with the

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rest of Government. There are a number of private secretaries each responsible for an area of Government.

27.3. The policy unit, which looks to push forward the Government's main ambitions. In this unit, within each area there are usually two advisers, an official and a special adviser.

Meetings attended

28. I have reviewed my calendar ([BWA/1 – INQ000196048]) and believe I most commonly attended meetings of SAGE, SPI-M and meetings where the Prime Minister was updated with data from dashboards. I also attended Cabinet Office meetings, including initially, COBR. The Number 10 meetings I attended covered a range of issues including test and trace, testing, PPE, Covid-19 guidance and roadmaps, NHS resilience, and healthcare planning. I should note that my calendar records meetings that I may not have attended. Also, I very likely attended meetings where my attendance was not recorded in the meeting invitation or the minutes. For these reasons, my calendar is not a perfect record. The frequency with which I attended these meetings and my role in them changed over time as my involvement in the Covid-19 response changed.

29. In this statement I do not set out my recollections on every meeting I attended. Also, I was not always copied in when minutes and actions were circulated. In particular, I have referred to SAGE minutes irrespective of whether I received them at the time.

First interactions with Covid-19

30. When I joined on 13 December 2019, Number 10 did not have a single person who specialised in science, analytics, data, or technology. There were officials looking at the policy in these areas, but Number 10 did not have any analysts. Although Number 10 did have a traditional IT function, there was no capability to build out technology or data products. It seemed to me that this lack of capability was shared by the HM Treasury ('HMT') and the Cabinet Office ('CO').

31. In January 2020, a large proportion of my time was spent working alongside the policy unit team responsible for transport on the decision as to whether to proceed with HS2. My main role was to provide analytical support to that policy team, helping them to

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ensure that the analysis that was being put into the papers for the Prime Minister was of the necessary quality.

32. I do not remember my first official awareness of Covid-19, though I would have been having discussions with people about it because I was generally aware of Covid-19 from the scientific press. I remember Covid-19 being part of the ongoing conversation during the morning meetings of which I think there were two, one with the Prime Minister and one beforehand which the Prime Minister did not attend.

33. The first date that is explicitly related to Covid-19 in my calendar was a Ministerial Exercise called "Nimbus" in COBR on the Government's response to Coronavirus. This was held on 12 February 2020, and I was an observer. The objective of the meeting was to expose ministers to decisions they might be expected to take during a pandemic in the Reasonable Worst Case Scenario ('RWCS'). The exercise was fictionally taking place on 14 April 2020.

34. The pack presented to ministers in this exercise included a briefing, which described the objectives including to expose the scale and impacts of a RWCS [BWA/2 - INQ000052022]. It also included a hypothetical "Commonly Recognised Information Picture", or "CRIP", produced by the Civil Contingencies Secretariat ('CCS') [BWA/3 - INQ000195859].

35. A slide in the briefing on electronic page 14 shows a graph with the percentage of cases against a projected timeline between February 2020 and July 2020 [BWA/2 - INQ000052022]. It clearly shows a single peak occurring (fictionally) in May 2020. It is important to realise that causally the only way for a peak to occur is for a change to occur. That requires an intervention – for example by implementing a Non-Pharmaceutical Intervention ('NPI'), immunity through vaccine or immunity through infection. The graph on page 14 and the slides as a whole show that the plan was to mitigate this peak but not to suppress it (that is, to suppress it by imposing a lockdown or bring in other stringent NPIs). This is despite the UK expecting 840,000 deaths over a 16-week period in the hypothetical scenario (slide on electronic page 12 of the briefing) [BWA/2 - INQ000052022].

36. Two possible strategies to deal with a pandemic are: one, mitigation, which focuses on slowing but not necessarily stopping the spread of disease; and two, suppression, which aims to reverse epidemic growth, reducing infection numbers to low levels and

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maintaining that level. I have used the phrases "mitigation" and "suppression" in this statement in this way.

37.   If the plan at the time of Project Nimbus had been to implement stringent NPIs to suppress the pandemic, the curve on electronic page 14 of the slides would look very different and the decisions presented to the ministers would not be solely or primarily about healthcare and death management, which are key in a mitigation strategy, but would be about (for example) testing, contact tracing and vaccines which are relevant in a suppression scenario. If a suppression strategy were being considered, the notional date of any decision-making exercise would be much earlier, that is not in April but in February / early March when key decisions, such as when to lock down, would be made.

38.   The comments I make on this exercise are with hindsight. My memory of this meeting is that it confirmed the sheer scale of the Covid-19 crisis and I did not think this exercise had stress tested the Government's overall pandemic response in any meaningful way.

SAGE

39.   As we were walking out of this exercise, I had a very quick conversation with Patrick Vallance in which I suggested that I come to SAGE, which he thought was a good idea. I also asked if his office could send me some papers so I could get up to speed. I believe this is why Patrick sent me documents on 14 February 2020 [BWA/4 - INQ000195860].

40.   SAGE is the Science Advisory Group for Emergencies. It is the group that advises the Civil Contingencies Secretariat on science. It is obviously widely known now, but before the pandemic it was not as prominent. At this time, I believe its advice came through three channels - COBR, Patrick Vallance and Chris Whitty. Over time SAGE grew to have a number of different subgroups and to advise across Government. When I joined the meetings, there were two main subgroups: SPI-M, the modelling subgroup, and SPI-B, the behavioural science subgroup.

41.   I went to SAGE on 13 February 2020 for the first time and proceeded to attend almost all SAGE meetings as an observer / Government official for the rest of my time in Government.

42.   Later, in a series of stories written by the Guardian, Dominic Cummings and I were criticised for attending SAGE meetings. I still believe that it was a good idea to ensure that I fully understood the advice that SAGE was giving to the Government, and the scientific basis and evidence on which it was built.

43.   I did speak in the SAGE meetings but very infrequently, maybe ten times over the 18 months. Most of my interactions with SAGE members throughout the pandemic were direct, informal conversations. The aim of these conversations was usually to check if my understanding of the current discussions in Government was scientifically correct, but also to gather the committee members' ideas or to understand/remove obstacles that were blocking progress, such as access to data. I would also sometimes ask members of SAGE to talk to specific groups to help those groups understand the science better and hear the experts' views directly, for example John Edmunds gave a teach-in to Number 10 on epidemiology. Of these interactions, I recall relying heavily on John Edmunds (Professor in the Faculty of Epidemiology and Population Health at the London School of Hygiene & Tropical Medicine), Jeremy Farrar (CEO, Welcome Trust) and Angela McLean (Chief Scientific Adviser to the Ministry of Defence), and of course Patrick Vallance, whose contributions were invaluable to my work.

44.   On the 25 February, Imran Shafi sent an email, asking that I be included in all COBR and civil contingencies meetings, whether they were for scientists, officials or ministers [BWA/5 - INQ000195862]. This was at Dominic Cummings' request.

45.   I have a set of notes I believe to be from the 25 February 2020 17:00 Coronavirus meeting [BWA/6 – INQ000215664], which is in my calendar [BWA/1 - INQ000196048]. I was copied in an email chain which I think contains a readout of this meeting [BWA/7 - INQ000146565]. My personal notes say (in part):

-> *Why is the NHS not ready?*

NHS, is never going to happen

…

1) People need to understand why you can't insulate completely

-> If we seal bordor

-> Great punishment (3 months!)

-> Still will get through

2) Story when we hit full epidemdic

- We have a coms plan ready <- what is that?

…

-   Where on tipping point China

- Does it matter

- What effect will it matter

Advise against travel ->What are the costs

-> what are the benefits

Said no point. …

46.   This note refers to advice given in the meeting, though I am not sure now who gave it, that we cannot react like some countries (like Taiwan) and that any sealing of the border was not worthwhile.

47.   I also have a note from this set that says "Help from spring" [BWA/6 – INQ000215664]. I think this refers to advice that if the UK could delay the peak of the epidemic for a while (that is, move the peak from March/April to May) the UK would be in a better place, due to the lower spread and higher capacity of the NHS.

Late February 2020

48.   On the morning of 27 February 2020 my diary shows I was in two meetings about Coronavirus, the first at 9.30 (called "Corona"), and the second was at 10am, and

both were at Number 10 [BWA/1 - INQ000196048]. I may also have been called into a COBR pre-meeting. I cannot now recall exactly which I attended but I have notes which I believe are from one or other of these meetings [BWA/6 – INQ000215664]. One of the notes says:

[Locking down policy end of week]

49.   This suggests to me that at that time I felt that we needed to at least be prepared for enacting a policy close to that of Wuhan, which was to lock down the population. However, I do not think at this point I was advocating for this strategy.

50.   In this set of notes on a page titled "Coronavirus", I have written:

[Where is this plan?]
î
|| review plan ||
RWC scenario
î
What is our actual forecast

51.   This I think is a reflection that we were told there was a plan but we still had not seen it and that although we talked about the reasonable worst case scenario a lot, we had not seen what people believed was likely to actually occur.

52.   I also went to a SAGE meeting on 27 February. The minutes record that SAGE reviewed the planning assumptions and advised that in the RWCS, 80% of the UK population would become infected with an overall 1% fatality rate. SAGE also reviewed the impacts of NPIs. The minutes say that mitigations could change the curve of the epidemic peak or delay it but will not change the number of infections, and that modelling suggests that earlier and/or combined interventions will have more effect. The SAGE minutes go on to say that alternative behaviours, such as going to the pub rather than going to a stadium, would pose comparable risk [BWA/8 - INQ000052204].

53.   I have found notes which I believe pertain to this SAGE meeting [BWA/6 – INQ000215664]. They say

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Sage

…

Bed capacity   - Total

*   - Intensive care.*

54.   I then recorded the following Covid-19 statistics which show that the high number of asymptomatic people was known early on.

-> *80% infections*

40% symptoms

0.1% 1% of 80% die

55.   Then my notes say:

-> *Question posed which measures are effective*

- Containment

- Combined most effective

- Need exit plan in place

- Relax

[[NHS fucked in any senario]]

Information on the cost

No rebound

Early and remove rather than chase.

Earlier the better

If you want the to see effects have to be in place for a long period of time. …

56.   I have no independent memory of this conversation in the meeting. But my note suggests to me that a question was asked about which measures would be most effective, and the answers are recorded in my notes. Without more context, I do not know exactly what this meant. The bracketed statement about the NHS likely means that in any scenario, the NHS will be under extreme stress. However, I have no memory as to whether I envisaged that the UK would lose its healthcare capacity for a period of months, that is, that the NHS would collapse. This note could be my own personal thoughts on the ongoing conversation in the room, or a reflection of the prevailing view being stated by those in the meeting.

57.   I also noted "Pubs are as dangerous as stadium, it is the closeness that matters" [BWA/6 – INQ000215664]. I think this reflects the advice at the time that closing large scale mass gatherings would likely have little impact, or even end up accelerating the spread due to people going to the pub indoors.

58.   My worry for the state of the NHS is probably why I emailed Patrick Vallance on 27 February [BWA/8A - INQ000195863] flagging I was "a little concerned the NHS didn't seem to know what they needed for their models, and didn't seem to have started modelling." I asked if he had the same feeling. Patrick responded: "Yes I have been pushing them on this for the last 10 days or so. I think Steve Powis has now grasped it and they have the meeting planned for Monday. I do know that NHS has been doing a lot of modelling of bed use etc, but the problem is that they haven't defined the input variables well enough and we haven't validated them. I think this is on track following today." Steve Powis is the National Medical Director of the NHS and represented the NHS at SAGE.

59.   I have notes of a meeting which I think was on 28 February 2020 at 15.00, titled "Cornavirus" [BWA/6 – INQ000215664], which say:

       -> *Small epidemic, possible*

       …

       -> *Serious health problem*

-> Biggest damage political & media overreaction

…

-> Mitigate phase

    -> group of countries together (G7/WHO)

    …

Vaccines, no chance this year!

60.   I think that this note reflects a common view that the biggest risk from Covid-19 at this stage was not the disease but that, in over-reacting to the disease, we would create substantial harm. My notes record the prevailing view that all countries would follow the same plan as the UK. The exclamation point after "vaccines - no chance" reflects my reaction to the statement that there would not be a vaccine, and that I thought we should try to change this.

Coronavirus Action Plan

61.   On 2 March 2020, Imran Shafi (Private Secretary to the Prime Minister) sent me a draft of the Coronavirus Action Plan which was to be published on 3 March 2020 [BWA/8B - INQ000195864] [BWA/9 - INQ000195865].

62.   At the time I felt that the Coronavirus Action Plan was designed to be a simple document that would communicate the broad intent to the public, and that there was a much more detailed internal document that addressed the complexity of the problem. I think that I left a printed version on Imran Shafi's desk with a Post-it saying "this is a comms plan, where is the real plan?".

3 March 2020

63. On 3 March 2020, I met with a number of officials and members of SPI-B to discuss the polling that was then underway to understand what was occurring amongst the public. From memory, DHSC was running a poll a week with the company BMG Research, and the Cabinet Office was running a weekly survey with YouGov with results being reported through the pdf tables that are industry standard. I encouraged them to run polling with more companies and at a larger sample size so as to be able to estimate the real-world uncertainty and to allow sub-sampling to occur more robustly [BWA/10 - INQ000195861]. Whether or not by my suggestion, it seemed to me that increased polling did occur across Government.

64. Also on 3 March 2020, my calendar indicates that I attended a SAGE meeting. I was sent the papers [BWA/11 - INQ000195866] attaching [[BWA/14 – INQ000195869], [BWA/15 – INQ000195870], [BWA/16 – INQ000195871], [BWA/17 – INQ000195872], [BWA/18 – INQ000087584], [BWA/19 – INQ000052319], but I am not listed on the publicly-available minutes [BWA/21 - INQ000119719]. I have found the following entry in my notebooks [BWA/20 - INQ000215663] which I believe is from that 3 March SAGE meeting.

   JVT - Continual spread of virus

   - Italy -> lost control

   - 50, 2 through sentinel

   …

   Projections not how it is going to pan out

   Changes in behaviour will change peak and move things to the right

   This virus have shifte qualities of becoming edendemic

   …

   -> RWC

19

-> Worse than we would expect

…

High uncertainty on how things will play out

…

->Cases and deaths, some weeks after transmission

…

Spatial variation.

 - Peaks at different time

 - ~4 weeks

London will be first

 -> Month to ~~a m~~ 6 weeks later newcastle

Interventions will have to move across country

…

Nursing home population ~ 25% fatality

 -> 0.5 million people

65. I also have the following notes, but I am unsure when the SAGE notes stop, and if these are connected [BWA/20 - INQ000215663]

Who is looking at economic and ~~outside~~ effect on health measures

[-> PHE needs to ~~[unclear]~~ build out advice on interventions <- could leak

20

-> Flu is bad

66. To the best of my memory the notes above reflect the conversations in the room and reflect the level of uncertainty about how things would play out.

67. One of the papers circulated at SAGE on 3 March 2020 was called 'Illustrative impact of behavioural and social intervention lasting several months on a reasonable worst-case epidemic' [BWA/18 - INQ000087584]. This paper lists the interventions that were being considered as the package of measures for the UK. It is worth noting that this does not include closing bars and restaurants nor stay at home policies for the general population as the UK Government ended up enacting later.

68. Under "General Conclusions", the paper says:

   "Interventions that could delay the peak and/or reduce the size of the peak, whilst increasing the duration of the pandemic, are likely to be helpful provided the epidemic is not extended into late autumn/winter."

69. It also notes:

   "In the event of a severe epidemic, the NHS will be unable to meet all demands placed on it. In the reasonable worst-case scenario, demand on beds is likely to overtake supply well before the peak is reached."

70. It also contains the following statement:

   "The measures outlined assume high levels of compliance over long periods of time. This may be unachievable in the UK population."

71. This summary aligns with my memory of the general perception at this time, that the British people would not accept stringent restrictions for very long.

5 March 2020

72.   My calendar and email indicate that I was invited to a COBR meeting on 5 March 2020 [BWA/1 - INQ000196048] [BWA/21A - INQ000195874]. The agenda says that the meeting was at 3pm in Conference room F and has, as item 1, the outcome of SAGE and, as item 2, "Understanding the impact of recommended interventions". Item 3 is "Public service readiness" [BWA/22 - INQ000195875]. The interventions referred to were probably similar to those that were discussed at the COBRA(M) meeting on 4 March 2020 which I attended, including social distancing and discouraging mass gatherings [BWA/25 - INQ000056218].

73.   I have found the note that I may have taken during this meeting [BWA/20 - INQ000215663]:

        Cobra F

        NHS 111]

        NHS Online]- Advice to stay home

        …

        Pandemdic flu plans => 20% not exercised

                        => a lot haven't checked

        Central template => end of week

            -> Allow LG each local tabletop

74.   I also attended a SAGE meeting on 5 March. The minutes record that there was no scientific ground to move away from containment efforts in the UK, but there was epidemiological and modelling data to support isolation measures within one to two weeks and, in addition, to support social isolation, or 'cocooning' for those over 65 or with underlying medical conditions to delay spread, modify the peak and reduce mortality rates. The minutes also say that SAGE agreed an updated set of RWCS planning assumptions [BWA/23 - INQ000052349].

75. I have found a note I probably took during that meeting [BWA/20 - INQ000215663]. It says:

Coronavirus

…

Have ongoing transmissions

Neil Ferguson

- *National scale interventions …*

76. Neil Ferguson was and is an epidemiologist at Imperial College London. My notes show that, at this point, we knew that there were community transmissions and Neil was saying that, therefore, we needed national-level interventions. My notes recorded the discussion on how to quantitatively understand when such interventions should be brought in and the pros and cons of different triggers. I highlighted that we needed good data streams on behaviour in real time.

77. My notes then say [BWA/20 - INQ000215663]:

- *Need to put in measures in now*

- *Early is better*

- *Do we need delay?*

78. I think this is in reference to the Government having a contain-delay-mitigate strategy. I felt that the Government should be moving faster, skipping forward to the mitigation phase and therefore bringing in some NPIs forward in time. Epidemiologically, measures implemented earlier are better because taking those actions would both delay the epidemic's peak and bring it down in height.

79. I also highlight in my notes the need to protect care homes [BWA/20 - INQ000215663], but I have no further memory of this.

[=> Protect Care homes]

80. My notes also highlight two dangers:

Danger   1) Over whelming

2) Squeeze peak into december

81. I believe my phrase "overwhelming" refers to overwhelming the NHS. "Squeeze the peak" I think is in reference to the worries of supressing the peak in the summer, only to push the peak into the winter when the NHS capacity is more limited. Therefore, because of these dangers, it would be important to:

"Have the epidemdic at our pace"

82. My notes then say:

Decision on who lives & dies very important

83. This reflects discussions at the time and I believe this is a reference to how decisions would be made in the triaging of care particularly around ICU.

84. At the end of the notes [BWA/20 - INQ000215663], I have recorded

CCS and CO   -> S̶t̶ Decsions

-> Plans

85. I think this is in reference to Patrick or Chris saying that SAGE is to provide scientific advice and that the decisions and plans are the responsibility of CCS and Cabinet Office.

7 - 8 March 2020

86. On 7 March 2020, I received an email attaching a document "Contain to Delay decision making protocol" [BWA/24 - INQ000195876] [BWA/25A - INQ000195877]. This document identified the aim of "ensuring HMG coordination on the

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communication of a decision to move from the 'CONTAIN' to the 'DELAY' phase of the response to the COVID-19 outbreak". The background included that, "in the event of the COVID-19 outbreak worsening, or a severe prolonged pandemic, the HMG response would escalate and, in the first instance, the focus would move from 'CONTAINING' (preventing the disease from taking hold in the UK), to 'DELAYING' (and flattening the peak of the outbreak in the UK)" following which "the pressures on services and wider society may start to become significant and more clearly noticeable."

87.   On 8 March I attended a Covid(O) meeting in Victoria Street that was chaired by Mark Sweeney (Director General of CO). My notes from this meeting [BWA/20 - INQ000215663] record that

  Cobr (AD HOC)

  Needs to be clear

  -> In a variety of senarios

  -> Still case NHS supply always [unclear] overwhelmed.

88.   I was making the point that in any documents that decision-makers were considering, it had to be clear that in a variety of scenarios being considered the NHS would always be overwhelmed. I was worried that this point was not at the front of the minds of those making decisions. It appears from my notes that, in this meeting, the point about the capacity of the NHS was raised, and someone said that DHSC had just sent over the numbers: 90k beds were needed for attentive care in the peak and there were only 7k beds. It appears that a question was asked along the lines of "can someone who is well go out" and that the answer was unknown. In my notes I have recorded both the question and "How do we not know the answer" [BWA/20 - INQ000215663].

89.   As discussed above, I was very concerned over the Coronavirus Action Plan, believing it to not be a plan to deal with the virus, but a document to be communicated. Off the back of the Victoria Street meeting and the protocol for 'Contain to Delay' being sent on 7 March, my worries only rose. On 8 March 2020, I sent an email to Imran Shafi and Dominic Cummings [BWA/26 - INQ000195879] in which I said,

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"I am worried that people are conflating a communication framework, with the decisions we will need to make due to reduce the impact of the disease.

Do we have written down what changes occur when we make this decision to move from contain to delay?

This document says "Following this transition the pressures on services and wider society may start to become significant and more clearly noticeable."

This isn't true – when minsters says the transition occurs makes fuck all difference, it's the fact that in the disease is widespread that causes these pressures.

I think that this suggests that we don't have a clear plan that reacts to real world developments but is Whitehall centred.

This protocol also seems to force us into national triggers for measures without considering whether regional (or a least country) make more sense"

90. My concern was that people were continuing to work on how we will decide to move from "contain to delay" when, at SAGE, it was said that we have ongoing transmission. That meant that we have failed to contain the virus and actions must be taken, but we did not seem to know what these actions were.

91. I also emailed Katharine Hammond (Director of CCS) on 8 March 2020, as I wanted to understand how CCS was thinking about this, and to flag that I thought there was an error in the contain to delay framework document [BWA/27 - INQ000195878]. Her response was that a drafting change was required and that this was about formal triggers and the operational actions were still to be defined.

92. I still think the whole discussion about moving from "contain to delay" was a Whitehall process (that is, focussed on identifying formal triggers) that distracted effort and thoughts from answering the real question of what the right response was.

93. As this stage, and five days after the Action Plan, it is notable that Government did not have a clear perspective of what actions should occur if we failed to contain the virus. This is especially striking because SAGE had said that there was ongoing community transmission (so, we had already failed to contain the virus). This method

of 'just in time' policy making would continue throughout our Covid-19 response and was a major hindrance in our ability to using analytics and critical thinking to improve our policies.

[C] **LEAD UP TO LOCKDOWN**

9 - 10 March 2020

94.   On the weekend of the 8/9 March, I had a number of conversations with Marc Warner discussing the UK Government's response to Covid-19. I do not remember these in any detail, but he shared with me a slide pack that I think sets out many of his thoughts [BWA/28 - INQ000196054]. I believe that Marc was strongly of the opinion that the UK Government's then strategy was incorrect. In particular, he flagged in the slide pack that there was a need to robustly test the assumption that we should not suppress the first peak because of the dangers of a second peak in winter. I do not believe I shared this document with anyone else in government and I do not know if others shared it further or not.

95.   It is not necessary to perform large scale simulations of an epidemic to understand the main effects of a mitigation versus a suppression strategy. Simple calculations allow for reasonable approximations of the outcome, and I would have been carrying out calculations of this type. Although my memory is not sufficient to be completely certain, I am reasonably sure that I did not formally oversee or commission the production of any mathematical simulations of epidemics at this time, but I may have made the case for modelling the effects of more stringent methods than had previously been commissioned. In any event, I believe that, at around this time, Marc and I decided that I should phone Neil Ferguson. I do not recall the call to Neil, though in an email afterwards, Neil mentioned that we had a call and he summarised the conversation. Unfortunately, my emails to Neil Ferguson over this period have not been recovered by Number 10 so I do not know how a call with him was set up. However, I have a copy of this email from Neil Ferguson to me dated 10 March, which I retained in hardcopy [BWA/29 - INQ000196055].

96.   In this email, Neil Ferguson attached his work on modelling the package of measures that were under consideration at this time. My best guess is that, in this email, Neil referred to a paper titled "Timing and triggering of non-pharmaceutical interventions (NPIs) to reduce COVID-19 mortality and healthcare demands" dated 6 March 2020.

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I have a partial copy of this paper in hard copy [BWA/30 - INQ000196062]. The Inquiry has provided me with a document [INQ000149009] and I believe this is the attachment to the email. In his email, Neil Ferguson drew my attention to some graphs [BWA/29 - INQ000196055]. The first point was about bed demand, which showed that capacity would be outstripped by demand. The second point was about daily deaths which he modelled as being 4000-6000 per day at peak. The third point he made was that the RWCS of the infection fatality ratio, which had been informing Government discussion and decision-making, was now what his institution (Imperial) forecast to be their best estimate of what would happen.

97.   Neil said that:

"a very large proportion of people in the country will know someone (likely old and frail) who died by the time this epidemic is over.

So long as the PM and Cabinet accept and understand this is what is likely to happen and are still happy to proceed with the current plans, then there is a rational basis to the decision which I would say the science supports."

He then wrote:

"But what would be the worst outcome – in my opinion – would be to go for mitigation (the policy package currently being discussed) and for the health, social and political cost to be judged later to be unacceptable – necessitating a policy pivot in the midst of what will already be a national crisis."

I agreed and responded that "I think the point you make is very valid, important and I will continue to raise it here," by which I meant Number 10 [BWA/29 - INQ000196055].

98.   I remember clearly Angela McLean making exactly the same points to me at a SAGE meeting, probably on 10 March. She said that there will be a large number of deaths and that the worst possible plan would be to pivot on the Covid-19 response strategy (that is, to change from a mitigate to a suppression strategy) when deaths are towards a peak. She used the expression "the only way out is through". I understood by that that if the UK Government chose the mitigation strategy, it needed to stay with it, and not change to a suppression strategy part-way. She asked me if I thought that the senior decision makers in Government had fully understood the consequences of the

mitigation strategy and that pivoting from it would have even worse consequences. I think that I said that I would ensure that people were fully aware.

99.   Neil Ferguson went on to produce some work modelling stringent measures and the effect on bed demand [BWA/31 - INQ000195888]. This is the first modelling of stringent measures required for a suppression strategy that I know of and it was first provided to Patrick Vallance and Chris Whitty on 15 March. I am not aware of any meeting where the Prime Minister was asked to choose between a mitigation or suppression strategy. But if that meeting had happened before 15 March, I am confident that the right information and evidence was not put before him to inform the consequences of this decision, simply because Neil's work did not exist before then.

11 - 12 March 2020

100.   On 11 March 2020, I discussed some slides with Imran Shafi, who was on a call with Katharine Hammond and Mark Sweeney. These were to be presented at COBR on 12 March. I have no memory as to exactly how I came to be shown these slides, but I recall I was at Imran's desk for the telephone call. The slides that we were looking at on 11 March have a recommendation at slides 2 and 3, that individuals with symptoms should stay at home from Monday [BWA/32 - INQ000195880]. I understood the reason for delaying introducing this NPI to the Monday was because the NHS was not ready with its 111 scripts. That is reflected in slide 3 at option 1 bullet point b, "an assessment of NHS readiness".

101.   The final pack, as shown to COBR, is different [BWA/33 - INQ000195881]. Slide 1 sets out the package of NPIs that COBR was considering. Slide 2 says that COBR should agree to bring in that overall package, with a decision on some to be agreed immediately, and decisions about others to be agreed in one to three weeks' time. This moved the decisions earlier, which was closer to what I thought should happen, but at this time I wanted to move faster, with more stringent measures.

102.   The rest of the pack for this meeting shows the advice that was going to Ministers. The single peak is clearly documented (see slide 5) indicating that a mitigation strategy is proposed. There is no discussion of the option of a suppression strategy, that is, a lockdown. Also, the slides show that most decisions were projected to be taken a decent distance into the future, with Intervention 1 (stay at home, mild symptoms) to be taken no later than 20 March, and interventions 2, 3 and 4

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(household isolation, shielding, social distancing over 70s) advised no later than circa 27 March to 10 April (see slide 7). But that timeline for decision making is not how events panned out.

103.   At this time, I had a meeting with the Prime Minister, and others (including, as far as I can recall, Dominic Cummings and Mark Sedwill). There are two meetings in my calendar which may record this meeting (most likely the 1pm entry on 12 March 2020) [BWA/1 - INQ000196048]. In this meeting it was clear that the plan was to still follow a mitigation strategy. One example of why I say that Government was proceeding with a mitigation strategy is that the Cabinet Secretary made reference to chicken pox parties and I suggested these would not be an appropriate response because of the current exponential growth of Covid. I do not recall any specific comments the Prime Minister made.

104.   On the evening of 12 March 2020, Dominic Cummings and I had dinner with Marc Warner, where we discussed the package of measures that had been proposed at that time, as discussed above in paragraph 102. I do not remember the conversation precisely but know that, at this time, Marc was strongly of the view that the plans were incorrect. I have a handwritten note on a loose piece of paper, written on this day that I think reflects our conversation [BWA/34- INQ000196049]. It says:

I know cobr recommendations were being modified at ten last night

Who is briefing ministers

   -> do they understand

                    ->How is this a good process

                    ->Who is making decisions

                    -> On what evidence

No plan, No strategy, no decision making loop

No coms to CS -> No one seems to know the strategy

Delay is a coms framework!

105. On the other side of the page I wrote:

    111 collapsing already

    - Tola [sic] new operators

    - Are they up & running

    111 not ready

    10 k tests not till end of month.

    No plan for clearing hospitals

       -> Not seen plan for prisons, care homes

    Social intervention plans

    Still not done -> first cobra with Sage recommendations in

    RWC wrong

    No advice to business on WFH

    expats

106. By "CS" I mean Civil Service. By my comment "How is this a good process?", I think I was expressing my worries at the COBR process. I felt that the change in the "Recommendations" should have come about by a more robust process with more thought and more analysis/insight than I had observed on 11-12 March.

13 March 2020

107. At around 2-3pm on 13 March, I started a google-doc entitled "UK CO 19 Strategy" [BWA/35 - INQ000196052]. This was the basis for a paper I intended to write for the

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senior decision makers in Government, in which I would argue for a change in strategy in the Covid-19 response. It clearly lays out my worries that the UK Government's existing strategy was wrong. For example, the document contains the following paragraphs:

"*Currently in our reasonable worst case planning assumption, we assume an 80% attack rate and a 1% fatality rate. This collapses the NHS which likely leads to a doubling in the death rate. Therefore, our deaths would be significantly higher than predicted in the RWC.*"

From looking at the settings of this document, it was shared with Marc and Dom but I cannot now say exactly when. I am not aware of any further people it was shared with.

108.   Here, I was describing the fact that in our RWC scenario, the number of hospitalisations predicted was far in excess of the number of hospital beds in the NHS. This meant that some people would not get the treatment that they required and would die. Additionally and as a consequence, hospital beds would then become unavailable for other emergency conditions such as strokes and heart attacks. Once the NHS had no available capacity for those conditions, the fatality rate would increase across the board. In other words, if the fatality rate was 1% currently while the NHS had capacity, then it would be even higher when the NHS had no capacity, leading to large numbers of unnecessary deaths.

109.   It is for this reason that I emailed Neil Ferguson on 13 March [BWA/29 - INQ000196055].

"*Quick question.*

I think there is a step change in deaths at the NHS capacity and I don't think this non-linearity is built into our RWC planning assumptions.

E.g. In the RWC, we assume the attack rate is 80% and 1% mortality. I think this overwhelms the NHS and the mortality rate is likely to increase. So the number of deaths etc can basically never by 1%.

Do you agree? I also assume that you don't model these effects?"

110. My thinking behind this email mirrors that described above: once the NHS is beyond its capacity, people will not be able to get the necessary treatment for Covid-19 or other emergency conditions. This would create a 'step' in the modelled curve as the mortality rate increases beyond the 1% mortality rate assumption. Because his models did not include a step, I assumed that Neil was not considering this effect.

111. This is important because this 'step' makes a material difference in the thinking between whether it is better to apply a mitigation strategy versus a suppression strategy, because the cumulative number of deaths will be higher in a mitigation scenario where the healthcare capacity is exceeded. It also meant that the information that was being put in front of the Ministers was not an accurate prediction of the number of deaths that would occur given the forecast of the progression of the pandemic. I do not have any record of a reply from Neil in my documents but, from memory, he agreed with me.

112. The fifteenth SAGE meeting on Wuhan Coronavirus (Covid-19) was held on 13 March 2020 at 1 Victoria St. I recall I was sitting next to David Halpern (CEO BIT, What works advisor to UK Government). Before the meeting, SAGE circulated papers [BWA/36 - INQ000195882] including a SPI-M consensus statement on public gatherings [BWA/37 - INQ000195883]; a paper by the London School of Hygiene and Tropical Medicine on the impact of banning mass gatherings [BWA/38 - INQ000195884]; SPI-B notes on public gatherings [BWA/39 - INQ000195885] and a briefing by the New and Emerging Respiratory Virus Threats Advisory Group about transmission distances [BWA/40 –INQ000195886] These indicate the NPIs that SAGE was considering in this meeting.

113. The minutes record that the view of SAGE officially changed. SAGE now considered that the UK was further along the epidemic curve, and that there were more infections in the community than had been previously estimated [BWA/41 - INQ000109142]:

> *"Owing to a 5 to 7 day lag in data provision for modelling, SAGE now believes there are more cases in the UK than SAGE previously expected at this point, and we may therefore be further ahead on the epidemic curve, but the UK remains on broadly the same epidemic trajectory and time to peak."*

114. I believe I raised a question at this SAGE meeting about the sufficiency of the current recommended package of measures, as set out in the papers for the meeting,

mentioned above. This sparked a discussion. From memory, Jeremy Farrar, Neil Ferguson and John Edmunds were stridently of the view that the package of measures was not sufficient, and that more stringent measures should be adopted. I believe I raised this question to test my thinking that we needed to reconsider our current plans. The discussion was documented in the SAGE minutes at points 19-20 [BWA/41 - INQ000109142]. The minutes noted that SAGE recognised that there was a risk that the proposed NPIs would not reduce demand for NHS services enough, and that SPI-M were to investigate further.

115. That evening, after that SAGE meeting, I spoke to a number of advisors and officials including (to the best of my memory) Dominic Cummings, Imran Shafi and Stuart Glassborow (DD, Deputy PPS) in the Prime Minister's office. I talked them through my views on the data and science, and my conclusion was that we needed to change strategy from mitigation to suppression. As evidence, I used Neil Ferguson's paper dated 6 March (referred to above at paragraph 96) and NHS papers, which I have in hard copy [BWA/42 - INQ000196056]. I believe I got the NHS papers from a meeting with the Prime Minister, Matt Hancock, Simon Stevens and others. I am not sure of the date and time of that meeting but it may have been on 12 March 2020.

116. While I was talking with Dom, Imran and Stuart, we were joined by Helen MacNamara and I talked through the data with her and explained my views and conclusions. There is an image of notes on a whiteboard that we used during the conversation [BWA/43 - INQ000196060]. I believe this image was taken by Dom. That image reflects my memory of what we discussed.

117. I do not think I wrote most of the notes on the whiteboard, but I did draw the graph on the left-hand side (in red pen) and made the annotations (in green). In it I was showing the difference between an unmitigated epidemic, single peak and one of suppression. The unmitigated epidemic is the curve with the steepest, highest peak. The flatter, single peak, marked in green as "our plan", refers to the UK Government's then-current mitigation strategy. The wiggly line marked "Plan B" represents a proposed suppression strategy, to keep infection under the capacity of the NHS.

118. The notes show the assumption that there would not likely be any vaccine in 2020; that in the case of an NHS collapse, the death rate would double; that to stop this collapse we would probably have to lock down; and that lockdown meant that everyone stayed at home with pubs et cetera to close. Around this, there are some

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more notes documenting worries and thoughts such as, how the needs of critical infrastructure would be met with people staying at home, and that we would need to look after people who could not survive alone.

119. It is clear that we were suggesting moving to a strategy of suppression. It is also clear that the driving factor for this was the potential collapse of the NHS and the measures that were needed to avert this.

120. Point 6, seems to read "who do we not save". I do not remember this specifically. It is likely that this is a reference to clinical decisions about who gets care. There was an ongoing discussion at this time on this topic, as evidenced in the Project Nimbus exercise minutes at paragraphs 7 and 8 [BWA/44 - INQ000195891]

121. Dom and I then went to dinner with Marc and ┊Irrelevant & Sensitive┊ Laura Pimpin who was the epidemiology lead at Babylon Health, having been a post-doctoral fellow at Tufts after a PhD at Cambridge, both in epidemiology. From memory, we discussed what we thought the plan should be. At some point, Dom decided that Marc and Laura should come into Number 10 the next day to talk further with Dom and me. Dom also said that he and I needed to brief the Prime Minster.

122. It had become clear to me that the following points were true: (i) the epidemic was further along (that is, there were more infections and the numbers growing faster) than had been anticipated; (ii) the capacity of the NHS was not going to be close to sufficient; and (iii) lots of people including members of SAGE did not believe that the UK Government was taking the correct course of action. This thinking was informed by the discussions at SAGE, the papers submitted and the conversations I was involved with across Government as documented in this statement. It also appeared to me that COBR/CSS were not reacting to this emerging information and updating the strategy.

14 March 2020

123. I edited the CO-19 googledoc on 14 March, 08:26 [BWA/45 - INQ000196053] to say:

> "*Most urgently and curically* [sic]*, we need to develop a plan to lock down the country for two weeks at 24 hours notice. The current plan makes this a certainty.*

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We need to work out how we get supplies to people.

We need to work out the communications.

By escalating other measures more quickly we may be able to avoid this, but we need to be certain we have a well thought through plan."

124. By "the current plan makes this a certainty", I meant that because the existing strategy was causing infections to rise, the UK Government was certainly going to have to do something to protect the NHS, and a form of lockdown was in my opinion inevitable.

125. I added a summary at the top:

"Summary

- Our current strategy is to move to herd immunity without collapsing the NHS.

- Our current plan collapses the NHS.

- We essentially want

> *- Use the young to protect the elderly.*

> *- Use the rich to control the spread.*

- We need to escalate our inventions more quickly.

- We need to have a plan in place to lock down for two weeks if necessary

- We need to develop an 'air traffic 'control system to help manage when/where/what interventions are in place."

126. The summary was written in haste and, as the document is unfinished, the wording is not completely clear. I think that "Our current strategy is to move to herd immunity without collapsing the NHS", is simply that we wanted to 'flatten the sombrero' to stop the NHS collapsing. The next line states "Our current plan collapses the NHS", which

is self-explanatory. The next lines record my recommendations: escalate interventions, plan for lockdown, and develop a system to bring in smarter NPIs later.

127. Later in the morning Marc, Laura and I wrote a paper called 'Briefing on the Covid-19 Response' [BWA/46 - INQ000195875]. The intent of the paper was to help persuade a wider audience including the Prime Minister to take action to stop the NHS failing; however apart from emailing to Dominic Cummings [BWA/47 - INQ000195887] I do not think we used this document. I think one reason is that a later paper from Neil Ferguson (discussed below) made the same point, but with more complete analysis.

128. I believe that our paper utilised the data from Neil Ferguson's paper dated 6 March (referred to at paragraph 96 above) and the information about the NHS capacity for total beds / freeable beds from the NHS slides I mentioned above (at paragraph 115) [BWA/42 - INQ000196056] to make the argument that "even under the best combination of interventions currently being considered, the maximum NHS capacity is reached within one month and is in deficit by 200,000 beds at peak".

129. Our paper clearly sets out the two strategies that we could take: "The current plan" of mitigation which slows the epidemic building to herd immunity, but which collapses the NHS; or "an alternative plan" of suppression where we attempt to prevent the spread of disease to gain time, noting that although "we do not know what interventions will be required", "we will likely require Wuhan-style restrictions of non-essential movement within a month", that is, a lockdown.

130. As we were writing the paper, we drew up graphs on a whiteboard [BWA/48 - INQ000196057]. Dom then wheeled the whiteboard into the Prime Minister's office to brief him. Also in the meeting with the Prime Minister, I believe, were Cleo Watson (Special Adviser to the Prime Minister), Imran Shafi, Stuart Glassborow, Lee Cain (Director of Communications) and Dom. At the last moment, I believe that Dom asked Marc and Laura to join us.

131. The whiteboard shows the three strategies – first with no mitigation, and a steep high curve of deaths, noting in red the point at which the NHS would collapse. Above that line, it is noted that more than 100,000 people would die in NHS corridors, that is, without treatment or care. The second graph shows the "current plan", that is, the plan in play at the time of the meeting. It shows what would happen with some mitigation, that is a less steep curve with fewer people dying. The wiggly line that

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branches off below the curve, I think, was probably added during the meeting, and it shows that when the NHS capacity is broken, we will end up locking down, but even so, deaths will continue to rise for another two weeks before they begin to fall. Then we would be onto what the plan at the bottom, "the Actual Plan" looks like. As to that, the plot at the bottom shows what the plan should be, that is, to not break the NHS capacity. We proposed that a combination of increasing NHS capacity (red line) and locking down to reduce the rate of infection would keep the NHS from collapsing and avoiding unnecessary deaths.

132.   As to the plot on the right, my guess is that it is some rough working, and it shows that, with different reproduction values ('R'), the capacity of the NHS would be broken in any event. It looks like this graph was drawn in the conversation I had with Marc and Laura before the meeting with the Prime Minister, and I do not think we referred to it in the meeting.

133.   From memory I believe I spoke first, talking the Prime Minister through our views of the data and science. I referred to the whiteboard and used the slides from the NHS meeting (as I referred to above). Then Dom talked through the implications, and then there was a discussion primarily between the Prime Minister, Dom, me, and other Number 10 colleagues. I do not think Laura or Marc spoke.

134.   I explained that, with the current plan, we would quickly overload the NHS. Once the NHS was broken, it would not be able to treat those with Covid, and therefore those with survivable Covid would die. In addition, people would not be able to get treatment for regular conditions such as heart attacks. This meant that the number of deaths that would occur would be significantly higher than just the infection fatality rate from Covid.

135.   I recall that the decision was that Government needed to act quickly and to move the wider response from a mitigation strategy to a suppression strategy. I cannot now recall precisely what people said in the meeting but I think there was broad agreement including from the Prime Minister.

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15 March 2020

136. Early on the morning of 15 March, Neil Ferguson sent me an email that contained his predictions [BWA/31 – INQ000195888]. He said:

> "Ben – see below. I just talked this through with Patrick.
>
> Fundamentally this is the same issue I highlighted earlier this week – even if we reduced the epidemic by 2/3 or more, it would still look very bad at the peak.
>
> What has changed is that NHSE has been more definitive at saying they are a long, long way away from coping with such levels of demand.
>
> I have offered to Patrick to present/discuss with ministers or advisers myself if helpful – just let me know."

137. Angela McLean sent a paper around the SAGE group on 15 March 2020 [BWA/49 – INQ000195889], which almost exactly reflects the figure that we had talked the Prime Minister through the day before. In the paper she said:

> "There is a discussion that I missed at Sage if it occurred; where on the "cases through the seasons" graph does health capacity lie? I do not think that I have heard a view from SPI-M or NHS about where we think NHS capacity lies relative to the forecast number of cases I know there are very many uncertainties. I'd like to know about realistic, current NHS capacity versus reasonable worst-case epidemiology with various controls all in place (home alone, home with family, cocoon the vulnerable).

138. She then drew a graph which is embedded in the paper [BWA/49 – INQ000195889]. The graph shows two peaks. The first taller peak is the unmitigated peak (that is, if we made no interventions), the second broader peak is the mitigated peak (that is, the one created with the planned interventions). She has then drawn two lines, one labelled "Health service capacity", and then a question asking "but what if it is here?" pointing to a label far lower than the number of cases. In her paper, after the graph, *Angela asked:*

> " If capacity is nearer the low line what other combination of options are there?

a. Lockdown

…"

139.   This graph is almost the same as the one that I drew on the previous Friday, and which we showed the Prime Minister on Saturday. Angela's paper goes on to draw the same conclusion that, in the case where NHS capacity is far exceeded by the number of Covid cases, we will need to bring in stringent measures such as lockdown.

16 March 2020 onwards

140.   On Monday 16 or Tuesday 17 March 2020, I was required to isolate due to the household isolation rules. I later developed symptoms and isolated for seven days. Over the next week my interactions were almost exclusively through phone calls, and emails. From my calendar, it looks like I returned to work fully on the 26 March 2020.

141.   In this period, there were two emails that are likely relevant, and likely describe the advice I gave at this time. I sent an email on the 18 March [BWA/50 – INQ000195890], in which this was in bold text:

> **"The most important thing to note is that by the time the data shows we haven't implemented strict enough measures it will be too late to stop an Italy like situation."**

142.   The reasoning behind my statement is laid out in the second relevant email, which I sent on 19 March to Tom Shinner [BWA/51 – INQ000196063]:

> *"I think the way we should frame this as:*
>
> *Deaths is the data we have most confidence in.*
>
> *The current trend of deaths in hospitals shows that ICU will be overrun in 14-21 days.*
>
> *If ICU is overrun death rate doubles.*
>
> *We won't know the impact of the interventions for two weeks.*

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Therefore the question is what data can we get by tomorrow that means we are confident not to take a decision."

143. To explain, in this email I made the argument that because data on infections and hospitalisations due to Covid rely on testing (which is a limited resource) and unsure reporting mechanisms, the data about those factors is more uncertain than deaths. I then made the argument that because infections led deaths by two to three weeks (that is, an infected person takes time to die), by the time we can see in the deaths data that the current inventions have not worked, we have already passed the point that the NHS is overrun. It therefore suggests that the argument is not what data do we need to make the decision to lock down, but rather what data can show that we should not lock down.

[D] OUT OF LOCKDOWN – LATE MARCH TO AUGUST 2020

144. On 23 March, the UK locked down, with the Government telling people it was necessary to stay at home in order to suppress the virus, moving from a strategy of mitigation to one of suppression.

145. In a mitigation scenario, capabilities such as having large-scale capacity in testing are not required, because it will have little effect on the overall impact of the pandemic. This is why PHE stopped testing in early March.

146. However, in a suppression scenario, the state has to play an active role in holding the number of infections down. The basic methods of this are well known as this is how the spread of many diseases, like HIV, is controlled, for example using contact tracing, testing and vaccines. To my mind, because the UK Government's capabilities in the suppression of Covid had already failed to contain the pandemic in February, it followed that their existing capabilities would be insufficient in the future.

147. A large part of my work in April to August 2020 was trying to help ensure that the UK had the necessary tools to enable it to successfully lift measures and not see a rapid rise in infections. This meant that my work was mainly through the set piece meetings that occurred in Number 10 during this time, and discussions with the teams preparing the papers for these meetings.

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148.   During April 2020, I did not always take notes in notebooks. Instead, I often wrote on A3 sheets of paper that I would wrap around the papers of the meeting that I was attending. Therefore, the record is incomplete and reconciling what my notes refer to exactly is extremely difficult.

Weaknesses in Government science data and analysis during the first lockdown

149.   On 24 March, I sent an email saying that "I have concerns about the level of understanding of science in CCS. This could be due to lack of communication, or capacity or capability but in the early days this has been a real problem." [BWA/52 – INQ000195892]. To try to avoid this at Number 10, Dominic Cummings asked for Laura Pimpin to be seconded from the private sector to help ensure that the advice to the Prime Minster was correct, and that Number 10 understood the emerging science around the pandemic [BWA/53 – INQ000195919]. Although Laura was a massive help to Number 10, as my email to Simon Case on 2 May shows [BWA/54 – INQ000195936], at that time I still thought that

"one of the huge gaps in our current response is the lack of epidemiological knowledge at the centre.

If I was given your role, my first call would be to Angela Mclean … to help on our central strategy."

150.   One of the other weaknesses in this period was the lack of availability of data/insight. This was due to numerous different causes. One cause was that the data people were presenting was not always the best available in Government [BWA/55 – INQ000195901]. Another cause was that teams could not get access to data or analysis that existed in other departments, for example, SPI-M struggled to access Test and Trace data [BWA/56 – INQ000195945] [BWA/57 – INQ000195916].

151.   Finally, Government struggled to collect the necessary data to help inform decisions, for example the team in Covid Task Force having to rely on imaginary case studies rather than commission focus groups with real people with real experiences [BWA/58 – INQ000195917].

152.   My main concern was that the analysis work was too shallow [BWA/59 – INQ000195911], and I felt that too often it contained a large number of qualitative

judgements where no evidence was shown, and too often included graphs with unlabelled axes, or which were unreadable [BWA/60 – INQ000195915]. Throughout Covid I interacted with analytical teams providing feedback and suggestions for how to improve the work, in particular trying to get them to state the inferences that could be drawn from their analysis clearly [BWA/61 – INQ000195906] [BWA/62 – INQ000195908].

153.   Many people in Number 10 and Cabinet Office recognised the importance of having a stronger analytical core. I suggested a number of different solutions which would solve different aspects of the problem [BWA/63 – INQ000195902]. I was a strong advocate for a team that had the capacity and capability to synthesise different data sources and carry out bespoke analysis (as discussed in a meeting with ministers on 14 April) [BWA/64 – INQ000195903].

154.   In particular, in April I felt that getting an analytical team thinking about the optimisation of NPIs and strengthening the analytical skills within CCS should be the priority [BWA/63 – INQ000195902].

155.   For the optimisation of NPIs, I believed that we needed a 'full systems' approach to ensure that analysis covered the full range of issues, including health, economy and social aspects and to ensure that the analysis did not just focus on one thing at a time. As well as this, we needed to consider the system of NPIs, meaning we needed to look at all the NPIs together as they impact society. If viewed this way, some NPIs that initially appear to have a positive effect will be shown to have little impact in the context of the full package of measures. I wrote a document about setting out how we would have to do this and what we would need to do it [BWA/65 – INQ000195939]. I emailed this to Simon Case on 22 May 2020 [BWA/66 – INQ000195938].

156.   Stephen Aldridge was brought in to lead the analytical strand of the Covid Task Force, although I think he retained his responsibilities in MHCLG. In mid-April, I was forwarded a note setting out the overall structure of the Covid Task Force with an organogram. In my email commenting on the structure, I made a number of points. The first was that policy and analysis had been split in the traditional Whitehall fashion, rather than building a single team; secondly, the organogram was missing a science team; and thirdly I commented on the very low number of analysts and the lack of ability to bring in data [BWA/67 – INQ000195910].

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157. In March, I had a meeting with Jonathan Nancekivell-Smith who led the Prime Minister's implementation unit, in which I asked to borrow Ben Henshall to support me. Thereafter, Ben worked with me for the rest of my time in Government and remains in the Government team I set up called 10ds today (which I discuss later in this section below). Ben and I decided that he was best placed to work with CCS and I am aware that he helped upgrade the data to which CCS had access, the technology that it was using to report and its use of the data.

158. Also in this period, CCS stood up an interactive dashboard to replace the PowerPoint slides that it was using. The dashboard was a front-end which drew data from google spreadsheets that were manually updated by a team in CCS. This was a good solution to get up and running.

159. However, I think that the product never really moved on from this basic dashboard, to a more powerful solution that enabled the democratisation of data, allowing for teams across Government to easily carry out analysis or quickly get answers to any questions.

160. My concerns about the dashboard are set out in my email on 15 May [BWA/68 – INQ000195931]. I suggested that the team needed a product manager in order to improve the specificity of the product vision, and the user experience in utilising the dashboard. I also flagged that although we had a data dashboard, we were reporting on it in a narrative style particularly when questions were asked.

My involvement in strategy – March-May 2020

161. Throughout the period from lockdown to the UK Government's publication of "Our Plan to Rebuild" on 11 May 2020, I participated in the Covid Strategy meetings, the Covid deep-dives and I also had active discussions with the team preparing the papers that were presented in these meetings.

162. In early April, the Prime Minister became ill with Covid. At first, he was working remotely, and then he went into hospital, and there were obviously different ways of working in those times. In particular, when the Prime Minister was in hospital/recovering, the joint meetings between the First Secretary of State, the Chancellor of the Exchequer, Secretary of State for Health and the Chancellor of the

Duchy of Lancaster became an important forum for decision-making, of which I was part.

163. Below, I set out some key topics that appear to have been top of my mind and which I dealt with in this period, based on the searches carried out, and my memories of the period.

Approach to strategic decisions

164. Many of the issues that the UK Government was dealing with are well known, for example, the importance of testing, contact tracing, ventilation and being outdoors and the supply of PPE. The place where there did seem to be room for strategic decision-making was on the question as to which of two strategies the UK should adopt to deal with Covid, which was pitched as a choice between 'running hot' (that is, keeping hospitalisations just under NHS capacity) and 'zero covid' (that is, keeping infections in the single figures). My view, as I said in an email on 2 April, was that it was incorrect to focus on deciding between these two strategies; rather the focus should be on what were the best and most effective NPIs – where 'best' means maximum effect on suppressing the pandemic for the minimum cost [BWA/69 – INQ000195897] [BWA/70 – INQ000195895].

165. A simplistic way to think about this is as an equation by which we establish (a) how to minimise the cost of the set of NPIs and (b) have enough effectiveness on the epidemic such that R was below 1. The result of this calculation is the optimal set of NPIs for the country. This set of NPIs will produce a level of infections in society, however the level of infections is not a goal in itself, because at R<1, infections will continue to drop.

166. On 4 April, I said that because of the false dichotomy between the two strategies, we should not use it further [BWA/71 – INQ000195898]. It was my view that we should develop a plan "to return life to as near normality as possible, for as many people as possible, as quickly as possible, in a way that minimises incremental loss of life and does as little damage to the economy" [BWA/72 – INQ000195899]. My reasoning was simply that we want to pick the set of NPIs that have the least cost to economy while keeping R below one, and that this is the better solution to the overall problem.

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167.	My views at the time on where we were in the pandemic were recorded in my paper "Where are we?" [BWA/73 – INQ000196051]. I infer that this was produced around 16 April 2020 from the graph in the bottom left corner. The first five sections reflected the current course of the pandemic: one, that measures had to be introduced to stop the NHS being overrun; two, that these measures seemed to be working; three, that the public were broadly in agreement with measures at the time; four, that the measures were very expensive; five that we did not want a second wave.

168.	Point six set out what the key components of our strategy should be. The first was a 'Manhattan project' on treatment, cure and vaccine. 'Manhattan' refers to the project in WW2 to develop a nuclear bomb at costs of 2% of GDP. The second was to increase capacity of the NHS and then the third was to improve our NPIs by replacing them with measures that were as effective but not as costly to society. The overall aim was an outcome of returning to near normality as possible, for as many people as possible, as quickly and fairly as possible. From memory, most of my interventions in this time were likely around these points.

Nosocomial infections and care homes

169.	Throughout the first wave, I was concerned about nosocomial infections, meaning infections that occurred while people were in hospitals. My concern came about because of SAGE discussions. On the 2 April 2020, I emailed **NR** (of the Number 10 Covid Delivery Unit) suggesting that we add these to the dashboard [BWA/74 – INQ000195896]. The reason for this was to increase the visibility of the problem, because transmissions in hospitals could result in serious pressure in the healthcare system.

170.	On 13 April, I emailed Imran Shafi and Tom Shinner further raising these concerns, asking if there was any work researching this [BWA/75 – INQ000195905]. I flagged that this was a problem and suggested that we commission DHSC to produce information. Tom agreed, and Imran asked Simon Ridley (Permanent Secretary) to look into it. As can be seen in the chain, DHSC's response was that this is not an issue of concern – despite SAGE saying that 20% of infections and 10% of deaths are due to infections in hospitals [BWA/75 – INQ000195905]. From memory, the importance of this issue seemed to increase.

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171. From the start of Covid, it was obvious that care homes were hugely vulnerable and I was constantly worried that there was not sufficient attention being paid to them. Based on discussions about care homes in SAGE, I tried to ensure that care homes were high up in people's minds [BWA/76 – INQ000195913] [BWA/77 – INQ000195912]. In late May, although there were plans on how to protect care homes, for example through testing, we did not have the monitoring in place to gather the data to understand if those plans were effective and my belief was that there was a good chance that they would fail. I made these points on several occasions [BWA/78 – INQ000195943] [BWA/79 – INQ000195947] [BWA/80 – INQ000195946].

Quantifying infections and the ONS studies

172. One of the biggest questions for Government throughout this period was how many infections there were in the country because, as we ramped up testing capacity, we would expect the number of recorded cases to rise, even if the number of infections was falling. From what I believe was a suggestion of mine, Covid-S commissioned SAGE to improve our understanding of the epidemic through using population sample testing, and this is what became the ONS infection study [BWA/81 – INQ000195907].

173. If memory serves correctly, because of hesitancy in PHE at SAGE, Ian Diamond took on the action to build out the solution, alongside members of SAGE. To this end, Jeremy Farrar led a meeting on 17 April to design the survey. I think that my main input into this conversation was to encourage the size of the sample to be as large as possible, and that the objective was to get a "reasonable estimate of incidence in the community in time" [BWA/82 – INQ000195909].

174. The ONS infections study is the gold standard globally, and I think that the UK was the only country in the world that had a robust estimate of the number of infections at any point in time. Beyond this it is, in my view, a superb piece of Government analysis, as it takes a very complex set of modelling and data collection, and simplifies it into a single chart that the Prime Minister used to make decisions.

Reactive measures

175. In early May, I felt the biggest weakness in our planning was the lack of reactive measures. By this I mean measures that Government would bring in when infections rose; in other words, what Government would do when things went wrong. This is

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flagged in the readout from the strategy meeting on 2 May [BWA/83 – INQ000195912] but is also contained within my email on 6 May [BWA/84 – INQ000195920]. These are important considerations because the degree of reactive measures implemented has a significant effect on the benefits of each measure and therefore cannot be left as an afterthought. For example, if you open schools but close them after one case, then the benefits of schools being open are limited; but if you keep them open when there are lots of cases, then the effect on the pandemic is significant.

2 metre distance review (2m review)

176. On 11 May, the UK Government released its strategy for moving out of lockdown entitled "Our Plan to Rebuild". Around this time, Dominic Cummings and I had a conversation, where we decided that I would focus less on Covid and concentrate on the broader transformation of Government's use of data, and building out what would become 10ds, which I discuss in more detail below.

177. In June 2020, I was involved in the 2m review [BWA/85 – INQ000195961]. I do not know what my official role was within the process. I contributed my thinking on what mitigations might be needed to reduce a 2m distance to 1m in an email to Patrick Vallance and Chris Whitty on 18 June 2020 [BWA/86 – INQ000195963] [BWA/87 – INQ000195964] [BWA/88 – INQ000195962], noting how the risk to an individual changes over time both from the number of infections in society and from mitigations, such as the 2m rule and wearing masks, and that therefore the changes in risk are quantifiable to some extent. Simon Case's email summary dated 19 June 2020 broadly reflects my memory of the conversations [BWA/89 – INQ000195965].

Alleged breaches of rules and guidelines

178. In May, reports came out of Dominic Cummings having travelled to his family's home in north England when he was isolating for Covid and associated trips. At the time of these reports, I was not involved in any conversations with Dom about the incidents, and I did not give him any advice or know about it before it came out in the press.

179. I did not follow the stories reported in the press about alleged behaviour of ministers and others during the pandemic, for example, with regards to PPE supply. While I do not want to appear to dismiss these as important issues for the Inquiry, I do not feel

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that I am able to comment further because I do not think I have anything valuable to add to the discussion.

180. In terms of 'partygate', again, I have not read the media stories or any of the documents that have been produced as a result of investigations. Given the hardships that many people were undergoing during this time, I understand the public reaction to these media stories.

181. It is my belief that the Government response to the Covid pandemic was more impactful on the public's confidence than stories in the media around the Westminster environment.

Test, track and trace

182. Test, track and trace ('**TTT**') was set up during this time. I participated in meetings about wider strategy on how Government could use test and trace to contain the pandemic. My early interventions were about trying to increase the ambition around testing and focussing on the speed of reporting to allow people to isolate as quickly as possible [BWA/90 – INQ000061774].

183. Most of my efforts in TTT were directed towards the Joint Biosecurity Centre ('**JBC**'). This was set up in around spring 2020 with the aim of improving our monitoring and surveillance of infections throughout the country in order to understand whether our measures were effective and what we needed to do to improve the response. The JBC sat with the TTT team at DHSC. I felt that the team carrying out the JBC work should not sit within the TTT team because the sources of data which would be important for JBC would not be important for TTT and because we did not want TTT to be in a position that they were marking their own homework [BWA/91 – INQ000195914].

184. The creation of the JBC was largely driven by the view (both mine and of others) that our current analytical processes were not of the necessary standard that would allow us to move from the broad NPIs that were implemented in the first lockdown, to the ambition of a narrower more precise set of measures that would allow us to play 'whack a mole' with local measures.

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185. As well as making this point on 29 April, I further flagged that the larger piece of work was to proactively detect hotspots in local communities, and that this was a relatively simple task in terms of the data [BWA/91 – INQ000195914].

186. In particular, it was important that JBC built a backwards tracing capacity, using data to quickly identify a hotspot such as a school or place of work. TTT at this point was focused on forward tracing, that is tracing people who may have been infected by a case. The reason that backward tracing is important is that it allows for the discovery of where the infections occur, so actions can be taken to limit further infections. Therefore, it was important to have both a top-down perspective of identifying hotspots and a bottom-up perspective that allowed for the school or workplace to react quickly and appropriately [BWA/92 – INQ000195941] [BWA/93 – INQ000195921].

187. Because the early work of JBC did not contain any explanation of how they were going to be able to do this, I flagged my concerns to Patrick Vallance and Angela McLean, in particular, around the need for a system that could find outbreaks at a very local scale but also find reservoirs of transmission that were likely to occur in disadvantaged or socially excluded parts of the country. Patrick and Angela both agreed and raised their own concerns that JBC's work did not address how it would stop an outbreak [BWA/94 – INQ000062151] [BWA/95 – INQ000195922].

188. Colleagues at Number 10 and CO reiterated on multiple occasions that the aim of the JBC programme was to be able to spot outbreaks at a very local level. In an email to Dominic Cummings, I recorded a number of quotations about the work of the JBC team [BWA/96 – INQ000195956] [BWA/97 – INQ000195957] [BWA/98 – INQ000195958] [BWA/99 – INQ000195959] [BWA/100 – INQ000195960]. For example, one quotation that I put in my email to Dom was from Patrick Vallance who wrote the following remarks:

> *"Thanks. Can we be clear that we mean we want to be able to detect at that level (eg shutting an individual workplace), not just draw on work place data?"*

> …

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"I agree that we need to see real detail of what is proposed and how it could be operationalised to meet the need of picking up local outbreaks as well as aggregating to give trend for the country overall.

"This isn't a plan – we need something clearer about operational aspects and we need to have the sensitivity. We have advised on the component of such a scheme (ie the data), and that it needs for example to be sensitive at the level of a school." [BWA/93 – INQ000195921].

189. This is reflected in Tom Hurd's letter to Dido Harding on 12 May 2020, where he notes "our starting point is to build a system that empowers and enables action to be taken at the most local level possible" [BWA/101 – INQ000195927]. My response to this correspondence and the slides that were attached ([BWA/102 – INQ000195926] [BWA/103 – INQ000195928]) was that the deck "isn't even wrong". By that, I likely meant that the work was focussed on the wrong area, and was too high-level and weak to allow for a rigorous discussion to occur. It was missing activities that were critical, in particular, I felt it missed that "the key question is and has always been how do we detect an outbreak in a single workplace and then tackle it" [BWA/104 – INQ000195925].

190. Instead, it seemed to me that the intention was rather to set up a Covid version of JTAC, which is the body that organises the UK's terrorist response. The echo of this can be seen in the establishment of Covid alert levels that mimic the terrorist threat levels [BWA/97 – INQ000195957].

191. This difference in vision is why I emailed Mark Sweeney on 10 May, saying "I am very concerned we are setting up the wrong thing in the biosecurity centre. People keep coming back with slides that have high level data aggregation as the main ambition." [BWA/105 – INQ000195924].

192. On 14 May 2020, Ollie Munn circulated a set of slides he and I had written on JBC user journeys [BWA/106 – INQ000195929] [BWA/107 – INQ000195930]. We were trying to help the JBC clarify the objectives that they had been asked to achieve. The idea behind it was to set out three different methods by which an outbreak could be discovered and the key questions/problems that had to be solved to enable each. What is noticeable about this deck is that it is very focused on identifying hotspots at a local level, it is a long way from the alert levels, and the end result was the

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identification of NPIs at a local level. Ollie expanded on the ideas of what we had in mind in his email on 23 May [BWA/108 – INQ000195944].

193.   By 18 May there were still a large number of open questions on JBC policy and analysis [BWA/109 – INQ000195932] [BWA/110 – INQ000195933] [BWA/111 – INQ000195933] [BWA/112 – INQ000050573]. It was also clear that the JBC was looking to build out the capability to bring together different data sets, both health and non-health, to be able to produce a nowcast of the number of infections [BWA/113 – INQ000195937]. This was a good idea in principle, because we knew that testing data should not be the only source of decision making if infections rose. But unfortunately, when Government had to make decisions in September, we did not have this capability.

194.   On 23 May, I wrote an email expressing my frustrations with the JBC's then plan [BWA/114 – INQ000195940]. I said:

> *"When you step back the current plan seems nuts*
>
> *We are building a new centre to prevent outbreaks that*
>
> *- uses the same systems & methods that are already in place and have failed once.*
>
> *- building new things are of unknown value.*
>
> *- Not making it easier for people to contact them or get information.*
>
> *- Not telling people they should contact their LA."*

195.   As to the use of alert levels, on 25 May I commented that overall, I did not think this was "well thought through at all" [BWA/115 – INQ000195942]. I thought that the notional 'alert level' had not taken into account the different sources of data, the time lags, and the uncertainty around the data. Also, I flagged that the alert levels would not change when we would want them to, leading us to be slow in responding and slow in releasing.

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196. Because of these concerns, Ollie and I suggested that I help JBC solve their problems, for example, to design their systems map. However, JBC seemed very hesitant to get us involved [BWA/116 – INQ000195953]. I thought that there might be two possible reasons for this. One was the cultural issue of a Number 10 Special Advisor getting involved in DHSC work. For example, it was my belief Mark Sweeney felt he could not assign work to me. I do not mean this as a criticism of Mark as he needed someone who he could hold responsible and accountable. Indeed, this is why I decided that it would be necessary for a senior civil servant leader to lead 10ds (which I discuss later in this section). The second possible reason was that the leadership of the technical and analytical team was weak and that the senior team was unaware of this [BWA/116 – INQ000195953].

197. Throughout June, the problems continued [BWA/117 – INQ000195951] [BWA/118 – INQ000195952] [BWA/119 – INQ000195955]. But then, also in June, Clare Gardiner was appointed to take over the JBC [BWA/120 – INQ000195974]. From memory, she agreed with many of our concerns, but asked for time for her to try and move the organisation towards where it needed to be. I think that for her at this time, the biggest problem was bringing in enough staff who had the right technical skills.

198. I continued to interact with the JBC throughout July, including a workshop on the 16th. The slide pack that they sent in July summarising JBC's strategy, service and backlog says that the JBC was still unsure of user needs, and not building out backward tracing [BWA/120 – INQ000195974] [BWA/121 – INQ000195975]. From my memory of the workshop meeting, I felt that too much of JBC's capacity was focused on projects that had interesting data science problems, rather than on the key problem of finding and understanding hotspots.

199. I documented a meeting in September 2020 with Claire Gardiner and other members of the JBC in my notebook [BWA/172 INQ000215667 - (pages 22-24)]. There was still evidently a problem at this time with getting the right technical skills, as well as a problem with the JBC having enough capacity to provide the analysis the government needed, in particular for the Gold and Silver Meetings, and the fact that T&T structures and processes were focussed on operational factors rather than enabling analysis.

200.   In the end, when the UK began to see the rises in infections in August, we did not have the insight we needed to understand what was occurring, or the levers to intervene early at the local level.

Contact Tracing App

201.   I was tangentially involved in the project to use technology solutions to help the response to the epidemic, in particular, contact tracing. I was an enthusiastic supporter of this as I felt it was a project that, if successful, had the potential to genuinely move the needle on the UK Government's overall response. However, to ever achieve this, we had to build with this ambition in mind and consider it as part of a system [BWA/122 - INQ000195894], because on its own, the app would have little effect. It had to be part of a system that could exploit the outputs.

202.   At this point, there was an internal NHSX team building out a low energy bluetooth solution, that would also collect GPS results. On 21 April, the Covid-S meeting assigned me several actions to interact with the team managing the roll-out and testing of the app [BWA/123 - INQ000088452]. On the comms side, I linked up the app team with some of the communications specialists who were working in Government [BWA/124 - INQ000195900].

203.   The actions recorded on 21 April refer to testing on the Isle of Wight [BWA/123 - INQ000088452]. It was felt that an island was a good place to carry out an experiment to show the effectiveness of the app, and I remember talk similar to that recorded in the minutes of a meeting on 17 April 2020, of a control room where they will dial the app up and down [BWA/125A - INQ000088664].

204.   From memory, when we discussed this with the team, it seemed to me that there had not been any consideration of how we would measure whether the app was actually effective and how we would have the information to order to move the dials up and down. I had ongoing discussions with the team behind the app which often raised concerns or which were about delays to the launch.

205.   On 10 April, Google and Apple announced that they were going to build a solution that did not rely on a centralised authority, which differed from the NHS solution, and which prohibited the collection of location data. I believe, for this reason, the NHSX team rejected switching to the Google/Apple solution, and because they felt they were

close to launch. However, the Number 10 team suggested that the NHS should spin up a Plan B team to develop an app using the Google/Apple solution [BWA/126 - INQ000195918] [BWA/127 - INQ000195948] [BWA/128 - INQ000195968].

206.   On 1 June 2020, I flagged to Ollie Munn and Tom Shinner that we needed to do a deep dive on the app due to various concerns that were raised in an email chain between members of the Number 10 team [BWA/129 - INQ000195949].

207.   In the same email chain, Ollie also mentioned that conversations with the team behind the app had not been hugely reassuring. For this reason, on 3 June, Ollie wrote a draft of a letter to send to Dido Harding that laid out concerns with the app that was under development [BWA/129 - INQ000195949] [BWA/130 - INQ000195950]. I think I contributed to this draft but, even if I did not, it summarises what my thoughts were at the time. It documents how the app struggled to perform on older models or when in many running states; that we were concerned about the usefulness of a notification that is only known to the user; and that the delivery time scales were off.

208.   In early July, I put together a slide deck that was designed to try and get people to consider an app that looked to track location rather than contact (that is GPS over bluetooth) [BWA/131 - INQ000195969] [BWA/132 - INQ000195977]. As Tom Shinner later detailed in his email to Dido Harding on 23 July, the idea is that their bluetooth app requires a high uptake and use by the population, and is an unknown technology, however the proposed GPS application that allows for backward tracing would allow us to find hotspots, and generate smarter NPIs [BWA/133 - INQ000195976] [BWA/132 - INQ000195977].

209.   In the end, a different version of the app was released in September which was developed as the 'Plan B' app, based on the Google/Apple API. This API did not allow Government access to data on where people were being infected so it meant that it only enabled forward tracing and the notification was only known to the person who was 'pinged' which, in my opinion, limited its effectiveness. In particular, the lack of the location data meant that we could not use the app to find hotspots, and this was a major hindrance in developing smarter NPIs [BWA/134- INQ000195948] [BWA/135- INQ000196000] [BWA/136 - INQ000196004].

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Communications and polling work

210.   In this period, I advised on communications providing ideas, advice and thoughts as to how we might be able to improve in communicating with the public, based on my skills and experience.

211.   My initial thoughts on the strategy behind Government's comms campaign are seen in the A3 sheet, likely written in late March or early April [BWA/137 - INQ000215666].

212.   This note shows my thinking: the objective is to protect the NHS and that to do this we had to stop the spread of Covid, and to protect the vulnerable. I have placed these on the two axes. I have drawn (poorly) a nine-box grid to create a number of segments, to allow us to prioritise where spend should be focused. I marked the group low- and mid-vulnerability but high compliance as "wasted spend". I flagged that it is key for those in the high vulnerability group to get the correct information. My diagram has the majority of spend to be on those of middle compliance, and mid- to high-vulnerability. I identified the group with low compliance but high vulnerability as the key problem segment. I have noted that for those in low vulnerability we should concentrate on an anti-spread message if there was to be any spend on communications at all. I added "if at all" because I assumed that there would be an ongoing general broadcast to everyone of the message "Stay at home, Save NHS, Save Lives'".

213.   My notes also record on this page that the ratio in hospitalisations between high and low suggests that Government might be spending over 20 times on the highly vulnerable, and also about how compliance with different measures will differ depending on life circumstances, for instance, an inner-city professional can work from home, but has no outdoor space.

214.   I used this thinking to build out a marketing 'model' using large-scale polling that Government was carrying out at the time. I helped to instigate this polling on the request of the Prime Minister, via Dominic Cummings, with the primary reason being that, at the point we locked down, Government was unsure if the public would obey the stay-at-home rule for an extended period. The polling was designed to give Government the maximum chance of seeing if that was occurring. It was also designed to help Government understand people's behaviours and therefore target

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messages at specific groups. The procurement of this polling was judicially reviewed later.

215. This 'model' was built for the Government communications team. I have a graphic of the model that I built out following the analysis of the polling [BWA/138 - INQ000196061] but I am afraid I do not have the code that I used to produce this graphic. From memory, I predefined groups based on demographic, age, and education. This choice was likely because I was using education as a proxy measure for either income or type of work. I then created a metric for vulnerability, it appears that this is a combination of age, plus self-reported vulnerability due to the fact there is a variation between different groups of the same age. I have similarly created a metric for compliance, likely self-reporting from the questionnaire. That the axis runs from -0.6 to 0.5 (y axis) and -1 to 2.5 suggests that I have normalised the data in some way, likely a z score.

216. I used the diagram on the left (or a different, similar iteration) to make the argument that, although younger men show far less compliance with the rules, they are not very vulnerable and therefore unlikely to worry the health service directly. However, for groups like 'No degree, Male 45-55' compliance and vulnerability meant that targeting them with communications might have a larger effect on lowering the burden on the healthcare system.

217. Beyond this, I continued to work with the wider marketing team informally, providing ideas and suggestions, or helping them to be informed about items from the wider piece. For example, one of my notebooks documents a meeting with the marketing team in Government communications where we discussed the message that should be conveyed to different groups of the population [BWA/6 - INQ000215664].

218. At times I also used the polling that was being carried out for the communications campaign to inform our strategy work, for example, trying to understand why people were not working [BWA/139 - INQ000195904].

Establishment of 10ds

219. Over this time, I set up 10ds. This team was designed to help improve Number 10's ability to carry out analysis, provide challenge and feedback, and to help drive forward the use of data across Government [BWA/140 - INQ000195967] [BWA/141 -

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INQ000195966]. We started with borrowing resources from the Prime Minister's implementation unit, ONS and others such as special advisors, and secondees. The team worked on many projects across the Government.

220. During the Covid response, 10ds tried to work by embedding itself in other teams working on Covid in central Government. Ben Henshall worked very closely with CCS in helping them to build out the capability of the dashboard, and then from late summer into winter, Catherine Cutts, an experienced data scientist in the private sector, was seconded into Number 10 / Cabinet Office and worked closely with the Covid Task Force analytical team to drive forward the analysis across Covid.

221. The intention was always to put this unit as an enduring capability unit in Number 10. In early June I identified that the key bottleneck to expanding the use of data science in Number 10 was the lack of a civil service lead [BWA/142 - INQ000195954]. I felt that until this person exists, people will not rely on it, or not see it as a long-lasting change to Government. As I flagged in my email in early June, although I was capable of performing this role, I did not believe this was the right thing. We advertised this position in July, with Laura Gilbert appointed in around the third week of September. From her appointment, we worked closely, but my role transitioned to the wider Government perspective rather than 10ds, which she led. I felt it was important that she was empowered to build out to her vision than try and conform to mine.

[E]   WE GO AGAIN – SEPTEMBER 2020 TO MAY 2021

222. From late summer, I was less directly involved with the Covid response. One reason for this was that 10ds was growing in capacity, for example as I said above, Catherine Cutts joined on secondment and led a lot of the Covid work for 10ds. There was also the later appointment of Laura Gilbert as director of 10ds. Later, Rob Harrison joined the Covid Task Force as Director General in charge of data analysis, further building the capacity and capability of Number 10 and the Covid Task Force in analytics.

223. Most of my efforts over this time were identifying weaknesses in our use of data and analysis, and then trying to work with those across Government to address the root causes of these problems.

224. There is not a complete record documenting my involvement in this period. This is partly because of the email gap I mentioned in section A above, and also because

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many of my interactions were in the form of short, informal conversations outside of meetings or commentary within meetings. Additionally, the longer time period that this section covers increases the chances that I have not remembered everything I did or that I have not found the relevant documentation.

Strategy for testing

225. Over the summer, when case numbers were low, our testing capacity was not a constraint; however, as we saw the numbers rise through late August, Government recognised that optimising testing could be an important area.

226. In July, I had been involved in discussions around testing when Number 10 had commissioned a testing strategy from the TTT team. Imran Shafi asked them to include the evidence used to drive the decisions within the strategy in a follow up to their submission. Their reply described the mechanisms through which they could get evidence but not the evidence itself [BWA/143 - INQ000195970] [BWA/144 - INQ000195971] [BWA/145 - INQ000195972]. I became worried that this strategy was not built on a quantitative foundation [BWA/146 - INQ000195973]. In September, it became clear that Government needed to make sure that it was using the available testing capacity as efficiently as possible to combat the pandemic, whether this was through restricting the spread of the disease or through using tests to try to protect the most vulnerable.

227. Throughout the pandemic, I do not think Government managed to do this as well as it should have, even accounting for the difficulties in solving this problem. One of the reasons for this could be that the Government lacked a clear objective that teams could build to. I do not think that the testing strategy team was ever enabled with the right capability, expertise or capacity to deliver this, and that the failures were due to systematic problems around operational science that persisted throughout the pandemic.

228. On 9 September 2020 I wrote to David Halpern setting out my worries about where we were [BWA/147 - INQ000195982]. I believe this email is in relation to the testing strategy rather than the JBC, despite the subject header, because of the final paragraph, and because David's initial email and paper was in relation to TTT [BWA/148 - INQ000195979] [BWA/149 - INQ000195980]. In my email I said:

"The call yesterday was terrible, they have no vision or plan. It feels like they are writing a piece of homework that need to get marked by SPI-M, before handing into Number 10. …

We currently are not pushing forward on improving our data quality, what we collect, how we do the analysis.

Most importantly in my mind, we have no way to judge if one strategy is better or worse than another." [BWA/147 - INQ000195982].

229. The comment about the work being "a piece of homework" was trying to convey that it felt like the testing strategy team were producing work to be judged as acceptable to SPI-M and Number 10, rather than putting forward what they thought the strategy for testing should be with reasons why. In fairness to them, this could be due to a lack of clarity on roles and responsibilities.

230. In the second-last paragraph of this email, I made the point that the key to any quantitative strategy is to have a way to judge success, that is, to have a scoreboard. Without a scoreboard, there is no basis on which to quantitatively differentiate between strategy X and strategy Y. In fairness, demonstrating that one strategy actually works better than another is a very difficult problem. In the context of testing, the only way to do this would be to run different strategies in different parts of the country and to try and understand the effect. I flagged this in an email on 8 September 2020 [BWA/150- INQ000195981].

231. Even though judging success would have been difficult, the TTT team could have created a strategy that was based on a simple set of rules built on scientific evidence and operational data. This would have allowed them to better utilise the testing available. An example of this type of thinking is in one of my emails to Ollie Munn on 28 September [BWA/151 - INQ000195994]. He had put together data on turnaround of tests for me, and asked me to remind him of my hypothesis. I said:

"1. My thinking was that we are wasting a huge number of tests, 4 days to get a result means that person will have infected 50% of everyone they will infect. When you also account for the weekly nature of the test, this means it is very likely that care home testing is having no effect beyond making us feel good about it.

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2. Help understand how and where lateral flow tests could be useful. If we test every care home worker every other day with 50% accuracy, is it better than once a week 100% accuracy 4 days late."

232.   In my opinion the team did not have the necessary capability and capacity to reach the right answer for the testing strategy and continually update this. I said this in an email to colleagues in Number 10 on 21 September 2020 [BWA/152 - INQ000195989]. However, as my email flags, the necessary interventions to enable this team did not necessarily lie within this team.

233.   I emailed Gila Sacks (Director of Testing Strategy and Policy) on 28 September 2020 in order to understand the team's current thoughts on what could be done to improve or enable them [BWA/153 - INQ000195995]. I said:

"As we bring in different types of tests, I think it is crucial we begin to think about the system 'algorithm' and how we use every type of test minimising the disadvantage and maximising the advantages." …

I think the key we need to think about now is not the algorithm, but what would we need in order to build this system approach.

- *Do we have the right expertise?*

- *Do we have enough people?*

- *Do we have access to the right data?*

- *Are we collecting the right data?*

- *How do we ensure this is a living system that updates given the real world changes."*

234.   My email on 25 September to Catherine Cutts, Ollie Munn and Laura Gilbert documents that I did not think that our testing prioritisation was being built on the best evidence, whether this is because the expert advice from the science adviser to TTT, Susan Hopkins (CMA to TTT), was weak or was not being fully understood [BWA/154

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- INQ000195993]. On 29 September 2020 I emailed Susan Hopkins about testing prioritisation, asking to see the advice sent across [BWA/155 - INQ000195996].

235.   I then had an exchange with Susan on the same day to understand the evidence base on which clinicians were making their recommendations. I asked first whether the group of clinicians advising the testing strategy had imbedded statisticians. Then, when I discovered that the clinicians were reliant on external groups, I asked if these groups had been commissioned to do the work [BWA/156 - INQ000195997].

236.   I am unsure of whether there was ever a reply from Susan on this question. I am also unsure how the testing strategy built in the trade-offs between the effects of the pandemic and wider health and economic issues. For this reason, I introduced Susan Hopkins to Mark Sculpher, a professor in health economics and Director of the Centre for Health Economics at University of York [BWA/157 - INQ000195998].

September decisions on NPIs

237.   I remember discussions about what could be done to try and reduce the clear rise in infections which we started to see in late August. Rather than tightening NPIs, it was felt that clearer communications might be effective.

238.   The 'Rule of Six' was therefore brought in as a solution, as it simplified the communication of the rules dramatically. I felt that this was a poor decision for two reasons: one, it removed the incentive to meet outside where the chance of transmission is vastly reduced, and two, the rule, although simple to communicate, would quickly look illogical in the real world – you could sit in a pub on a table with six people to your left and to your right, but you could only have six in your house even if one is a child sleeping upstairs [BWA/158 - INQ000195978].

239.   As the minutes in SAGE meeting 57 on 17 September 2020 show, SAGE was becoming increasingly worried about rising levels of infection across the country and the need to take action [BWA/159 - INQ000061565 – I do not have access on Relativity]. The minutes say:

> *"Incidence across the UK continues to increase rapidly, and data now show clear increases in hospital and ICU admissions. Medium-term projections indicate a rapid increase in hospital admissions in the coming weeks, and in a scenario*

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where there were no interventions, this would have the potential to overwhelm the NHS."

240. My notes of this meeting reflect this, recording that the Government will have to change tack going back on current trends and quickly [BWA/160 - INQ000215665]. Alongside, I have made a note that issues in testing were still hurting the Covid response.

241. I have notes from a meeting titled '2nd Lockdown meeting Friday 18th 18:00', which appears to be in my calendar as 'covid' suggesting that meeting was about Government considering the need for stringent measures [BWA/1 - INQ000196048]. In my notes it sets out that there are two choices, a "Circuit breaker -> [to] bend" or "Recalibration -> to flatten" the course of the pandemic. [BWA/160 - INQ000215665]

242. My notes say that it is a "bet we can make it through winter" [BWA/160 - INQ000215665]. By this, I meant that it was a bet that the UK could make it through winter, not that I would bet that to be true. My thinking was that, for example, if you have a notional doubling time of 60 days (that is, the time it takes to double the number of infections in the population, which in early March, was around 3 days), you would not break the NHS during winter. My notes appear to reflect that I thought we could not rely on TTT because it had not limited the infections when the number of infections was lower [BWA/160 - INQ000215665]. My conclusion was that, therefore, the Government would have to increase the stringency of the overall package of the NPIs.

243. I wrote in my notebook, "No choice, when things get bad" [BWA/160 - INQ000215665] meaning that Government will have to act in a situation where the NHS comes under severe pressure. I also noted that we are "not smart enough to be precise" [BWA/160 - INQ000215665]. Here, I was saying we did not understand either why infections were increasing or where they were occurring (not good enough backward tracing), to construct a set of NPIs that minimally interfered with society while decreasing infections.

244. On 20 September, there was a science roundtable with the aim of making sure that the different perspectives of scientists were heard. I am not exactly sure how it came about. I certainly played a role, advising on the cast list, and the programme [BWA/161 - INQ000195986]. In particular, I suggested every scientist should be

invited to pre-submit a one pager, which was to ensure that the scientists had a chance to look over any papers or data that others were using as evidence [BWA/162 - INQ000196005]; [BWA/169 -INQ000195987]. From memory, the discussion closely followed the papers submitted [BWA/163 - INQ000195984] [BWA/164 - INQ000146607] [BWA/165 - INQ000195985] [BWA/166 - INQ000146609] [BWA/167 - INQ000183963] [BWA/168 - INQ000146606].

245.   From my notes of this meeting, under the title "Science Discussion", it looks like the mainstay of the discussion was on how Government could best protect the most vulnerable [BWA/160 - INQ000215665]. Segmentation of the vulnerable was discussed, as were the problems of attaining it in key settings (such as retail, healthcare, transport, and multigenerational households), the long period of time you would have to keep segmentation in place for, and issues around care homes. There was also some discussion of the data and how the scientists' interpretations differed.

246.   On 20 September, I emailed Ollie Ilott a series of my drawings with suggestions on how best we could illustrate to the Prime Minister that if he was going to enact NPIs, they should be enacted early [BWA/169 - INQ000195987] [BWA/170 - INQ000195988].

247.   I have a note in my notebook, likely written during SAGE on 24 September [BWA/171 - INQ000183867] which I think is designed to be a succinct set of facts to be used to make the case that we will need to act soon [BWA/172 - INQ000215667 BWA_CAB025885143]. It says

         We built ONS survey to understand progression.

         In early August ~1 in 2000

           early Sep ~1 in 1500

           last week ~1 in 1000

           this week ~1 in 500 ...

         SPI-M see similar trends R>1 everywhere in the UK, and 1.2-1.5

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Madrid ICU medical >100%, and surgical is 60%.

Doctors saying it is like northern Italy.

ONS showing rising rates in Old, NHS seeing this in hospital admissions.

SAGE clear view, this is late February.

248. At this point, I do not believe I was a strong advocate for a 'circuit breaker' because I thought that, at best, it would move us back to where we were a fortnight ago in terms of infections, but then they would just rise again, although there is an argument it might help reset people's behaviour. From memory, I believed that the UK Government needed to bring in stringent measures, but ones that we knew we would have to hold throughout winter, such as asking people to work from home once again.

249. In the end, a decision was made to continue to utilise localised tiering levels, which unfortunately proved unable to reduce the transmission in these areas resulting in rising infections throughout October and into Winter.

November Lockdown

250. Sometime in late October I attended a meeting in the Cabinet room with many officials and Dominic Cummings where there was a debate as to the right course of action. From memory, at the end of the discussion, Dom laid out what he felt was the consensus of the room, that a four-week lockdown was necessary. He asked if anyone disagreed, I believe asking first whether anyone thought a lockdown should be longer than four weeks, and then asking if anyone thought it should be less. To each, I was the single person who said anything in response.

251. My point was effectively that a four-week lockdown in November, especially if it was less strict, would only bring the UK infections back to the October levels and at that time we already needed more stringent measures in many parts of the country. Therefore, I felt that any lockdown should either be stricter and longer, or else we should not bother. However, the unanimous opinion of the others (that is, excluding me) was to lock down for four weeks.

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252. On 29 October, I constructed a slide deck with three slides. The first was a graph of deaths from gov.uk. The second showed SPI-M working calculations that I believe I had screen-shotted out of a SPI-M working paper that showed the predictions from different UK academic groups if the pandemic carried on with no further changes. The third showed those two graphs together, where I have resized the images to approximately the same scale [BWA/173 - INQ000196007]. This was designed to illustrate how I would pitch the need for action. I emailed this to a group of people at Number 10 and Cabinet Office who were working on the Covid response. In my cover email, I said that the slides documented "a very simple story to show why we need to take action, and that doing nothing is not an option" [BWA/174 - INQ000196006].

253. On the same day, I asked Angela McLean and SPI-M for cumulative data on deaths, and, that evening, Elizabeth Richards, at SPI-M, sent me a paper [BWA/175 - INQ000196010] [BWA/176 - INQ000196011]. She told me that this had not been through SAGE and was a SPI-M working document. I forwarded this email on to a similar group to the one I had provided the slide deck.

254. At the same time, other documents were being prepared to support a case for taking action on the rising infections. On 29 October 2020, Ollie Ilott wrote an email circulating a word document which was similarly a statement on why action was needed [BWA/177 - INQ000196008] [BWA/178 - INQ000196009] on which I and others commented [BWA/179 - INQ000196015]. I raised concerns that a month-long package would not be long enough [BWA/180 - INQ000196014]. This is the point I previously raised in the meeting in the Cabinet room.

255. On Friday 30 October 2020, Ollie Ilott circulated documents in advance of a meeting to be held at 11.45 with the Prime Minister [BWA/181 - INQ000196012]. Ben Cropper replied to everyone on the chain attaching my "simple story" slides [BWA/181 - INQ000196012] [BWA/182 - INQ000196007]. I think I was at that meeting but I do not think I was the one to talk to the Prime Minister through any data pack. I do not remember if the slides as I had sent them were presented but, from what happened later, it seems that the SPI-M graph was used in some form in the meeting.

256. After the meeting with the Prime Minister, at 13.28, I wrote to Patrick Vallance forwarding the SPI-M paper that my slides had come from and the correspondence with SPI-M [BWA/183 - INQ000196050]. I said that I thought we should use this information to inform the graphs but not if they were misleading.

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257. Then, Stuart Wainwright of GO-Science said that the SPI-M graphs should not be used in my slides because neither SPI-M nor SAGE had approved them. Emma Payne of the Cabinet Office replied that there would be a caveat on the graphs that were presented saying they were not SAGE-approved and that Patrick Vallance would have the opportunity to comment [BWA/184 - INQ000196017]. I agreed in principle with Stuart, but pointed out that what we had was high quality, and certainly better than me basing graphs on my own calculations [BWA/185 - INQ000196016].

258. That Friday, there was a meeting with senior ministers about the case for a second lockdown which I attended but I did not speak *[BWA/185A - INQ000269373] [BWA/185B - INQ000269374]; [BWA/185C - INQ000269375]*. I think it was in this meeting that it was decided that there was a need for a second lockdown but that the exact details and the final decision would be made on Monday. However, I recall that information about this meeting ended up in the newspapers on Saturday and so, as far as I understand, it was felt that a second lockdown had to be announced that day.

259. On Saturday 31 October, I talked to Angela McLean on the phone where we discussed the SPI-M paper. Catherine Cutts may have been on the phone call or I may have discussed it with her afterwards. Angela flagged that, because of more recent data, R was now predicted to be lower and therefore the peak number of deaths would be lower than represented in the SPI-M graph. Angela and I discussed what to do and we agreed that in any presentation, the best option was to use the RWCS scenarios that had already been produced. This is why I sent Catherine Cutts the RWCS at 12.36 on 31 October 2020 [BWA/186 - INQ000196058].

260. After this conversation, I went into the Cabinet room and explained to officials and the Prime Minister that SPI-M's model suggested that R was lower and therefore the peak deaths would also be lower. I believe I said this could be at about 50% of the peak height.

261. When I left Number 10 that day, I was under the impression that the SPI-M working paper graph was not going to be used in any public announcement. I discovered later that it was used in the press conference. The scientific groups came under criticism for their work, unfairly in my view, because these results should not have been presented when it was known in Government at this point that they were no longer up to date.

262. The decision to lock down was the scientific consensus of SAGE, and obviously I do not know the exact role the SPI-M working paper graph played in the decision making. However, in retrospect, the fact that a graph came from a SPI-M working paper may have created a false confidence. I think the right thing to do for the presentation to the Prime Minister would have been for someone to redraw the graphs in a way that stylistically emphasised the vast uncertainty in the predictions, for example, by drawing them to show maximum and minimum predictions, and shading the area in between.

Toy model

263. In early January, with a change in team at Number 10, there was a request for a model of the pandemic into which officials and ministers could input their own information and run to understand the effects of the pandemic in different scenarios. This was called a 'toy model' because it could be played with. The models that SPI-M ran were very large, complex and sophisticated. Anything suitable for laypeople would have to be drastically simplified.

264. The reason that we had not done this previously is that the simple model of the type that we could build could not take into account the complexities of the real world that even SPI-M's experts struggled with. Therefore, the results of a toy model could create misleading impressions of the effect of the pandemic. My opinion was that it would be far better to have Angela McLean or a member of SPI-M to talk through the modelling when Number 10 wanted it.

265. In the end, Number 10 asked the JBC to build out the toy model. I was concerned about this decision and tried to stop it being used incorrectly, and I was repeatedly assured it was not going to be used to make decisions. However, it did seem that it was being used: [BWA/187 - INQ000196021] [BWA/188 - INQ000196035] [BWA/189 - INQ000196034] [BWA/190 - INQ000196033].

266. There was a good deal of discussion at this point about HMT's use of the toy model, including a meeting with colleagues from Cabinet Office, DHSC, HMT and SPI-M on 21 January 2021 [BWA/191 - INQ000196025] [BWA/192 - INQ000196026].

267. On 25 January 2021, I again expressed my concerns to Rob Harrison and others about the toy model and how HMT analysts were engaging with it [BWA/193 -

INQ000196028]. In the same chain, Angela also raised her concerns. She had quality assured the model but said that since then, HMT had just changed it. She had raised these issues with Patrick Vallance and Chris Whitty.

268. I forwarded Angela's email on the same day to Phil Duffy (who was both Chief Scientific Adviser of HMT, and a person I have worked with on other issues in Government) [BWA/194 - INQ000196029]. I expressed my worries on the analytic capability and capacity in HMT. Phil followed up and spoke to me, and I think Claire Lombardelli also spoke with me, and from memory both were open and thoughtful in their views [BWA/195 - INQ000196031] but I cannot now remember any specifics.

269. I would like to make clear, as said at the time, that I am not insinuating that officials were deliberately misleading the Chancellor of the Exchequer, but that the lack of capability was not providing him with the full range of information [BWA/196 - INQ000196030].

270. For this reason, at this time, I would often talk to the Chancellor of the Exchequer's private office. I wanted to ensure that the Chancellor of the Exchequer and his team had the best possible understanding of the science. As an example, on 21 January 2021, I wrote to Elizabeth Perelman (PPS to the Chancellor of the Exchequer) to introduce her to Angela McLean as chair of SPI-M [BWA/197 - INQ000196023].

Covid Status Certification App

271. In March and April 2021, I was asked to specifically look into the certification app. This was an app that demonstrated a person's Covid status, that is that a person had been vaccinated, tested or had natural immunity.

272. From around November and throughout this period, I often participated in meetings known as "Covid Taskforce Challenge Sessions", sometimes called "red teaming". They were organised by Marcus Reedman and Graham Harvey [BWA/198 - INQ000196018]. These sessions were designed to be a forum in which ideas or plans could be discussed and in which challenge would be invited from a wide catchment of people outside of the immediate team in charge of an initiative, to give a fresh perspective. For example, there were challenge sessions on topics such as students returning to university, community testing and tiering. I felt these sessions always provided an interesting perspective.

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273. For this reason, I helped organise a challenge session into the certification app which was held in April 2021. The outcome of this session is described in a report [BWA/199- INQ000196045]. At this point, the main feature of the app was a QR code that could be read by a third party to certify that someone had been tested or vaccinated. However, in the challenge session, it was noted that the time taken in scanning the code would be a major problem at the borders and at mass events and that the app would rely on honesty in taking a lateral flow test. This level of security was unnecessary and ultimately a simple green tick was added. In the end this was how the app was developed.

Observations about data and analysis from September 2020

274. Because I was less directly involved in decision-making and had a broader remit to look across departments on numerous topics, in this period I had a chance to form some views about general and persistent problems the Government had with using data and analysis.

Problems with data

275. While Government colleagues continued to make great efforts to use data, it was often presented either as high-level metrics, or it lacked clarity as to what information it did or did not represent.

276. One example of this is in the packs the JBC created that went into Covid Gold and Silver meetings to help with decision making. My email to Kate Josephs (DG Delivery) in early October shows that I worried about how decisions were being made on testing data which is an "increasingly unreliable data source and there is little in the way of discussion about variability due to testing, uncertainty, or noise" [BWA/200 - INQ000195999]. I flagged that we "should be making decisions using a much broader set of data, especially the ONS, and NHS data, and the overall pack needs to be higher quality." I remained concerned about this even in November, and emailed others to set out my worries [BWA/201 - INQ000196019] [BWA/202 - INQ000196020].

277. There were also problems in getting the right data feeds to those who would do the analysis. In early September, SPI-M were still struggling to get hold of the data that they felt they required. I think that this was because it was often unclear who was

responsible or accountable for getting them access to this data [BWA/203 - INQ000195983] [BWA/204 - INQ000196022] [BWA/205 - INQ000196024] [BWA/206 - INQ000196027].

278. The lack of ability to easily access and share data for analysis is a problem generally in Government. As part of the wider work on digital and data, we tried to implement a number of solutions that would specifically enable data sharing more widely, but mainly they failed to have the impact I hoped. For this reason, the integrated data platform that the ONS started building out at the time I was in Government is an important project for Government to solve this problem.

Analysis

279. My opinion on the state of analysis in this period is summed up in a reply I sent to Dominic Cummings, Simon Case, Alex Chisholm and Marc Warner on 23 September [BWA/207 - INQ000195991]. It responded to a letter from the Royal Society, titled "Data and Covid – Letter to Secretaries of Health and Culture/Digital".

280. I wrote:

"The key point of this letter, that we currently do not have the right system (inc. collection, aggregation, reporting and analysis) in place to help decisions is obviously true – as Simon flagged on Friday.

Simply put, we still have very large gaps in our knowledge of Covid.

There are two reasons, the first is that this is an inherently hard and uncertain problem, the second is that we are making mistakes in this area. These mistakes vary from the issues flagged here on data quality, data sharing, and data collection. But there are also other issues around organisational structures, leadership and empowerment.

The problem with the first is that we lack leadership and the people below this are either not capable enough or empowered to drive towards solving these complex problems.

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- *The Covid Taskforce is currently without a DG in data/analysis, and I feel the underlying team has been shown to be weak throughout.*

  - *Note – New DG expression of interest closed on Friday so recruitment is in process.*

- *The Track and Trace leadership team do not even think about maths (as shown by the slides presented at mass testing with no numbers on estimates on accuracy of the tests).*

- *The testing strategy team, supported by a BCG team, are guessing the password on homework from #10 rather than building towards solving a very difficult problem. They are staffed as a Whitehall policy team while trying to solve a very hard technical problem, with the inevitable mediocre results.*

- *The JBC is and continues to be a failure. I think that Clare Edwards is smart, but was given a hospital pass.*

I think that a lot of the mistakes has been driven by a gap in our operational structures, the skills of the leaders in programs, which has created an implicit low prioritisation. This has created a number of problems, and with no clear escalation route they remain unsolved. For example, SPI-M have been flagging data issues for months to T&T.

This has led to a low level in investment (outside of the ONS survey) so we have little to draw on when needed (for example, we cancelled the large scale population survey over the summer). The current culture is for teams to look to answer with available data rather than commissioning data collection/studies activities which means we remain in the same place. I have placed the annex from the Mondays sage note below my signature which talks about some of these problems.

This is a very complex picture of overlapping roles and responsibilities, and there is work ongoing in the background to try and fix this. Therefore, it is important that we either do this centrally with a full awareness of the costs, or do not. Another reporting line/meeting that does not lead to change will make things worse. …"

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281.   The annex embedded in my email is from a SAGE paper and sets out a similar set of problems and worries.

"Knowledge gaps and proposed short, and medium-term research activities

The evidence base into the effectiveness and harms of these interventions is generally weak. However, the urgency of the situation is such that we cannot wait for better quality evidence before making decisions. Nevertheless, NPIs will need to be in place for a considerable period of time and it is important, therefore, that studies are undertaken to evaluate the risks in different settings and the impact of different control policies. Such work will need to be kept continually under review as evidence emerges and the dominant modes of transmission alter. Suggested data analyses and studies include:

• Collection and analysis of contact-tracing data, particularly from backward contact tracing. This requires improved record-linkages, so that routes of transmission can be routinely investigated. At present this is only available for a small minority of cases, so the power of these data to inform decisions is not being maximised. In addition, care needs to be taken when analysing these data as they lack a control group.

• More detailed data collection on the environments and occupations where people are interacting linked to the T&T system.

• Regular (perhaps every 1 or 2 weeks) case control studies should be undertaken in which a large random sample of cases are matched with community controls and their risk factors are examined. Any such study would need to be large enough to examine regional differences, should they emerge (or be able to oversample to look at regional differences) or differences by socio-economic and demographic groups. PHE have recently undertaken a case-control study that meets most of these requirements.

• An alternative would be to follow a large cohort of individuals with regular reporting of risk factors as well as disease status (ideally linked to national T&T system).

• Studies on the impact of harms of interventions.

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• Studies on the effectiveness of interventions in different settings."

282.   I do not remember if there was any reaction to this email. I had already listed what I was going to do about the problems I identified in it, and in some ways the appointment of Rob Harrison was the key action to start fixing those problems. In addition, on the wider issues around data in Government, I believe that I had already talked to Alex Chisholm about this letter and collaborated with Ian Diamond in his response to the letter from the Royal Society. I felt that although the letter's key point was correct, overall we had already identified the issues flagged, and had projects underway to try and fix them, for example the integrated data platform mentioned previously.

283.   I was talking to many people across the analytical landscape to try and understand the cause of the problems. I wrote up my recollection of the conversations I had been having about analysis during Covid and, on 13 October 2020, I shared a draft with David Halpern [BWA/208 - INQ000196001] [BWA/209 - INQ000196003]. I do not have a record of who else I sent this to because this is in the period where some of my emails are missing.

284.   Under the heading "People" I noted that there was a lack of staff in technical areas. Under "Structures" I said that "Process and organisational structures are designed around decision making" and that this meant that questions were asked too late for rigorous analysis. I then said that too much work is on data and not enough on insight, and that we should implement consensus statements for key questions, which could be updated as evidence changed and analysis/data improved.

285.   I further noted that the process through which the Government commissions work from analytical teams is often not the best. Commissions are often simply made to a team because they sit in the particular area. However, to get the best possible answer, Government should bring in different teams across Government who had different insight or data on the question or topic. At the very least, the opaque process of commissioning made it almost impossible for another team in Government to flag that they had relevant data or insight that might add to the evidence that was being presented.

286.   Also attached to my email to David Halpern [BWA/208 - INQ000196001] was a document I wrote about consensus statements and my vision for them, inspired by

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SPI-M's practices [BWA/210 - INQ000196002]. This flags the issue that often the simple metrics that were contained within the Covid Task Force dashboard failed to convey the entire situation. I said that for this reason we should build out a set of short statements that best summarise the current evidence and provide it in a living document for decision makers that reflected the most up to date position. I thought the most important topics for consensus statements were, one, where people were getting infected and two, the state of the economy.

287. Off the back of this, I also worked with the Covid Task Force on how to develop a better understanding of what analytical work was occurring across Government. I think that this resulted in some work between the Covid Task Force and McKinsey to explore this further. My emails in September 2020 show the idea [BWA/211 - INQ000195990] [BWA/212 - INQ000195992]. However, I do not remember the result of this work, and it may have been overtaken by work due to the November lockdown.

Retrospective meeting ('Retro meeting')

288. The very senior decision makers in the civil service were not against the use of data or analysis. Indeed, I would say they were interested in helping to improve in this area. For example, Simon Case hosted a retrospective on analysis to encourage an open conversation on some of the issues and to try to fix them.

289. I helped set up this 'Retro meeting' in collaboration with Simon Case's private office. I wrote a rationale for the meeting, identifying the objective, to have the best possible quality evidence before decision makers, as well as the challenges, particularly that stakeholders could not force changes throughout the system of Government. I proposed, therefore, a retrospective meeting where we could look back at the challenges we faced in the last 12 months and think how we could improve them [BWA/213 - INQ000196032]. I believe that something like this paper was sent to the attendees [BWA/214 - INQ000196036].

290. On 12 February 2021, an agenda was circulated in advance of the retrospective to be held on 15 February [BWA/215 - INQ000196039] [BWA/216 - INQ000196040]. We invited Patrick Vallance, Chris Whitty, Clare Gardiner, Susan Hopkins, Clare Lombardelli, James Bowler and Ian Diamond. The Chair's Brief for this meeting contains my comments [BWA/217 - INQ000196038].

291. As noted in my comments, the fact that this meeting was necessary is evidence that we lacked the proper structures in place to drive forward a strategic long term analytical plan, that was intimately linked into our wider policy work, but with the proper prioritisation and time scales that enable teams to deliver high quality work.

292. A weakness was that predominantly we were providing data to decision makers rather than insight. Such insight should be provided after having been robustly challenged in an environment that forces disagreements to the forefront. This is important as I believed that there was a feeling that there was a degree of self-censoring within the process of preparing papers for minsters.

293. I also noted "In all my conversations there were worries about the capability of analytical teams, in some areas this was a lack of expertise, but in other areas this was that the teams were too small and were drowning under BAU. This area seems to be especially true of JBC and PHE. Beyond analytical teams, there is a concern that the quantitative ability is not in the room" [BWA/217 - INQ000196038].

294. The second part of the meeting highlighted the most important questions and so that we could begin to push forward a plan on how we can better address these questions.

> "1) **What works?** Which of our NPIs are effective in reducing transmission and to what degree?
>
> 2) Where does **transmission** occur?
>
> 3) What is the **net impact** of the virus and our response to it on all dimensions - health, economic, societal, international? Both in the short and long term?
>
> 4) How are people actually **behaving**, and to what degree do our policy interventions affect this?
>
> 5) How will **vaccination and variants** affect the trajectory of the epidemic in the UK, and the global pandemic?" [BWA/216 - INQ000196040].

295. On 15 February 2021, I wrote a follow up email which documents my thoughts on the Retro meeting [BWA/218 - INQ000196041]. I commented on structures and

governance. I felt the need for a group, which I called, "Covid-A", a senior analytical steering group, to be a point of escalation for issues, set medium to long term priorities and to ensure cross Government conscientiousness in this field. I said that there should be small working groups for each of the vexing questions, and these should have an owner, and a plan to solve it. The actions were recorded on 19 February 2021 [BWA/219 - INQ000196042].

296. I do not think the Retro meeting had quite the energising effect that I had hoped. I do not think that we ever truly solved any of the vexing questions, and I am unsure of the success of Covid-A at the time I left. That said, my impression is that the analytical community became better at working together over time, even if this specific meeting might not have been catalytic.

297. Throughout March, April and May 2021 I continued to be involved in the Covid response, mainly through the challenge sessions, and informal conversations with the private secretaries in Number 10, CDL office and the Covid Task Force. In particular, in this time I was pushing for a proper escalatory plan around variants of concern that considered different scenarios and detailed what our response would be in each case [BWA/220 - INQ000196043].

298. I left Number 10 on 18 May 2021, chosen as it was almost exactly 18 months since I had joined. I left because most of my initial goals had been accomplished; we had managed to bring in good people and set up the system as best we could to give them the chance of success. I felt that my remaining in post would mean I either acted as a friction or a crutch to these people, neither of which I thought would be a good thing.

[F]   CONCLUSIONS AND FURTHER THOUGHTS

299. One mistake made during the pandemic that stands out to me was around the deaths of family members. There had to have been safe ways that the UK could have allowed everyone to properly say goodbye to their loved ones both while they were alive and at funerals.

300. Standing back, in my opinion, based on my wider experience of Government, the response to the Covid-19 crisis reflected the current capacity of the State.

301. Rather than considering Covid-19 as a unique crisis, it is better thought of as an area of Government policy where feedback was significantly faster than usual and the key metrics (unfortunately and sadly) starkly transparent. In essence, if the tape of Covid-19 were to be rerun, the mistakes would be different but the overall level of response would be almost the same.

302. Although the Covid-19 response is likely the high-water mark of the use of science and data in Government, due to initiatives such as SAGE and the ONS infection study, I think Government could and should have done more to base its decisions on rigorous quantitative analysis, as set out throughout my witness statement.

303. I believe the case for the first lockdown was correct. Even if later analysis suggests that the wider economic and health costs were too high, I do not believe that we would have stayed the course. If there came a point when people's loved ones were unable to get into hospital and were left to die at home, inevitably we would have locked down. Changing from a mitigation strategy to suppression midway would have been the worst of both worlds. From early 2020, we should have developed alternative plans (for example lockdowns), after seeing the actions in China or at least after northern Italy.

304. This was also the case for responses later (for example tiering). Throughout the Covid-19 response, not enough resources were devoted to alternative plans and measures that strategically reacted to potential developments in Covid-19. Government's 'just-in-time' policy making exposed the lack of expertise within teams, as the speed meant that it was difficult to pull in the appropriate expertise from outside, and this speed also forced a reliance in decision-making on visualisations of data, rather than rigorous quantitative analysis.

305. For the second and third lockdowns, given the situation in the week preceding each of these events, I think that they were the right decisions at the time the decision had to be made. However, I do believe that we could have done more to prepare for these scenarios. Although these preparations would have been unlikely to remove the need for a lockdown, I think they could have reduced the time under lockdown, or reduced the economic/social harms that were inflicted.

306. From April 2020 Government should have been looking to update the NPIs to maximise their effect on the pandemic and minimise their effect on society.

Government was unable to do this because it lacked critical information, for example where people were getting infected. It is also likely that Government policies were not as flexible when evidence developed as they should have been, for example that Covid-19 was airborne and that, therefore, outdoors and ventilation were key.

307. As the introduction to a document I wrote about consensus statements (mentioned above) says, "The Covid dashboard has been a success at getting data at the table, but it suffers when a simple metric does not suffice to explain the entire situation." [BWA/221 - INQ000196002]. Too often in Covid, decision makers were presented with large packs of data that did not fully describe the situation, rather than short packs of insight that would allow them to best understand the situation and the uncertainty. As Ian Diamond said to me, we need to put insight before data.

308. Almost every analytical team during Covid suffered from not having the capacity needed, and was 'hand to mouth' in supplying the analysis to meet the demands made of them. In particular, the lack of people with software engineering skills meant little automation occurred, which meant that these burdens were continuous on the teams.

309. I felt that the biggest absence throughout the pandemic was the lack of economic modelling in decision making. HMT, who is responsible for economic modelling, has a strong set of policy officials, but when it came to my interactions for all aspects of my work in Government, I found that HMT was severely limited when it came to specialists in science, advanced analytics, technology or data.

310. In the document written at the time [BWA/222 - INQ000196059], I set out my concerns around HMT's capability and capacity and a suggested solution which is that HMT build out a small digital and data team that can focus on bringing in the right data, and also help make HMT a more intelligent customer.

311. Throughout my time in Government, I was concerned about the lack of robust quantitative analysis in decision-making and towards the end of my time at Number 10, I wrote a draft document about my concerns [BWA/223 - INQ000196046]. The idea behind this document was to provoke a discussion rather than being a purely neutral analysis. In particular, it does not include two points which are important to consider.

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312.   The first point is that during Covid, while Government may have had enough capability and capacity across the entire civil service, it could not easily access these resources or move them to the priority problems. This is why one of the projects in the note I wrote, Six Projects to Transform Whitehall [BWA/224 - INQ000196044], presents the idea of building a flexible capacity to surge resources to key areas.

313.   The second point is that, in the document I used the phrase "government analysis acts like a law firm" as a critique [BWA/223 - INQ000196046]. However, Government analysts in the main do play an important role in providing information to ministers and senior officials, for example, on what statistics are sufficiently robust to be used by Parliament and provided to the public. This is somewhat like the way a lawyer advises but does not make the decision themselves.

314.   My main arguments in the paper go to building out a new capability of people in Government whose role is specifically to be involved in the decision-making process, responsible for building in robust quantitative analysis.

315.   Indeed, the role I envisage is one close to that set out in a document I wrote [BWA/225 - INQ000196047]. Here I suggest that rather than the reaction to COVID being more 'grip', it needs to be about building a flexible 'creative' capability that is able to support civil servants to deliver innovative solutions.

316.   However, if I were to actually try and reform the civil service, I would follow the construct laid out in [BWA/226 - INQ000196037]. There are excellent civil servants, who understand the challenges intimately, and we simply need to invest in them, remove blockers while giving them the necessary resources.

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.

Signed: **Personal Data**

Name: Ben Warner

Dated: 8th September 2023