Revised Draft Water Resources Management Plan 2024

Appendix 9A: Sensitivity testing

Portsmouth Water Ltd
PO Box 8
West Street
Havant
Hants
PO9 1LG

August 2023

TABLE OF CONTENTS

1 Introduction 3

2 Stress testing 4

2.1 Stress test 1: Demand management 4

2.1.1 Scenario tested 5

2.1.2 Results of stress test 5

2.1.3 Outcomes and response 5

2.2 Stress test 2: Licence capping under environmental destination 5

2.2.1 Scenario tested 5

2.2.2 Results of stress test 6

2.2.3 Outcomes and response 6

2.3 Stress test 3: Reduced demand reduction from drought interventions 6

2.3.1 Scenario tested 6

2.3.2 Results of stress test 6

2.3.3 Outcomes and response 6

2.4 Stress test 4: Bulk supplies with neighbouring water companies 7

2.4.1 Scenarios tested 7

2.4.2 Results of stress tests 7

2.4.3 Outcomes and response 8

2.5 Stress test 5: Reduced Drought Permit Benefit 8

2.5.1 Scenario tested 8

2.5.2 Results of stress test 8

2.5.3 Outcomes and response 8

2.6 Stress test 6: Bulk supplies to new appointments and variations (NAVs) 8

2.6.1 Scenario tested 9

2.6.2 Results of stress test 9

2.6.3 Outcomes and response 9

2.7 Stress test 7: Exclude Source O Booster Upgrade 9

2.7.1 Scenario tested 10

2.7.2 Results of stress test 10

2.7.3 Outcomes and response 10

3 Informing our final preferred plan 11

Annex A WRSE sensitivity testing: 1 in 500 year level of resilience 12

1 INTRODUCTION

This appendix to Portsmouth Water's revised draft Water Resources Management Plan 2024 (dWRMP24), sets out how we tested the sensitivity of our best value plan against changes to the baseline and option assumptions used, and what insights this provided about the resilience of our best value plan.

After considering potential risks to the plan including population growth, climate change, sustainability changes, resilience, risk profile, and delivery of our preferred programme, we have selected appropriate sensitivity tests to understand, and identify strategic alternative schemes or plans.

The decision-making approach already adopts an adaptive planning approach – solving nine different plausible future scenarios simultaneously relating to the impacts of population growth, climate change and environmental ambitions on availability of sources. Some degree of scenario testing is therefore inherent through that adaptive planning process. This has been described in Sections 2 and 8 of the rdWRMP24 main statutory document.

The **purpose of this appendix is to explain how we stress tested the plan** for a range of other "what if" scenarios, to **ensure it is as robust as possible.** By demonstrating the resilience of our best value plan to a range of sensitivity tests we confirmed the decision that our best value plan is also our preferred plan for rdWRMP24.

As described previously, the investment modelling was carried out at the WRSE regional level. A range of assessments and scenario tests has been used to inform the development of best value plans through the regional planning group. All the contributing water companies have been involved in reviewing and challenging the outputs, and identifying key scenarios for testing, so that, across the region, we can be confident in our plan.

2 STRESS TESTING

We have identified a number of key areas of stress tests relevant to our company plan. These include the following:

- Demand management: achieving lower reductions than forecasted;
- Environmental destination and time limited licences: implementing licence reductions earlier in the planning period;
- Drought demand options: achieving lower demand reductions than forecasted from Non-Essential Use Bans (NEUBs) and Temporary Use Bans (TUBs) during times of drought;
- Bulk supplies with neighbouring water companies: capping exports during non-drought periods;
- Drought Permit supply option benefits: not obtaining the expected yield;
- Bulk supplies to new appointments and variations (NAVs): including an additional volume allowance for these;
- Source O Booster Upgrade: impact of not implementing this option.

These key areas were chosen to test how resilient the best value plan is by assessing how it performs if our planning assumptions turn out to be very different to our expectations. The following sections present an overview of the sensitivity tests.

Further to our sensitivity tests, WRSE also undertook sensitivity testing associated with the timing of the shift from a 1 in 200 to a 1 in 500-year level of resilience. This is not considered further in the sections below, but key information from WRSE has been provided in Annex A.

2.1 Stress test 1: Demand management

The best value planning assumed a "basket" of demand measures, of which some elements may be harder to achieve or less certain than other elements, or the assumed savings may differ over the planning horizon from what was assumed (either providing greater savings than expected or not providing enough, which may present a risk of future deficits). For example:

- **Universal metering and adoption of smart meters:** these options are considered to be reasonably reliable in terms of the savings in demand achieved from metering, based on evidence from a wide variety of companies. However, the level of metering that can be achieved can vary by area according to housing type etc.
- **Leakage reductions of 40% by 2040:** this target is likely to rely to some extent on new innovations that are yet to be developed and it certainly relies upon the availability of new data from smart metering. Achieving lower leakage levels may be more costly than anticipated without technological innovation (e.g. needing to focus more on widespread pipe replacements). Also, in any given planning year, other factors will affect the level of leakage such as the weather (for example, freeze thaw type events)
- **Enhanced water efficiency activity:** this will typically comprise a range of measures such as household audits, provision of water efficient devices and, awareness campaigns. The efficacy of these measures can vary and assumptions around the number of customers that take up these offers can be particularly uncertain.
- **Government policies relating to mandatory water labelling and strengthened water regulation standards** to drive water efficiency in homes: this is a key driver of reductions in customer demand for water, but there is no current legislation for these policies proposed, so the extent to which they will drive demand reduction is still uncertain at present.

For the best value plan for the WRSE regional work our "**high plus" demand management basket** was applied, together with assumed government-led policies. At a regional level several variations of government intervention were considered, with scenario C+ selected. Further information on the government interventions is included within Appendix 7C of our rdWRMP24.

Whilst we think this is an appropriate assumption from a societal and environmental perspective, we need to understand the risks if the assumed assumptions cannot be achieved. **We have therefore stress tested the plan with lower assumed demand management savings from government interventions**.

The purpose of this run was to understand how the plan adapts and what other options are triggered as an alternative if a lower level of government savings are achieved within our High Plus demand scenario.

2.1.1 Scenario tested

This stress test run was set up as follows:

- The model used the "best value plan", with no changes to the seven baseline supply demand balances (SDBs) of the nine branches (i.e. the SDBs that are input to the investment model for solving).
- The model used government led WRSE profile 'H' instead of C+.
- All other options were as in the best value plan.

2.1.2 Results of stress test

Initially the model was unable to solve deficits in our water supply area, which were occurring in the 2040s and beyond. Therefore, manual adjustments to option capacities were required, allowing a solution to be determined:

- The capacity of the Thames to Southern Water Transfer needed to be increased to 200 Ml/d.
- The capacity of the Otterbourne WSW to Source A transfer needed to be increased to 95 Ml/d.

The sensitivity test demonstrates that overall, a reduced demand reduction would likely **increase our reliance upon transfers from neighbouring companies and the development of new or larger capacity strategic regional options elsewhere in the WRSE region to provide new water**.

2.1.3 Outcomes and response

As part of our preparations for WRMP29 and via our WINEP investigations we would be seeking to **complete additional options appraisal to feed into WRMP29 to provide alternative options** if future demand reductions do not arise. We will also continue to review and **liaise with Southern Water** regarding the need for a larger import in preparation for WRMP29.

2.2 Stress test 2: Licence capping under environmental destination

One of the core aims of the adaptive planning approach is to address the impacts of different assumptions relating to environmental destination. Further information on environmental destination profiles in the rdWRMP24 can be found in Appendix 5B.

2.2.1 Scenario tested

This stress test run was set up as follows:

- The model used the "best value plan", with no changes to the seven baseline SDBs of the nine branches (i.e. the SDBs that are input to the investment model for solving).
- It was assumed that the current time limited licence variations are not renewed (which effectively brings forward licence reductions) into 2028-29.
- All options were as in the best value plan.

2.2.2 Results of stress test

Under this scenario, the model instead did the following:

- This scenario solved within the model (i.e. water could be moved around so that the balance of supply and demand was maintained). However, this was only achieved by **decreasing treated water exports to Southern Water** with an equivalent **increased reliance on Southern Water drought permits and orders** to take more raw water from the Rivers Itchen and Arun. We do not believe this is a viable environmental solution.

2.2.3 Outcomes and response

Since the dWRMP24 we have **produced a new appendix (5B)** which details our approach to **investigating and achieving sustainable abstraction** and how we plan to manage risk to avoid any short-term deterioration in environmental status. Please refer to this appendix for further information.

2.3 Stress test 3: Reduced demand reduction from drought interventions

The purpose of this run was to examine whether the plan can solve the deficits with a reduced demand saving from Temporary Use Bans (TUBs) and Non-Essential Use Bans (NEUBs). This is to account for a risk that the benefit may reduce over time as the percentage of customers metered increased.

2.3.1 Scenario tested

This stress test run was set up as follows:

- The model used the "best value plan", with no changes to the seven baseline SDBs of the nine branches (i.e. the SDBs that are input to the investment model for solving).
- The benefit of the options dropped to 50% once the smart metering roll out is complete (post 2035).
- All other options were as in the best value plan.

The calculation for the adjustment factor is as follows:

Factor to apply to option benefit = max (1.0 - 0.5*(year - 2026) / (2035 - 2026), 0.5)

2.3.2 Results of stress test

Under this scenario, the model instead did the following:

- The model run did not solve, although deficits only appeared in the extreme adaptive planning situation 1 towards the end of the plan (beyond 2068 in a 1 in 500-year event).
- Under the preferred and reported pathway (situation 4) the selected supply side investments were brought forward. The Source O Booster Upgrade is first utilised in 2032-33 instead of 2039-40 and the treatment works related investments are brought forward by around two years in the 2040s.

This confirms that our plan is **dependent upon the assumed savings from drought interventions within the best value plan.**

2.3.3 Outcomes and response

As part of our preparations for WRMP29 and via our WINEP investigations we would be seeking to complete **additional optional appraisal** to feed into WRMP29 to provide **alternative**

supply options if future demand reductions do not arise. In particular, schemes to capture and store excess winter flows.

We will also continue to review our assumptions for savings from drought interventions for WRMP29 to ensure they are realistic.

2.4 Stress test 4: Bulk supplies with neighbouring water companies

Currently, we are a **net provider of water to our neighbouring water supply areas, which contributes to greater regional resilience**. The "baseline" assumption is that existing bulk supplies will be maintained until the end of contractual arrangements. Our "baseline" bulk supplies are as follows:

- Up to 15 Ml/d eastwards to Southern Water's SN WRZ (Sussex North)
- Up to 15 Ml/d westwards to Southern Water's HSE WRZ (Hampshire)

Our ability to continue to provide the above bulk supplies, or additional ones, is related to the size of our supply demand balance surplus, which is influenced by the implementation of supply schemes including our Havant Thicket Reservoir (for which we have received panning permission) and demand management schemes, plus the modelled impact of possible sustainability reductions, climate change and population growth.

The following sensitivity analyses was undertaken following Regulator discussions regarding the risk of WFD related water body deterioration linked to our exports to Southern Water. We have explored the impact of restricting the normal year transfer rates for existing bulk supplies to Southern Water to realistic historic levels in the model via sensitivity testing. This is a more realistic representation of the real-world in the model and helps us to demonstrate that planned/existing bulk transfers to Southern Water (including the QRST Group) will not lead to increases in abstraction that could cause deterioration of water bodies under the WFD.

2.4.1 Scenarios tested

This stress tests were set up as follows:

- The models used the "best value plan", with no changes to the seven baseline SDBs of the nine branches (i.e. the SDBs that are input to the investment model for solving).
- Existing 15 Ml/d exports to Southern Water's Sussex North and Hampshire zones were restricted to 2.5 Ml/d in a normal year. Three model runs were completed to test 'alone' and 'in-combination' capping scenarios.

All other options were as in the best value plan.

2.4.2 Results of stress tests

Under these scenarios, the model instead did the following:

- The sensitivity testing indicated that our existing 15 Ml/d export to Southern Water's Sussex North zone in the east can be restricted to 2.5 Ml/d in a normal year without causing deficits (a loss of supply to customers) in the supply demand balance of that zone. This is achieved by Southern Water increasing the output from a water recycling scheme and increasing other bulk imports. The sensitivity test indicates that the risk of deterioration of water bodies under the WFD is low.
- The sensitivity testing indicated that our existing 15 Ml/d export to Southern Water's Hampshire zones in the west can be restricted to 2.5 Ml/d in a normal year scenario in most future years without causing deficits (a loss of supply to customers) in the supply demand balance of that zone. The exception is 2025-26 and 2026-27, where there are 9.1 Ml/d and 9.9 Ml/d deficits, respectively.

- A third sensitivity test was completed where both existing exports were constrained to 2.5 Ml/d in a normal year (an 'in-combination' run). This gave the same results as the 'individual' runs described above, with no deficits in the Sussex North zone, and deficits in the Hampshire zones during 2025-26 and 2026-27.

2.4.3 Outcomes and response

The sensitivity testing indicates **that abstractions and exports will need to be carefully managed** to mitigate the risk of water body deterioration during AMP8. We will work with Southern Water and the Environment Agency to achieve this and will be a parameter we monitor in our monitoring plan (Appendix 10A). We will also report upon the bulk exports annually to regulators via the WRMP Annual Return.

2.5 Stress test 5: Reduced Drought Permit Benefit

Based on consultation feedback on the dWRMP24 we have added a new sensitivity test which assumes a lower benefit from Source S drought permit. This included reducing the benefit to 50% and excluding the option from the model. This scenario was to test the reliance upon the option and the yield assumptions.

2.5.1 Scenario tested

This stress test run was set up as follows:

- The model used the "best value plan", with no changes to the seven baseline SDBs of the nine branches (i.e. the SDBs that are input to the investment model for solving).
- The Source S drought permit benefit was reduced to 50% and also 0% (no benefit).
- All other options were as in the best value plan.

2.5.2 Results of stress test

Under this scenario, the model instead did the following:

- Both runs failed to solve, demonstrating our reliance upon this option at the start of the WRMP24 planning horizon to maintain resilience to extreme drought. A single year (2025-26) with a deficit appeared in both the '50%' benefit and 'exclude' runs, with a magnitude of 1.2 Ml/d and 2.9 Ml/d, respectively.
- In later years the loss of part or all the drought permit is replaced by bringing forward the implementation year of the Source O booster upgrade to release conjunctive use benefits associated with Havant Thicket Reservoir; from 2039-40 to 2032-33.

2.5.3 Outcomes and response

In response to this, we will **reassess the benefits of implementing the Source O booster upgrade in an earlier year** as part of our next WRMP (WRMP 2029). As detailed in Appendix 5B (section 2.3 and 3.3) we will be undertaking further investigation on the yield and potential environmental effects of this option.

2.6 Stress test 6: Bulk supplies to new appointments and variations (NAVs)

Since the dWRMP24 we have reviewed our water balance to include NAVs linked to our supply network. For our base year (2021-22), the volume of water exported to NAVs was 0.57 Ml/d. These NAVs are now classified as exports.

The intention was to include the base year NAVs as a 'baseline export' throughout the planning horizon within our rdWRMP24 tables, with potential future growth in NAVs exports accounted

for by the wider property and population growth projections that influence the 'distribution input' data in our rdWRMP24 tables.

Whilst potential future growth in NAVs is accounted for within our rdWRMP24 tables as 'distribution input', unfortunately it was not possible to include the base year NAVs export within the WRSE best value regional plan prior to it being finalised ('locked down' to allow water companies to progress their rdWRMP24s).

WRSE subsequently attempted to include the base year NAVs exports for Portsmouth Water within a locked down version of the WRSE investment model i.e. where best value plan options and implementation years are fixed. The aim was to allow the base year NAVs export to be satisfied by simply flexing option utilisation within the investment model, and if successful, to adopt that model run for our rdWRMP24. Unfortunately, this led to deficits in the supply demand balance in specific years, caused by the inability of the model to shift the implementation year of our options.

To demonstrate that our rdWRMP24 is resilient to the inclusion of the 0.57 Ml/d base year NAVs export, we have undertaken a sensitivity test that allows the implementation year for our best value plan options to change.

2.6.1 Scenario tested

This stress test run was set up as follows:

- The model used the "best value plan" set-up, with no changes to the seven baseline SDBs of the nine branches (i.e. the SDBs that are input to the investment model for solving).
- The model included the NAV demand of 0.57 Ml/d in the baseline.
- The implementation year of our best value plan options was allowed to flex (in addition to utilisation).

2.6.2 Results of stress test

Under this scenario, the model instead did the following:

- The run selected the 'HT to SRN Source A spur to Reservoir C' 20 Ml/d pipeline instead of the 10 Ml/d' pipeline variation, and it is selected two years earlier in 2045 instead of 2047 (this includes the 10 Ml/d water treatment works element of the option).
- In 2065, the water treatment works element is upgraded by a further 10 Ml/d via the Phase 2 of the option. This is what triggers building a larger 20 Ml/d capacity pipeline.
- The run selected the Source O Booster Upgrade five years earlier in 2033 (instead of 2038), so that once built in 2035, it unlocks the use of the Havant Thicket conjunctive use benefit in 2035 (instead of 2040).

Overall, there are **no significant impacts on the plan**.

2.6.3 Outcomes and response

The stress test demonstrated that overall, there are no significant impacts on the plan**. A key focus for WRMP29 is the timing of the Source O Booster Upgrade**, which may need to be brought forward to 2035 (AMP9, not AMP10 in the BVP).

2.7 Stress test 7: Exclude Source O Booster Upgrade

To help inform our environmental assessment work we have explored a sensitivity test where the Source O booster upgrade option is excluded from the investment model run.

2.7.1 Scenario tested

This stress test run was set up as follows:

- The model used the "best value plan" set-up, with no changes to the seven baseline SDBs of the nine branches (i.e. the SDBs that are input to the investment model for solving).
- The model excluded the Source O Booster Upgrade option.

2.7.2 Results of stress test

Under this scenario, the model instead did the following:

- The model brought forward some of the 2040s treatment works options by one or two years.

Overall, there are **no significant impacts on the plan**.

2.7.3 Outcomes and response

The stress test demonstrated that overall, there are no significant impacts on the plan**.** The results will be considered when reporting on the environmental assessments for the rdWRMP24.

3 INFORMING OUR FINAL PREFERRED PLAN

The key components of our plan are as follows:

- High levels of demand management
- Use of our planned Havant Thicket Reservoir (2031/32)
- Southern Water's use of our Havant Thicket Reservoir with their Hampshire Water Transfer and Water Recycling Project (HWTWRP) to provide significant additional regional benefits.
- Net exporter of water at the start of the planning period, becoming a net importer of water later in the planning period.

From the stress test outputs and analysis we can conclude and infer that our plan can generally be seen to be robust in the face of the uncertainties examined. This is demonstrated by how stable the plan is under different stress tests.

The results indicate that no key alternatives are required in our plan. However, the strategy may be impacted if the Southern Water HWTWRP is not deliverable – an alternative strategic option or options will need to be developed by Southern Water. Our Havant Thicket reservoir is a key part of the Southern Water strategic reuse option and contributes significantly to the resilience of our plan.

Furthermore, the results show that the impact of a reduced water saving from demand management is that we are in a less strong position to support our neighbours and are likely to rely on larger imports from Southern Water. Therefore, we become more reliant on the development of Southern Water and Thames Water strategic resource options.

The outcome of many sensitivity tests demonstrates we will need to consider alternative (earlier) implementation dates of supply schemes, in particular, Source O Booster Upgrade.

The results also indicate that once Southern Water and Thames Water have strategic options in place, we are in a position to reduce or cease our bulk supplies to our neighbours. In addition, we are reliant upon drought permit options but only in the first year of the plan.

Our Monitoring Plan (Appendix 10A) details how we will monitor and track each element of our plan, including demand reductions to highlight if any significant risks are emerging. This would be reported via the WRMP Annual Review.

ANNEX A WRSE SENSITIVITY TESTING: 1 IN 500 YEAR LEVEL OF RESILIENCE

The following text was provided by WRSE to describe sensitivity testing around the timing of the 1 in 500 year level of resilience:

1.1. All water supply systems are designed to deal with a certain level of drought before they have to have recourse to drought measures or in some circumstances refer to more extreme drought restrictions such as rationing water. Since privatisation the level of resilience of the system has on the whole been improving, but more needs to be done and we need to offer a greater level of protection to both the environment, by not using drought permits as frequently, and customers. This means designing the system to be able to cope with more severe droughts in the future than it has seen in the past.

1.2. The industry has worked hard on understanding how future droughts of different severities and durations can impact the water supply systems in the South East and from this work we understand how much of a shortfall in supplies could occur if a more extreme drought were to occur in the region. We have used this knowledge in helping to derive the regional plan.

1.3. In line with Government expectations and guidance we therefore intend to increase resilience of the region's water resources to drought so the need for emergency drought restrictions, such as rota cuts or standpipes, reduces. The Water Resource Planning guidance requires companies, and therefore the region, to move the design of the regional systems to be able to cope with a 1:500 year drought, without the need for water rationing by no later than 2040, unless it can be shown that more cost-effective solutions can be achieved by delaying achieving this standard until 2045 or 2050. This marks a change in the current design standard for the system and planning to a more severe drought typically reduces the availability of water from existing and future sources to a greater or lesser extent.

1.4. The companies used simulation models to determine the deployable output of their systems under different drought events including the 1:500 year drought. This analysis was also used to determine the output from resource options. Based on this information WRSE explored the impacts on the regional plan moving all of the companies to this 1:500 year drought resilience standard at the same time.

1.5. The supply forecast profiles reflected the company's current drought resilience standard, any agreed future improvements (Thames Water moving to a 1:200 year standard by 2032) and then moving to the 1:500year standard by 2040.

1.6. When testing different timings for the resilience standard we moved the 1:500 year standard to a later date of 2045 or 2050 instead of 2040. This wasn't the only changes to the supply forecast as we also had to account for climate change. Therefore, the supply forecast used in the investment model reflect a composite of current resilience standards, climate change impacts; and a step transition to the 1:500 year drought resilience standard.

1.7. At the draft plan stage WRSE tested achieving this level of resilience in 2035; 2040; 2045 and 2050. Meeting the standard earlier requires more infrastructure to be developed in order to meet the shortfall so there are increased pressures on customer bills in the short term. Delaying improving the resilience of the system increases the likelihood of customers and industry being impacted by these severe droughts. At the draft regional plan, we set out that achieving this standard by 2040 in line with government expectations. By achieving this standard by 2040 customers and the environment should see less reliance on drought permits and orders after the first 15 years of the plan. Such that the likelihood of being impacted by certain events reduces as set out in the table below:

Drought intervention	Current	BVP
Temporary use ban (TUB)	99.48%	97.04%
Non-essential use ban (NEUB)	63.58%	48.88%
Environmental drought order / permit	46.68%	18.23%
Extreme drought & drought plan interventions	9.53%	2.96%

1.8. We have updated the analysis we undertook at the draft plan stage, and we still conclude that meeting this standard of resilience by 2040 represents the best timing.

1.9. The updated analysis shows that moving the design standard back to 2045 or 2050 does not delay the need for key strategic schemes to be constructed, it merely delays their full utilisation as a number of these schemes are required to deliver environmental protection. Therefore, the trigger for the infrastructure being developed to is either or both to protect customers and the environment and moving the resilience standard back to 2045 or 2050 does not negate the environmental need.

1.10. The cost of the plans achieving the different levels of resilience are as follows:

LCP situation 4: £19,052m

BVP situation 4: £19,255m

1:500 yr. by 2045 sit 4: £19,322m

1:500 yr. by 2050 sit 5: £19,293m

1.11. It can be seen from the model runs that delaying the resilience standard increases the overall cost of the plan as additional schemes have to be brought online. The differences between situation 4 in the least cost plan and the BVP and the delayed drought resilience plans is GUC and the timing of some schemes. In the LCP GUC is 50 Ml/d but in the BVP and delayed resilience plans GUC is selected at 100 Ml/d across all 9 branches, and this in itself will cause an increase in the costs. The other minor costs differences are due to different timing of schemes which are accelerated by 2 years. The conclusion of this analysis is that achieving the drought resilience by 2040, in line with the WRPG, is more cost effective than delaying achieving this standard.

1.12. To be clear Temporary Use Bans and Non- essential use bans will still be required in the future, but the need for more drought permits to abstract more water from the environment during droughts or water rationing during the next 50 years will be significantly reduced.

1.13. Other aspects of resilience supported by customers and stakeholders have been explored as set out in our resilience framework published in June 2020[1]. This aligns with the National Infrastructure Commission's resilience document – Anticipate, React, Recover published in May 2020[2]. Through our plan we have developed a wider understanding of the vulnerability of water in the region and how a joined-up approach to resilience planning can offer better value for everyone.

[1] https://www.wrse.org.uk/media/pqvnpbpl/wrse-resilience-framework-technical-report-consultation-document.pdf

[2] https://nic.org.uk/app/uploads//Anticipate-React-Recover-28-May-2020.pdf