



Department for  
Science, Innovation  
& Technology



**Met Office**

# Customer Supplier Agreement

**For the provision of the UK Public Weather Service**

## 2024-2029

**Date agreement comes into effect: 1<sup>st</sup> April 2024**

Met Office Ref No: L6999

# SECTION 2: PWS PERFORMANCE MEASURES, DELIVERABLES, SERVICES AND REPORTING FOR 2024-29

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## Foreword

Welcome to the Customer Supplier Agreement 2024-2029. This is the second year that the document has been structured to reflect a rolling 5-year agreement, ensuring that the PWS has the ability to plan for upcoming developments, future capabilities and provide innovation to the market. Horizon scanning is critical to ensure the PWS remains effective and impactful for the UK. The PWSCG remains committed to ensuring that the services provided remain clearly aligned with the Met Office Strategy and provide support across Government, industry and for the general public, gathering the voices of key stakeholders including the Devolved Nations.



Key themes around Stay Safe, Thrive, Authoritative Voice, National Capabilities and International Commitments remain the bedrock around which plans and deliverables are built.

Throughout the past year, the PWSCG have been focussed on ensuring that the Met Office can deliver the new Citizens Engagement Strategy, to increase the reach of its services across the UK, and provide clarity and influence on the UK weather picture. Strong progress has been made in this area, with the Met Office developing new ways of communicating forecast information through its Web, App and social channels, and also through attributed information on 3<sup>rd</sup> party providers. The PWSCG has also continued its focus on accuracy in all its forms – Actual, Comparative and Perceptions.

This forthcoming year we hope to welcome the new supercomputer becoming operational and starting to deliver on some of the improvements in forecasting that it promises. Delays in the programme, largely for external reasons beyond the Met Office's control, have been frustrating but the PWSCG will be monitoring porting, testing and implementation so many of the improvements can be realised as soon as possible. Inevitably some target dates have had to slip in this CSA, but our focus through the next year will be on ensuring capability can be enhanced as quickly as possible, especially in the area of accuracy.

The PWSCG also welcome the Final report into the Economic value of the Met Office which is due shortly. This builds on the 2015 report that identified a 14/1 return on public investment in the Met Office. At a time of spending reviews and a new government this year, this report will provide confidence in the value of the Met Office and the provision of the PWS.

Finally, this year the weather has been challenging, with extremes of heat but also rain and storms over the winter. Ten named storms have impacted the UK between September and January. This has required significant coordination and clarity in communication between the Expert Guidance Unit, Civil Contingencies Teams and local resilience forums to support the UK to stay safe and thrive.

The focus of the Customer Group will be to ensure that the services delivered by the Met Office will continue to enhance the reach and decision making by the public to make the best use of this world leading weather service.

A handwritten signature in blue ink, appearing to read 'Duncan L Potts'.

Duncan L Potts CB

Chair of the Public Weather Service Customer Group

# 1. Introduction

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The UK Government through the Department for Science, Innovation and Technology (DSIT) funds the Met Office to provide a public weather service for all citizens of the United Kingdom. The Public Weather Service (PWS) exists to provide a trustworthy and reliable public forecast for UK citizens, including the provision of a National Severe Weather Warning Service.

As a DSIT Partner Organisation, the Met Office is an Executive Agency of the Department with Trading Fund Status. The Met Office is the delivery body for the PWS with the owning Department, DSIT, setting the organisation's Public Task through the PWS.

To ensure the PWS is delivered in a way that meets the needs of all users of these services, an independently Chaired Public Weather Service Customer Group (PWSCG) provides a crucial role in representing the interests of the wider public sector and government, including the interest of the general public. Further details on the role of the PWSCG can be found [here](#) and in Annex D.

## 1.1. Public Weather Service (PWS) Scope

The PWS must equip the UK public, responder organisations and users of the outputs of the Met Office National Capability with information that enables them to take appropriate decisions and actions to **stay safe and thrive**.

It will provide advice and support learning to enable the effective use of weather, climate, and climate change information.

On behalf of UK citizens, the PWSCG requires the Met Office to provide **trusted, accurate and useful** forecasts.

This includes warnings of severe weather that are trustworthy and useful, delivered in a manner that the public and responder community can take action.

Weather forecasts will cover the whole of the UK, including mountains, island and coastal areas, for all time periods from nowcasting through to the next 3-months. This must help them assess what weather conditions may impact themselves and others, including their personal or business activities.

The products and services are defined by the Customer Supplier Agreement (CSA) and must be delivered to agreed performance standards.

## 1.2. Public Weather Service (PWS) Principles

The following additional principles will guide development and delivery of PWS services:

- **Value for money** – all PWS services, products and the underlying capability should provide value for money to the taxpayer and deliver social and economic benefits to the UK;
- **User insight** – the development of services and products will be based on a sound understanding of user needs, informed by user engagement, user testing and research together with usage statistics and digital channel analytics;
- **Partnerships and collaboration** – requirements will be developed and delivered working with or collaborating with partners where relevant;
- **Consistency** – products and messages across all delivery channels will be as consistent as possible, critical for gaining trust in forecasts;

- **Integrity** – all products will be based on sound scientific principles and provide demonstrable value;
- **Resilience** – operational services will be delivered with a high level of resilience and with appropriate levels of support;
- **Verification** – where possible all forecasts will be verified against observations, surveys and impacts;
- **Compliance** – PWS services and products will comply with all relevant legislation.

### 1.3. What the Public Weather Service is not

The Public Weather Service provides products and services that are within the scope of PWS and follow the principles laid out above. It does not provide **specialist** products and services; specialist forecasts should be paid for under a commercial contract with the Met Office. The final decision for including a service within the PWS CSA rests with the PWSCG after consideration of the PWS scope and principles.

### 1.4. What is National Capability?

National Capability comprises the essential observations, common forecast capabilities and infrastructure that underpin all Met Office weather services for PWS and wider UK Governments (see Annex B).

### 1.5. The Customer Supplier Agreement (CSA)

The CSA is the agreement that is in place between the Secretary of State at the Department for Science, Innovation and Technology (DSIT) and the Met Office to set out the detailed outcomes that the Met Office must deliver as part of the Public Weather Service. The CSA is signed by three parties; the Senior Civil Servant with policy responsibility for the PWS at DSIT on behalf of the Secretary of State, the Chief Executive Officer at the Met Office and the Chair of the Public Weather Service Customer Group.

During the 2023 refresh, which covered the halfway mark of the 2021-2026 agreement, the CSA was adjusted to a rolling 5 year agreement.

This rolling contract enables the CSA to support PWS science and services planning across Spending Review periods and identify horizon scanning opportunities. The CSA will therefore be able to support and guide with alignment to the Met Office Strategy as defined in Section 1.6. Funding of PWS will remain aligned to the Finance statement in Section 1 – page 10.

The CSA describes the full range of expectations of capability and services that the PWSCG require from the Met Office. It outlines what products and services are required and is focussed on outputs and impacts, with a series of associated metrics (performance measures) by which the Met Office will be assessed. Deliverables are also defined detailing PWSCG requirements for pieces of work designed to improve PWS services. The

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*It is recognised that over the timescale of this 5-year rolling agreement, there is potential for some external factors to impact and influence the priorities within the CSA and may impact upon the Met Office's ability to deliver the full ambition described in this Customer Supplier Agreement (CSA). The PWSCG will monitor progress throughout and prioritise delivery as appropriate. These factors include;*

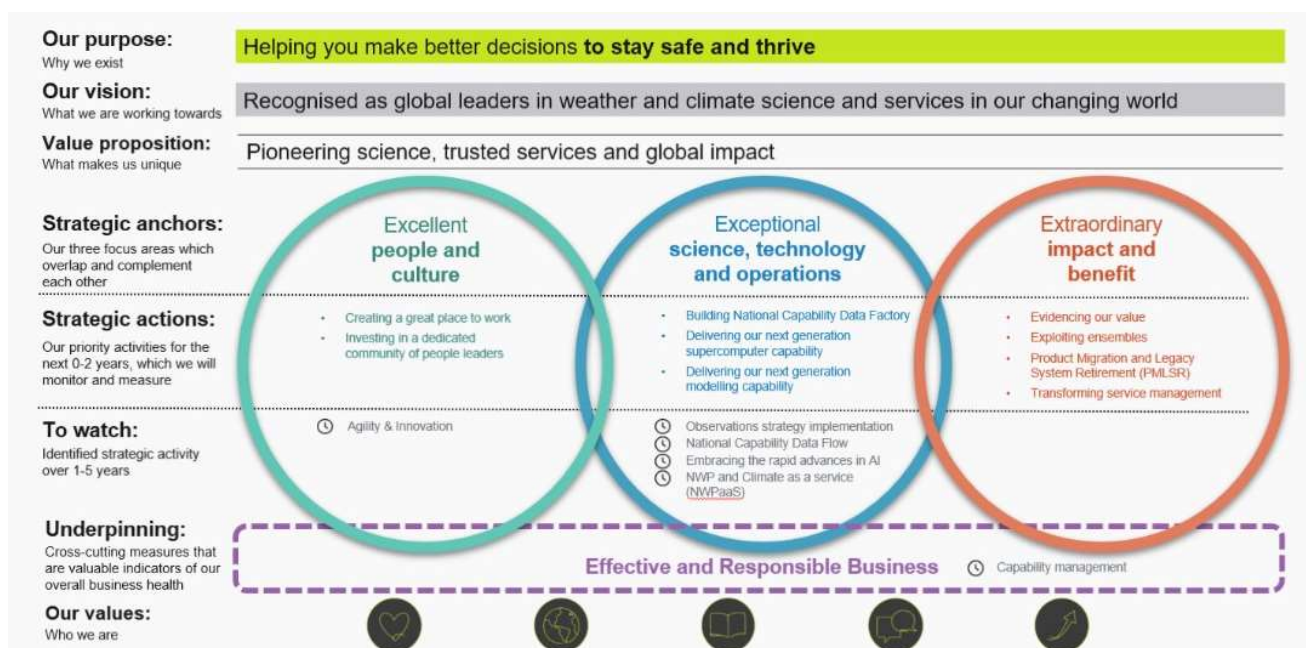
- o Spending Review outcomes*
  - o Implementation of the new supercomputer and adjacent supporting technologies*
-

products and services described in the CSA cover a 5-year period, however the CSA is designed to be flexible in the face of evolving circumstances, for example to digital developments, forecasting capability and financial settlements. Therefore, metrics and deliverables will be assessed annually to ensure that they continue to be appropriate, with new deliverables developed as required.

The CSA is written and owned by the PWSCG, with support from the Met Office. The Met Office will write and maintain a service delivery plan to describe how the performance measures and deliverables will be met.

### 1.6. How does this Customer Supplier Agreement link to the 2024/2025 Met Office strategy

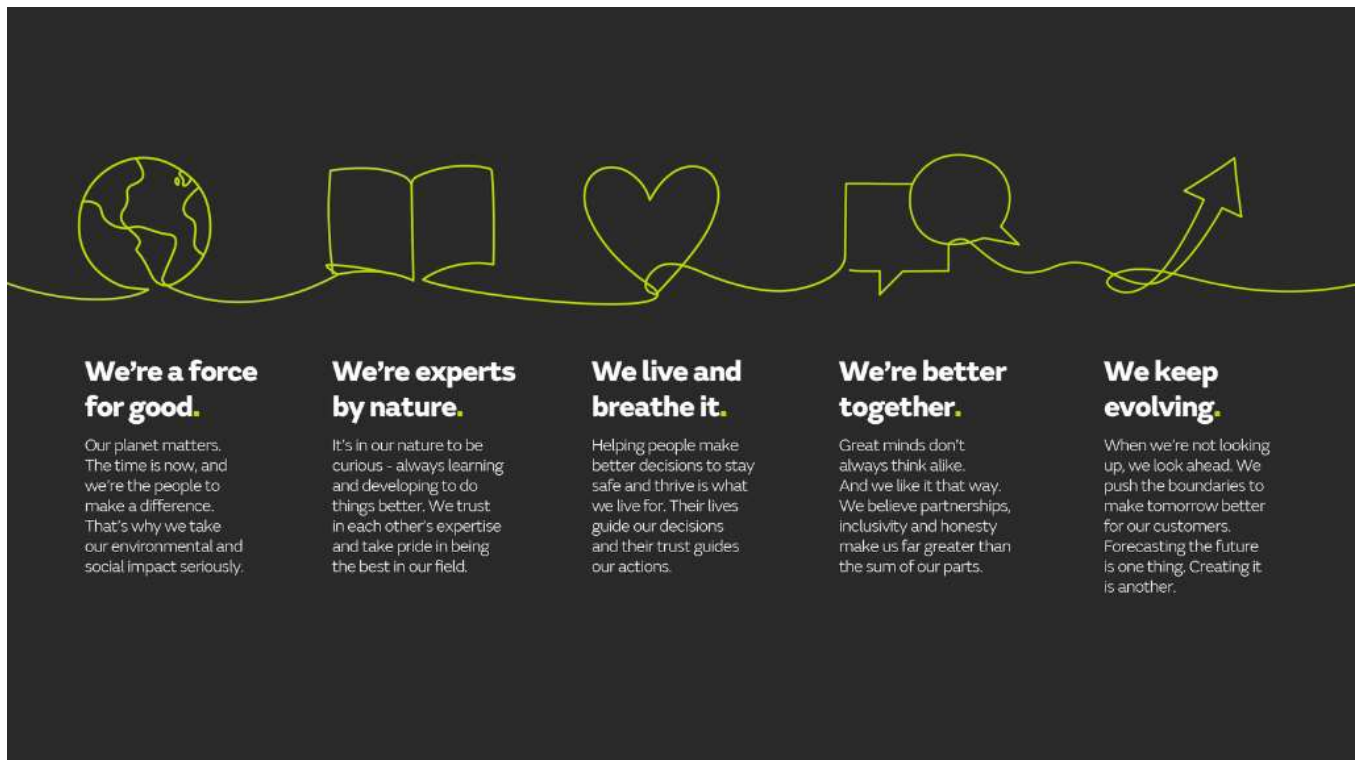
The Met Office purpose is ‘helping you make better decisions to stay safe and thrive’ (Figure 1). The PWSCG CSA has been developed to help ensure the Met Office delivers this strategy.



**Figure 1 – Met Office Strategy**

The Met Office vision is to be ‘recognised as global leaders in weather and climate science and services in a changing world’, always striving to be among the world’s best national weather and climate services. The PWSCG CSA aims to give the Met Office a framework to deliver services that are focussed on what people, organisations and responders want and need, provide good value for money to the UK population, and deliver extraordinary impact and benefit.

The CSA also links to the Met Office values as shown in Figure 2, in the way that PWSCG requires the Met Office to deliver weather forecasts.



**Figure 2 – Met Office Values**

### 1.7. How does the Public Weather Service tie in with broader UK aims?

The PWS provides direct and indirect benefits to the UK that go beyond the well-known forecast and warning services. Investing in a public weather service and all the underpinning UK infrastructure, science and expertise needed to produce and communicate weather forecasts nationally and internationally provides the UK with an enviable scientific meteorological infrastructure. This infrastructure, which includes world leading supercomputing capability, allows the UK to remain at the forefront of weather and climate science. The services that are provided help to reduce the impact that severe weather has on our lives, not only to stay safe but to mitigate against disruption that would otherwise hit the nation's productivity.

The PWS supports the Met Office to work closely across the UK's 4 Nations, ensuring that the service captures an alignment in needs, ideas and recommendations to drive improvements, ensuring the UK can use weather information to stay safe and thrive.

The PWS supports jobs in the Science, technology, engineering, and mathematics (STEM) sector both in regions of the UK where these opportunities are less prevalent such as the South-West but also in many other regions with a dispersed workforce across the UK, including operational capability in Aberdeen.

The underpinning national capability that the PWS pays for supports the Hadley Centre for Climate Change to carry out its world leading science and research which is key to putting the UK on a path to Net Zero by 2050.

The Met Office plays a pivotal role in providing crucial advice and support to when it comes to saving lives, protecting property and the economy during times of severe weather. As a Category 2 Responder under the Civil Contingencies Act the Met Office has responsibilities to support the resilience community. It is classified as a Lead Government Department for identification and assessment of severe weather and a number of

other natural hazards and plays a vital role in government risk assessment at both national and local level, including as a risk owner of several National Security Risk Assessment risks.

Weather and climate advice is becoming increasingly important to national resilience particularly given the increasing frequency and severity of extreme weather. This change in status is an important acknowledgement of the UK's National Weather Service, working in partnership with government and the UK resilience community in the planning and response to emergencies and incidents across the country.

A dedicated team of Civil Contingency Advisors already work closely with Local Resilience Forums and emergency responders across the UK, and this change will allow them to work with in a more consistent and structured way, not only as emergencies unfold but also during emergency planning and multi-agency training exercises helping to highlight potential risks.

The types of incidents that the Met Office is commonly involved in supporting and planning for include impacts from severe storms, periods of extreme heat or cold, plume predictions (such as fires and chemical incidents), events where weather could have a significant impact, as well as offering support to the agencies responsible for forecasting and responding to flooding.

Met Office expertise was recognised during Storm Babet in October 2023, which brought high levels of rainfall from the east – impacting communities not used to these levels of precipitation across England and Scotland. Teams across the Met Office played a pivotal role in the run up to and during the event. Support through the Government, Devolved Administrations, Scottish Environment Protection Agency (SEPA), Defra, local authorities', and emergency responders with briefings and guidance showing how in times of exceptional weather, Met Office values come into their own. The impact of the Citizens Engagement Strategy was exploited, with over 20,000 media mentions of the Met Office across print, broadcast and online during the week, 10 million impressions on Twitter, and 5,000 new followers – enhancing reach and action taken during the event.

PWS funding enables the Met Office to represent UK national interests within several important international organisations. The UK leverages influence on the back of this expertise and reputation forged over many years as a leading player in the field of meteorology. This gives the UK a strong voice in organisations such as EUMETSAT, ensuring the financial contribution from the UK delivers value for money for UK taxpayers. The PWS provides the means for the Met Office to enhance the UK's reputation overseas both amongst its allies but also to develop relationships that are of strategic benefit of the nation. Maintaining diplomatic relations within organisations such as the World Meteorological Organization (WMO), all play their part in ensuring the UK can use its 'soft power' influence to achieve consensus to the benefit of national interest. The PWSCG is very pleased to report that Prof. Penny Endersby (Chief Executive of the Met Office) was announced as President of the ECMWF Council – highlighting the strong collaboration and leadership the Met Office has with international partner organisations.

Public Sector Information made available for reuse as part of the Met Office's Public Task helps to stimulate a competitive market for weather products and services. This aligns with wider Government objectives to ensure an innovative sector that supports job creation in the fields of artificial intelligence and geospatial data.

## 1.8. Partnership working

The Met Office should develop services and products, collaborating and working with partners. Where possible it should use groups which are already established such as the Natural Hazards Partnership.



The Natural Hazards Partnership (NHP) is a consortium of 22 public bodies (mainly government departments and agencies, trading funds and public sector research establishments) which aims to build on partners’ existing natural hazard science, expertise and services to deliver fully coordinated impact-based natural hazard advice for civil contingencies and responder communities and governments across the UK. PWS funds the production of the Daily Hazard Assessment which brings together information in an ‘at a glance’ overview of potential natural hazards and health implications that could affect the UK over the next 5 days. It provides a hazards summary to help increase UK’s ability to respond to, and be prepared for multi-hazard events. The Met Office should build upon relationships within NHP where appropriate as it develops services and products within this CSA.

## 2. Summary

### 2.1. Executive summary

This CSA was updated in 2024 to cover a rolling period of 5 years (2024-29), with metrics being assessed each year to ensure that they continue to be appropriate, and new deliverables developed each year. Requirements are based on consultations with customers and research and are outlined in detail in this document which describes what the PWSCG require from the Met Office. Four overarching themes are shown in Figure 3.

In summary, the PWSCG requires the Met Office to improve the accuracy of the warning and forecasts that people see and use, get the information to people when and where they need it and ensure the science and collaborations needed to do this are improved. Met Office products and services should be: **Discoverable Accurate, Consistent, Timely, Useful and Authoritative.**



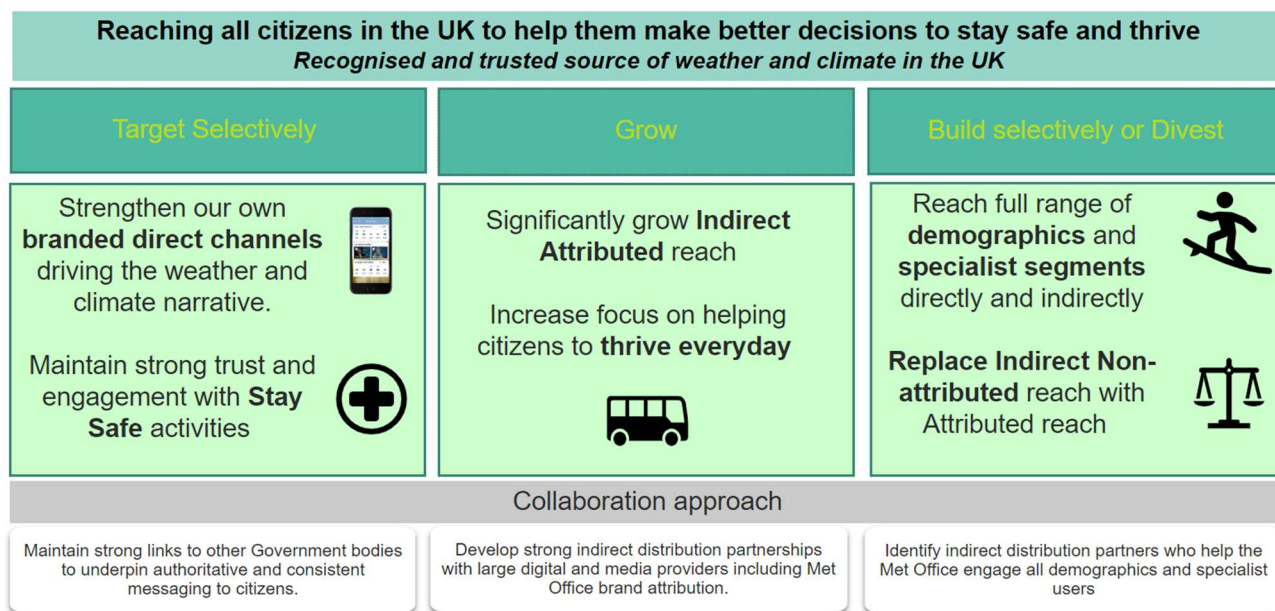
**Figure 3: A summary of the CSA themes which define the requirements of the CSA.**

Over the proceeding years, the Met Office delivered against performance measures and provided regular reports for Theme 4 of the CSA which provides assurance on the national capability and international commitments of the Met Office.

The '22-'23 CSA has not only focused on the performance and deliverables, but also implementation of the agreed Citizens Engagement Strategy. This was defined to ensure that placed on ensuring an effective

approach to reaching all members of the UK population, to deliver trusted weather and climate services. From 2023, the customer group has been provided reports indicating the results of this strategy, and outputs have shown good progress in the Met Offices direct and indirect reach. This new CSA ensures the Met Office continues to build on this progress. A reminder of the Strategy can be found in Figure 4.

## Citizen Engagement Strategy



**Figure 4: Met Office Citizens Engagement Strategy Summary**

Accuracy of the Met Office’s Numerical Weather Prediction is an area the Customer Group is turning its focus.

*Actual Accuracy* (what was forecast, verified with what was observed) drives the users *Perception of Accuracy* (what a user thought was forecast versus what they believe occurred). If the perception of accuracy falls, due to inaccurate forecasts, the users *Trust* decreases, and therefore the willingness to take *Action* on that forecast will reduce. *Action* is the final critical component to ensure that the UK population *Stay Safe and Thrive*. Accuracy is first stepping stone to ensure the Met Office deliver their remit.

The Met Office announced on the 22<sup>nd</sup> of April 2021 that it signed a £1.2bn agreement with Microsoft to deliver a world leading supercomputer capability. The new supercomputer is critical to support the PWS developments, including capabilities such as greater model resolution, running models out for further into the future - 14-day outlooks, enhance ensemble modelling and greater climate analysis and prediction.

Due to Semiconductor shortages, and technical challenges of implementing a ground-breaking new supercomputer, the implementation of the Generation 1 supercomputer has been delayed. This has had a knock on impact on the pull through of new science developments and observational assimilation into the NWP. These delays are largely outside of the Met Offices control, and mean that the Met Office need to delay some deliverables and work demands to the changing timetable.

Emphasis for the '24-'29 CSA refresh will use the delay in the supercomputer implementation to allow the Met Office to plan its products, services and science strategy, to ensure the Met Office remains at the forefront of weather and climate services in the future.

Disruptive technologies, including Artificial Intelligence/Machine Learning are developing at a rapid pace, bringing new, innovative ways of developing weather forecasts. The opportunities for AI/ML forecasts may remain reliant on traditional physics-based models, therefore the Met Office is collaborating up with The Alan Turing Institute to work together to review the capability AI models to improve forecast, including for extreme weather events, helping to save lives and protect critical national infrastructure.

The implementation of the Citizens Engagement Strategy has shown developments in the Met Office capabilities to provide weather and climate data through its own channels, and through third parties. This CSA will drive the Met Office to look at its current channels, including the Website and App (iOS and Android), and understand how these platforms can be best utilised to provide the 'front door' for the UK public, responder communities and government organisations to access consistent forecasts and services. The Met Office needs to understand how to best portray the future NWP data delivered by the new supercomputer, to ensure a blend of accessibility and detail for types of user.

## 3. Themes

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The following themes within the CSA are based on the consultations and research, and tie in with the Met Office Purpose.

Performance metrics and deliverables have been developed using evidence and information that has been gathered from surveys and research undertaken by the PWSCG, the Met Office and other independent research organisations. These surveys include the Public Perception Survey, Trust Tracker, Consumer Accuracy Index and ad-hoc warning surveys.

### 3.1 Theme 1: Weather forecasts and warnings when it matters – stay safe:

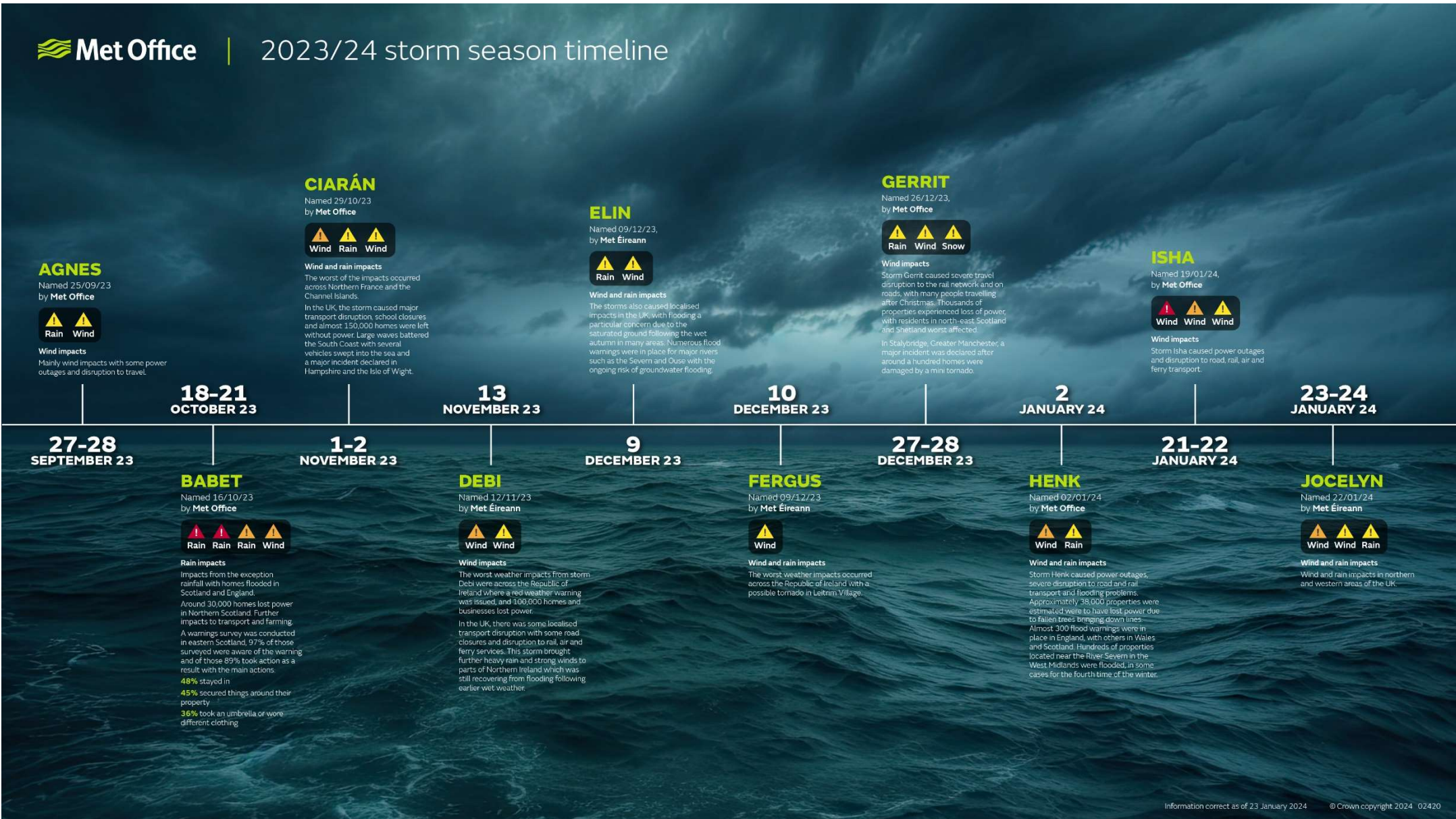
Accurate weather forecasts and warnings that help people make decisions and change their behaviour.

The Met Office should deliver authoritative, trusted, timely and useful forecasts and warnings when it matters. Warnings for high impact weather should be made available to all users – this includes the public, communities, responders, the media, and government through its responsibilities as a CAT2 responder - in a timely way through the National Severe Weather Warnings Service (NSWWS), Civil Contingency Services, and direct and indirect channels. These warnings and their supporting services should provide information and advice to help mitigate the impacts of the weather that may pose an immediate risk to life and property, such as that shown in Figure 5.

To meet this aim, there are a range of improvements that the Met Office should seek to make. These improvements are described in full in the following sections, but include improving the accuracy of warnings, including advice on impacts to help people make decisions and drive behaviour change, as well as maintaining and improving the advisor service and the technology used by responders (currently Hazard Manager (HM)).

Why is this a priority?

Warnings and advice from the Met Office, working with partners where appropriate, will enable the public, responders (for example Category 1 and Category 2 responders, community resilience, voluntary organisations etc) and government (for example the Civil Contingencies Secretariat) to take action to mitigate the impacts of weather events that may cause danger or disruption to people, property or infrastructure.



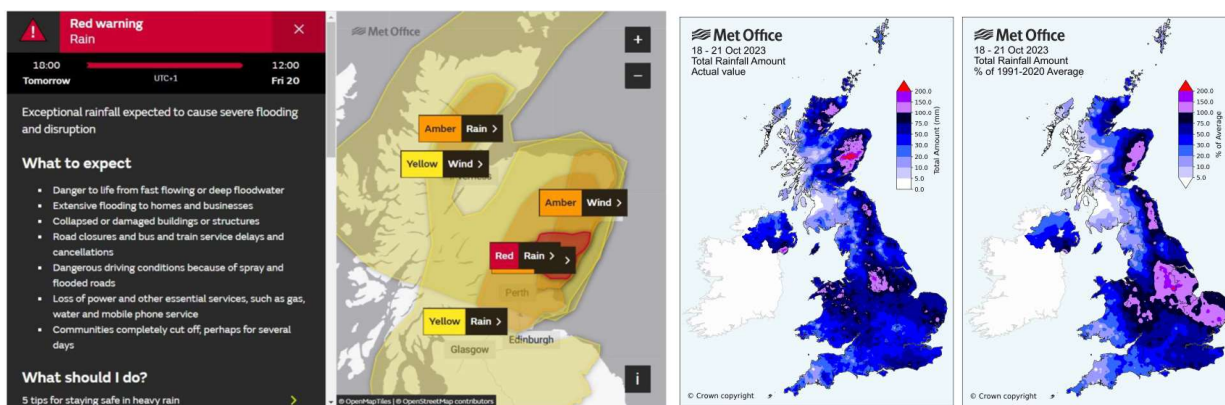
Information correct as of 23 January 2024 © Crown copyright 2024 02420

Figure 5: 2023/2024 storm season up until March 2024 – Autumn 2023 had the most warnings issued on record.

The services and outputs from this theme:

### *The National Severe Weather Warning Service*

The PWS provides the UK's warnings service which issues timely, accurate and authoritative advice to the public, communities, responders, the media, and government about weather which may cause danger or disruption to people, property, or infrastructure. This service should be made up of the National Severe Weather Warning Service (NSWWS) impact-based, colour coded product, supporting communication information, engagement, education, and civil contingencies services. Figure 6 shows an example of output from the National Severe Weather Warning Service.



**Figure 6: The map of UK warnings for Storm Babet on the 19th of October 2023 on the left. Images on the right show the total amount of rainfall and climatological averages. Exceptional rainfall amounts in eastern Scotland, with 150 to 200mm falling in the wettest areas, the county of Angus was the wettest day on record in a series from 1891.**

### *Civil Contingency Services*

The PWS will provide the UK Civil Contingencies Community with relevant, accurate and trusted advice around impactful weather and weather-related natural hazards. A team of Met Office Civil Contingencies Advisors distributed across the UK will integrate with and advise Local Resilience Fora, Civil Contingencies Groups and Partnerships as well as the UK Government and Devolved Administrations. By working closely with responders, the Advisors will interpret the risks of weather in the context of responder decisions, supported by appropriate online information and expert advice or support.

The Advisors will also provide trusted advice to UK Government around weather and natural hazard events affecting UK interests worldwide. The PWS will also provide forecasts and advice to UK government for weather and atmospheric pollution events that pose a risk to UK citizens, property, or infrastructure abroad. The Met Office will work with partner organisations to coordinate and understand impacts of warnings, including the Environment Agency (EA), Scottish Environment Protection Agency (SEPA), Natural Resources Wales (NRW), Northern Ireland Rivers Agency (NIRA), UK Health Security Agency (UKHSA) and their equivalents in the Devolved Administrations and other members of the Natural Hazard Partnership (NHP). The Met Office will continue to own risks on the National Security Risk Assessment – cold and snow, heat and storms (the Met Office also own Space weather but as this is not a PWS service it is not covered in this CSA).

### *Safety forecasts*

The Met Office will provide weather forecasts and warnings in areas of heightened risk, to ensure the safety of users. This will include mountain, and beach forecasts. These forecasts will be readily available, and developed in partnership with other organisations, such as the Maritime and Coastguard Agency recognising

that 'when it matters' may also include what may be thought of as benign weather (e.g. hot, calm weather on the beach) and people can become 'at risk' when in a situation that is unfamiliar to them or when they are unable to take appropriate action.

PWSCG outcomes required in this theme:

**Increase in quality and authority of warnings to the public and responder community.**

**All citizens and the responder community are provided with trusted, accurate and useful (timely, consistent, discoverable, innovative) forecasts, ensuring everyone makes better decisions to stay safe and thrive.**

Weather warnings should:

- Be accurate, timely and consistent with other forecast information both within channels and across different channels:
  - Clear start and end times;
  - As much notice as possible (dependent upon confidence);
  - Include context -compared to recent weather/memorable events/weather in the future;
  - Include clear messages around uncertainty, communicating the true risk level;
  - Include warnings of short notice weather events, pulling through nowcasting capabilities and operational improvements made during the first year of this CSA.
- Give clear and relevant geographical detail:
  - Take a holistic view of warning services; not just warnings but the advice, communications and educational services which support them;
  - Ensure messages are clear and simple even when faced with a complex weather event;
  - Ensure warnings are issued where possible at times when they will get the most impact – e.g. at times when broadcasters can present the information.
- Include context and appropriately tailored advice to drive action and change behaviour:
  - This should be done in collaboration with partners and the media - Key messages with clear advice should be communicated consistently between the Met Office and partner organisations;
  - This advice should be clear about when people should act and what they should do;
  - The true risk level should be clearly communicated;
  - The way confidence and uncertainty of warnings is conveyed should be improved;
  - This should employ social science and marketing and communications expertise to optimise understanding and to drive action.
- Be communicated clearly and appropriately:
  - Be developed, produced, and owned in collaboration or partnership with other organisations and departments, for example through the NHP, to ensure correct messaging, reduce duplication of work whilst allowing all parties to disseminate the same message, reduce confusion and enhance clarity. This includes an attribution framework to enhance Branded attribution, single source attribution, combines source attribution and no attribution options – dependant on the use of content and data.
  - Be tested with users to ensure clear communication;
  - Be accessible via a wide variety of platforms, direct and indirect, improving reach and access;
  - Facilitate sharing of authoritative Met Office warnings by and between partners and third-party platforms and systems following guidelines to ensure that they are used appropriately;
  - Ensure published advice can be integrated into other systems where possible;

- Ensure there is a suitable platform for civil contingency practitioners which meets their needs, life cycling and updating the technology (e.g. Hazard Manager) as appropriate;
- Provide global weather advice and information to Government in order to keep UK citizens safe when abroad.
- Align work within a wider UK vision and framework for risk and resilience:
  - Continue to set the standard for weather warning and civil contingency services worldwide;
  - Investigate ways to tailor information to specific users (whilst not creeping into what are rightly specialist services).

There will be a network of Civil Contingency Advisors, that will:

- Be UK-wide, covering all nations and regions;
- Be resilient, with a team structure that enables them to provide a service to responders when required, with additional support from the wider Met Office to provide cover out of hours;
- Give additional information and advice around warnings, weather related hazards and impacts of weather;
- Provide training to responders on weather, natural hazards and use of Met Office products and services;
- Provide support for risk assessment and resilience planning to responders and government;
- Provide information, support and advice to government as requested, for example to support COBR and the resilience aspect of high-profile events such as COP;
- Work with partners to ensure advice to government and responders is consistent and authoritative.

The Met Office should undertake a strategic review the activities of the civil contingency services to remain innovative and thought leaders in the field:

- Undertake Strategic Review of activities with Civil contingency community;
- Implementing recommendations of the strategic review.

These outcomes will be measured by the Performance Measures, supported by deliverables which can be found in Section 4, Theme 1.

Assurance will be provided through Assurance Reports to the PWS Assurance Group (PAG 1)

The PWSCG sub-group PAG 1 provides additional scrutiny of the Met Office in its delivery of theme 1 safety of life and warning services and will be used to inform the development of reports for the PWSCG.

Many of the performance measures and deliverables are a continuation of work done in the first few years of the CSA.

The Performance Measure reports will provide quantitative and qualitative information detailing the Accuracy of warnings, usefulness and availability of services to stay safe, as well as deliver new services and improvements to the Theme.

The Met Office must assure PAG 1 that progress is being made against the PWSCG requirements included within this theme.

Information within the reports will explain the factors influencing trends in performance and any dips or peaks which occur. Factors which are outside of the influence of the Met Office will be stated. Subject matter experts within the Met Office representing and User Engagement Direct & Indirect Channels, Data Services will present the report to PAG 1 and be available for questions and discussion, to support the PAG in providing their assurance.

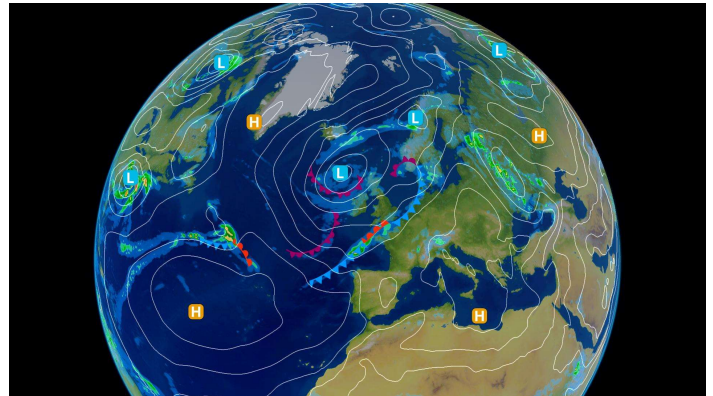


### 3.2 Theme 2: Weather forecasts every day – thrive:

Accurate weather forecasts that people see and use every day.

The Met Office should enable members of the UK public to thrive every day. This means that the Met Office should provide weather information that helps people to make informed everyday decisions that improve their lives and wellbeing, and helps businesses to make decisions that enable them to work more effectively and increase productivity.

To do this, the Met Office should provide authoritative, comprehensive, accurate, consistent, trusted and seamless forecasts for all time periods from hourly to 6 months in the context of a changing climate, and at a quality and accuracy that compares well to other providers. Forecasts will cover the whole of the UK, including mountains, islands, and coastal areas. Figure 7 shows an example of the globe, with frontal analysis produced by the Chief Meteorologists. The most important aspect is that the forecast that people use should align with the weather that they experience. To meet this aim, there are a range of improvements to accuracy that the Met Office should seek to make, described in full in the following sections.



**Figure 7: Frontal Analysis produced by Chief Meteorologists, overlaid onto a global projection.**

Why is this a priority?

Every year the PWSCG ask the Met Office to work with an external agency to survey the public. This survey asks a representative sample of the public across the UK how they access weather and climate information, how important they think weather forecasts are, how satisfied they are with the key elements of weather forecasts and the survey also assess awareness and usage of forecasts. This is known as the Public Perception Survey (PPS) and the results of this survey in 2023 showed that the most important aspects of a weather forecast are:

- Accuracy;
- Local detail;
- Giving useful information of how a forecast is going to change;
- Usefulness;
- Ease of understanding;
- Ease of use;
- Clear presentation;
- Being provided by a trusted supplier.

Accurate weather forecasts will enable the UK public to thrive in their everyday lives. By providing clear weather information that the public trusts, the Met Office is enabling the public to either perform their daily activities without the concern of weather disruption or to take action to mitigate weather impacts. All improvements in actual accuracy will feed through to improvements in forecasts that people use to stay safe when in unfamiliar situations.

Accurate weather forecasts will also enable businesses (for example agriculture, building, leisure, tourism, green power) to make better decisions to drive effectiveness, improve productivity and efficiency. This will therefore improve the economic impact and benefits.

The Met Office should continue to improve the accuracy of weather forecasts throughout the period of the CSA. There are three aspects of accuracy that are important – actual accuracy, perceptions of accuracy and accuracy relative to other weather providers (comparative accuracy).

The services and outputs from this theme:

- Be accurate, timely and consistent with other forecast information both within channels and across different channels:
- Accurate weather forecasts for all time periods from Nowcasts to six months;
- The provision of forecasts relevant to health and wellbeing, including for example UV, pollen, and air quality.

PWSCG outcomes required in this theme:

**Improvements in forecast accuracy available to all UK citizens, to help them make better decisions to stay safe and thrive:**

- The actual accuracy of precipitation forecasts should improve (this includes rain and snow):
  - Will it be wet or dry?
  - When will it start and stop?
  - How hard will it be?
- There should be a focus on improving the actual accuracy of predicted temperature, especially when it is extreme and newsworthy;
- The Met Office should produce weather forecasts which remain world class in terms of actual and comparative accuracy;
- Ensure that the improvements to local forecasts from Enhanced post processed data are pulled through to all PWS services;
- As the new supercomputer comes online, the PWSCG expects the improvements in underpinning modelling and science pull through to drive improvements in forecast accuracy;

Longer range forecasts should be improved:

- Improve the utility and understanding of the three-month forecast for government and responder communities;
- Implement 14-day forecasts on all Met Office channels. Video content was made available in January 2024, and forecast data driving the forecasts on the web and app should be available in 2026;

Improve accuracy of forecasts by pulling through Met Office research and innovation into PWS products and services, including visualisation of ensembles for the public.

These outcomes will be measured by the Performance Measures, supported by deliverables which can be found in Section 4, Theme 2.

Assurance will be provided through Assurance Reports to the PWS Assurance Group (PAG 2)

The PWSCG sub-group PAG 2 provides additional scrutiny of the Met Office in its delivery of theme 2 weather forecasts every day and will be used to inform the development of reports for the PWSCG.

The Performance Measure reports will provide quantitative and qualitative information detailing the accuracy (actual, perceived and comparative) of weather forecast data, public perception and ease of access to make informed decisions to thrive, as well as deliver new services and improvements to the Theme.

The Met Office must assure PAG 2 that progress is being made against the PWSCG requirements included within this theme.

Information within the reports will explain the factors influencing trends in performance and any dips or peaks which occur. Factors which are outside of the influence of the Met Office will be stated. Subject matter experts within the Met Office representing Verification, Science and Data Services will present the report to PAG 2 and be available for questions and discussion, to support the PAG in providing their assurance.

Details of these reports are found in Section 4, Theme 2.

### 3.3 Theme 3: Maintaining an authoritative voice – recognised as global leaders in weather and climate services

Trusted and authoritative weather--- forecasts, accessible when and where people need them.

The other themes of this CSA require the Met Office to produce accurate weather forecasts especially through improvements in the science and technology. However, the Met Office could produce an accurate forecast, but if this is not getting into the hands of the people who need it in a way that is useful and helps them to make decisions then that investment and work is wasted. Recognising the importance of communication and engagement with end users, the Met Office developed the Citizens Engagement Strategy in 2022 with the support of the Customer Group. The purpose of the strategy is to set out and implement the Met Office’s approach to reaching all members of the UK population with trusted weather and climate services. 2023 saw the first year of implementation, with positive progress being made.

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*Met Office products and services should be:*

*Trusted, Accurate and Useful*

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As the UK’s national weather provider, the Met Office should be the primary source of weather information for the UK population. This can be through direct reach, indirect reach or using data which has been made available via other sources (indirect reach). The Met Office should maintain the authoritative voice that establishes it as a trusted and reliable source of weather information, communicating weather forecasts, extreme weather events and climate information in a clear, accessible, consistent, informative, and engaging way.

The Met Office should reach the majority of the UK population across all ages and social demographics. It should demonstrate that it is reaching ‘harder to reach’ audiences and those who are most vulnerable to the impacts of the weather and climate. It should demonstrate the effectiveness of its reach through direct, indirect and indirect non-attributed channels and engage with different audience groups, some of whom may not traditionally access weather information.

The success of Theme 3 is dependent upon the success of Themes 1, 2 and 4 – without the improvements in the science, technology, accuracy and warnings, the Met Office will not be able to maintain its authoritative voice.

Why is this a priority?

Ensuring the Met Office has an authoritative voice and communicates forecasts that are both accurate and useful on a day-to-day basis will ensure that people are aware of the weather and climate, understand how it might impact them and act in order to stay safe and thrive.

The provision of a high-quality authoritative and consistent service will establish trust and brand loyalty between customers and the Met Office, resulting in greater engagement with Met Office Weather Warnings and improving the likelihood that appropriate behaviour change will occur every day and during extreme weather.

Building and maintaining an authoritative brand through Met Office direct channels, such as the Met Office App shown in Figure 8, will encourage third party media channels and organisations to work with it, which increases the reach, use and display of data, forecasts, and warnings.

Whilst there are delays in pull through of the new supercomputer capability, the Met Office must ensure that it can bridge the gap between accuracy and authoritative voice – ensuring the Met Office brand remains world leading in the eyes of the public and responder communities.

As described in Theme 2, the most important aspects of a weather forecast as evidenced by the Public Perception Survey are:

- Accuracy;
- Local detail;
- Giving useful information of how a forecast is going to change;
- Usefulness;
- Ease of understanding;
- Ease of use;
- Clear presentation;
- Being provided by a trusted supplier.

It is these factors that drive engagement between the Met Office and the end user. The Met Office defines Engagement as:

*Working to positively **engage audiences** so that they are **aware, understand and act.***



**Figure 8: The Met Office app.**

This ensures that the information provided is trusted, listened to and acted upon. In the 2023 CSA, the Met Office developed new performance measures to measure engagement through direct and indirect channels, and will be implementing this for monthly reporting through this CSA period.

The services and outputs from this theme:

- Clearly communicated, accessible, consistent, timely and engaging provision of weather forecasts and weather information that reach the UK population and help them to make decisions and change their behaviour (direct channels);
- High quality presentation of weather forecasts, content and data that are shared with, and where possible developed in conjunction with, partner organisations (indirect channels);
- Maintenance of the Met Office Library and archive, which is a legal obligation under the Public Records Acts 1958 <https://www.metoffice.gov.uk/research/library-and-archive/about-us/our-policies>.

PWSCG outcomes required in this theme:

**Increase in thought leadership and innovation applied to high quality, compelling and trusted direct channels.**

- The Met Office should continue to strengthen direct channels which are world class and maintain their **authoritative voice** – demonstrating **thought leadership** and **innovation**. Requirements for these direct channels include:
  - Improve the way weather is communicated, thus improving the perception of accuracy of Met Office forecasts:
    - Improve the communication of how the weather will *feel*;
    - Review how symbols or other ways of representing weather in forecasting are seen and understood and make improvements, for example by including ways to represent how heavy rain will be and to fully tell the weather story.

- Provide forecasts and warnings that enable the general public to understand the weather within the context of a changing climate and within appropriate historical context: – this information should be provided working in conjunction with the Met Office’s Hadley Centre for Climate Change;
- Include comparison to historical events where appropriate;
- Include more information on how seasons will change, trends of severe weather changes, frequency of severe weather events, comparison of predicted future weather to current extreme weather;
- Raising awareness of climate change and how it will change the weather in the future amongst the public both directly and indirectly.
- Give more information to help people make decisions;
- Use clear language to explain probability and uncertainty in all forecasts and warnings;
- Explain how the forecast is going to change;
- Improving direct engagement with ‘harder to reach’ audiences and those who are most vulnerable to the impacts of the weather and climate.

**Increased levels of citizen engagement with attributed Met Office information through direct and indirect channels.**

- The Met Office should also extend the reach of Met Office information and forecasts by:
  - Widening partnership working via indirect channels to ensure authoritative advice provided by the Met Office has extensive reach to drive action and change behaviours;
  - Data should be **easily accessible**, useable, and be **attributed** to the Met Office where possible;
  - Content should be relevant/bespoke for indirect channels - content partnerships and syndication;
  - The use of partner organisations should be capitalised on;
  - Work with partners to increase the authority of our service by providing content relevant to their area of expertise;
  - Work strategically with weather partners who have competitive capability (whether this be technology or data) to enter different markets;
  - Target harder to reach audiences and drive action;
  - Build social media partnerships (for example via ambassadors or influencers);
  - Encouraging wider use of Met Office data, making it quick and easy to download and use by individuals and government, especially when it comes to warnings.

**Increase public trust in the Met Office for weather and climate.**

- The Met Office should continue to raise awareness of the weather and climate change in schools.
- The Met Office should also seek to maintain its authoritative voice via the delivery of a Met Office National Meteorological Library and Archive service that provides weather and climate information to enable the general public and specialist users (i.e. academia) to research and understand the science and history of meteorology and ensures compliance with the Public Records Act 1958.
- The Met Office should ensure that the weather story is the same whatever communication channel is used to view it, and that the information within a channel is also **consistent**:
  - Ensure that communication of forecasts is consistent within all channels - for example, the forecast should match the radar picture, the weather script should match the spot forecast information etc;
  - Show consistent weather forecasts and key messages across channels (website, app etc.).

These outcomes will be measured by the Performance Measures, supported by deliverables which can be found in Section 4, Theme 3.

Assurance will be provided through Assurance Reports to the PWS Assurance Group (PAG 3)

The PWSCG sub-group PAG 3 provides additional scrutiny of the Met Office in its delivery of Theme 3 maintaining an authoritative voice and will be used to inform the development of reports for the PWSCG.

The Media and Reach Group (MARG) will also challenge and steer the Met Office to ensure adequate reach through broadcasters and advise on increasing the reach of PWS outputs.

Performance will be reviewed by PAG 3 through submission of Assurance Reports twice per year in the form of a structured paper. These papers will provide quantitative and qualitative information detailing the reach, impact and benefit to UK citizens delivered through services and other outputs. This report will be in addition to other material provided to PAG 3 covering development deliverables that apply to Theme 3.

The Met Office must assure PAG 3 that progress is being made against the PWSCG requirements included within this theme.

Information within the reports will explain the factors influencing trends in performance and any dips or peaks which occur. Factors which are outside of the influence of the Met Office will be stated.

Subject matter experts within the Met Office representing Direct & Indirect Channels, Data Services and User & Corporate Impacts will present the report to PAG 3 and be available for questions and discussion, to support the PAG in providing their assurance.

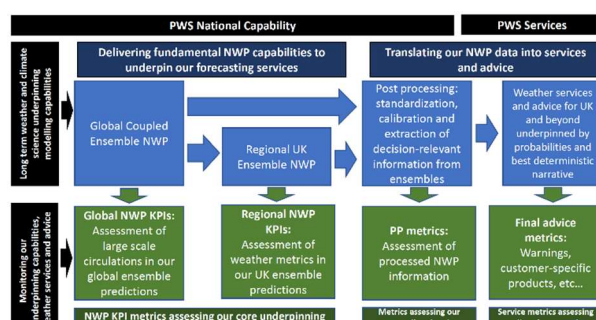
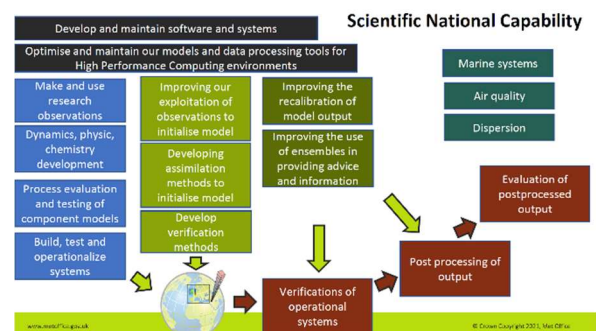
### 3.4 Theme 4: National capability and international commitments - recognised as global leaders in weather and climate science.

Science, observations, technology and international commitments that underpin weather forecasts and warnings.

The National Capability of the Met Office comprises the essential observations, common forecast capabilities, supercomputer, and infrastructure that underpin all Met Office weather services for PWS and the wider UK government (see Figure 9). The Met Office should ensure that the contribution of science, observations and technology continues to improve the capabilities which enable the requirements set out above to be delivered, i.e. to stay safe, thrive and maintain an authoritative voice. This includes continuing to improve the accuracy of forecasts and warnings, and the provision of consistent information for use within services. Top priorities include improving the accuracy and precision of forecasts of exceptionally high and low temperatures, precipitation (intensity, duration and location) and forecasts of severe weather whose impacts may be reflected within a warning. An additional focus on services that support health and well-being to help the public to stay safe and thrive may require the Met Office to develop capabilities that assist in the evaluation or prediction of UV, pollen and air quality.



Figure 9: The National Capability.



The Met Office Science programme forms part of this National Capability by combining scientific expertise with the subject-matter knowledge and technical skill required to develop and deliver operationally robust forecast systems. This starts with underpinning research into numerical and physical processes, including the coordination of, contribution to, and collaboration with targeted observational campaigns. This research feeds into the development of world-class seamless models, which in turn are used to build forecasting and post-processing systems providing output from hourly to centennial timescales. Collaborative development between scientists and scientific software engineers provides the assurance that these systems are scientifically and technical suitable to meet current and potential future requirements.



Observations are a crucial component and form the start of the chain of what is required to produce a weather forecast. Observations are primarily used to create accurate forecasts (via assimilation into the forecast models), verify the accuracy of forecasts & warnings, directly for users to view within products & services (to enable users to 'see' the current weather) and by meteorologists to provide guidance (especially for short term weather, including severe weather) and to improve the accuracy and usefulness of forecasts curated by a human. Observations are provided in accordance with international standards and to common user requirements which are informed by the scientific value of each observation type.

The Met Office should continue to evolve and enhance its observing networks to address identified capability gaps to enable the delivery of the highest quality forecast possible for the available PWS funding.

The National Capability is dependent upon the global exchange of essential data using common standards for use within forecast and observing systems. Collaboration with international organisations to enhance the exchange of essential data, with a particular aim to address the worsening data gaps globally, is an important component of the National Capability.

A key component of the underpinning national capability is access to supercomputing capability. It is only with the right level of investment in supercomputer resource and the means to efficiently manage the large amount of data that effective pull through of science into improved weather and climate services can be achieved.

The outputs of the National Capability required by the PWSCG include UK, some global observations, and seamless UK & global forecasts from hours to 6 months ahead. These outputs are mostly in the form of data and are used within PWS products & services and to provide advice to the public and UK government. These outputs are also provided to a wide range of government departments and for re-use by academia and by the private sector. Use of the National Capability by sector is summarised in Annex B.

The Met Office as the UK's national met service is well respected and highly regarded internationally and plays an important role in deploying a degree of 'soft power' to the overall benefit of the UK. The Met Office should maintain and, where possible, increase influence within key organisations and collaborations to ensure that UK interests are served. When representing the UK on the international stage the Met Office should seek to maximise the impact of any financial contributions made by the UK Government. If circumstances allow, the Met Office should ensure that interventions and decisions support and further widen UK Government aims and objectives that may be closely linked or aligned to those in weather and climate.

On behalf of the UK, the Met Office is an active member within international organisations and has also established itself as a trusted partner with a number of overseas governments.

The key organisations and institutions that Met Office should maintain an active role in and maintain engagement with to the benefit of the PWS are:

- EUMETSAT
  - The European Organisation for the Exploitation of Meteorological Satellites is an intergovernmental organisation based in Darmstadt, Germany. Currently with 30 Member States, it develops and operates 24/7 primary weather satellites for Europe. It also provides its members access to meteorological satellite data from other agencies.
- ECMWF
  - The European Centre for Medium-range Weather Forecasts. An intergovernmental organisation of 23 member states responsible for delivering numerical weather predictions on the medium and extended range timescales for its members.

- WMO
  - The World Meteorological Organisation is the United Nations specialised Agency responsible for international cooperation in weather, climate, and water. Through its programmes it coordinates the exchange of real time meteorological information between its 193 members and facilitates the capacity development of National Meteorological Services (NMSs) in developing countries through its Voluntary Cooperation Programme (VCP).
- EUMETNET
  - European Meteorological Services Network. An economic interest grouping of European Meteorological Services which organises cooperative programmes relating to surface observations and weather forecasting, to ensure cost-efficient, optimised, Europe-wide composite observing system. Based in Brussels, Belgium.
- ECOMET
  - Economic interest grouping of the National Meteorological Services of the European Economic Area. Operates and maintains an administrative framework to increase access to data and products throughout Europe (for ECOMET Members and 3rd parties). Based in Brussels, Belgium.

The PWS Assurance Group PAG 4 will scrutinise this theme and the Met Office should produce a report as outlined below.

Why is this a priority?

The National Capability underpins the PWS and weather services provided to a wide range of government departments as described above, providing accurate and timely observations and forecasts, and the means through which information is disseminated to users.

Without the national capability and international co-operation and commitments there would be no weather forecasts, the UK would not be able to provide the public or responders with information that will help them stay safe and thrive and the Met Office would not be able to fulfil their public task<sup>1</sup>.

The services and outputs from this theme:

- Outputs essential to deliver PWS Services listed within the Annex to this CSA;
- Outputs that provide advice to multiple UK government departments to assist in the mitigation of weather-related risks within the National Risk Register;
- Outputs to Civil Aviation which are regulated by the Civil Aviation Authority (CAA) and which are required to perform to quality standards in accordance with the UK's international obligations, and additional national requirements as applicable;
- Capability essential to underpin outputs to UK government which enable multiple Departments to discharge their responsibilities in line with the UK's National Security Strategy;
- Capabilities that improve the quality of PWS services to meet performance levels required by the PWSCG in this CSA;

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<sup>1</sup> The PWS Services and outputs of the National Capability which are listed within the Service Catalogue of this CSA form the Met Office Public Task.

- Capability that exists as part of the Met Office's recognised role by the World Meteorological Organisation (WMO) as the UK's National Meteorological Service;
- Pull through of new capabilities running on the new supercomputer – in conjunction with partners;

A full list of services can be found in the Annex A at the end of this document.

PWSCG requirements for this theme:

The Met Office should focus on:

- Ensuring national capability is constantly developed and its outputs are pulled through from the science to the wide range of users, focussing improvements on accuracy for forecasts that matter most to the user, with a particular focus on precipitation and extreme temperatures, whilst recognising that improvements in the accuracy of all warnings is required to stay safe.
- Ensuring that forecast capabilities on the supercomputer are developed to deliver the performance gains which are reflected within this Customer Supplier Agreement. A new supercomputer with significantly greater capacity is expected to be implemented during 2024/25, followed by a second capacity upgrade, that will require implementation of a next generation modelling capability, pulling through improvements from the new supercomputer into improved accuracy, products, and services.
- Ensuring that the substantial increase in data volumes from the next supercomputer can be managed efficiently. Service continuity should also be maintained whilst transitioning to the new supercomputer.
- Evolve and life-cycle the UK observational network for the next generation of models, including observations from satellite, radar, surface (land and marine), upper air and from emerging novel sources (including exploiting the internet of things). This should be continuous to deliver the outcomes required through services and to ensure that the next generation models have access to the appropriate quantity and types of observations.
- Engaging with WMO, EUMETSAT, ECMWF, EUMETNET and the wider international community in line with UK Government policy and its priorities, in order to operate as a member of the global weather and climate community.
- Ensuring that absolute and relative verification capabilities are kept up to date and relevant to ensure that the Met Office can measure and report on the accuracy of forecasts as required.

Assurance will be provided through Assurance Reports to the PWS Assurance Group (PAG 4)

The key output of the National Capability is to constantly improve forecasts to stay safe and thrive; the specific service measures are within other themes. For the improvements required in other parts of the CSA to be realised it is critically dependent on the requirements in this theme. Performance will be reviewed through submission of a series of Assurance Reports, in the form of an agreed structured paper detailing development and delivery activities, for discussion with the PWSCG. These reports will include a variety of performance information that apply to the outputs from the National Capability.

The Met Office must therefore assure the PAG that progress is being made within this theme. This should be done through a report to the PAG for their scrutiny at each meeting, outlining any developments or issues which may impact upon the delivery of the Met Office's National Capability. The PWSCG chair, supported by the PWSCG secretariat should also be invited to The Met Office Scientific Advisory Committee (MOSAC) meetings.

	Reporting frequency	Overview of Assurance Reporting
<b>1) Technical Services (Observations)</b> <b>2) Science</b> <b>3) Technology</b>	Annual + Interim	<b>October (Interim)</b> – Provide update on Delivery Metrics and BaU activities primarily, interim review on development activities. <b>March (End of Year)</b> – Full assurance report including final position on BaU metrics. Annual review of development activities. Also provide roadmap development activities for the following year.
<b>4) International Commitments</b>	Annual + Ad-hoc following meetings	<b>Annual Review</b> – (March) Review of previous year’s activities – as well as forward look and plans for following year. <b>Ad-hoc</b> information and papers presented following international conferences and meetings of note.
<b>5) Finance</b>	Annual + Interim	<b>October (Interim)</b> – Review of 6-month position of PWS finances <b>March (End of Year)</b> – Review of Annual PWS Finances

The format of the Assurance Reports varies, and the structure of each report is summarised in the information below.

### Technical Services (Observations)

The Technical Services Assurance reports provided to the PWSCG will detail:

Service Delivery Activities:

- The quality, availability, and timeliness of observations from across the networks;
- The availability and timeliness of essential data from satellites.

Development Activities:

- Updates on developments that will help deliver the outcomes for PWS outlined in Themes 1-3 of the CSA, including enhancements to observations networks that will result in improved and more resilient measurement of high impact, convective scale weather, including UK rainfall and lightning strikes.

End of year report:

- An annual summary report, focussed on service delivery and development activity, and including key achievements, risks and a roadmap for next year.

### Science

The Science Assurance reports provided to the PWSCG for will detail:

Service Delivery Activities:

- Quality (forecast accuracy) of underpinning NWP forecasts;
- Quality of science as reported by Chair of Met Office Service Advisory Committee (MOSAC);
- Relative performance of medium range forecasts provided by ECMWF relative to other global providers.

Development Activities:

- Updates on developments that will help deliver the outcomes for PWS outlined in Themes 1-3 of the CSA, including operational implementation of new post processing capability.

End of year report:

- An annual summary report, focussed on above service delivery and development activity, and including key achievements, risks and a roadmap for next year.

### Operational Technology

The Operational Technology Assurance reports provided to the PWSCG for discussion will detail:

Service Delivery Activities:

- Availability of critical, underpinning IT infrastructure.
- Availability and timeliness of common forecast capabilities.
- Exchange of essential data between Met Office and other National Meteorological Centres.

Development Activities:

- Updates on developments that will help deliver the PWS outcomes outlined in Themes 1-3 of the CSA.
- Provide updates on the progress of porting essential forecast model capabilities to the new supercomputer
- Service continuity maintained and data flows transitioned to technologies adjacent to new supercomputer (2024/25 End of Year Report).
- Benefits of new supercomputer to PWS priorities (annual).
- Update on Met Office Data Roadmap (annual)

End of year report:

- An annual summary report, focussed on above service delivery and development activity, and including key achievements, risks and a roadmap for next year.

### International Commitments

The International Commitments Annual Assurance report provided to the PWSCG for discussion will detail:

Service Delivery Activities:

- Report on WMO, ECMWF, EUMETSAT and EUMETNET Council/Assembly meetings decisions against Top Level UK/Met Office Objectives and impacts to PWS;
- Report from Met Office staff within influential positions at WMO Technical Commissions: **SERCOM** – The Commission for Weather, Climate Water and Related Environmental **SERVICES** and Applications;
- **INFCOM**– The Commission for Observation, **INF**rastructure and Information Systems;
- *Note: These influential positions may change and will be reviewed annually.*
- Delivery of Voluntary Cooperation Programme against plan, budget and assessment of value for money;

Development Activities:

- UK warnings provided via Meteoalarm issued with messaging that is consistent with direct channels.

End of year report:

- An annual summary report, focussed on above service delivery and development activity, including key achievements, risks and a roadmap for next year.

### Finance

The bi-annual Finance assurance reports provided to the PWSCG will detail current in-year PWS finances Reports to include a 5-year forward look, incorporating anticipated changes arising from international subscriptions.

## 4 Summary tables

### Theme 1 performance measures and deliverables

5 Year Outcome	Objectives (in bold) for years 1&2 and years 3-5 and deliverables for years 1&2
<p><b>Increase in quality and authority of warnings to the public and responder community.</b></p> <p>All citizens and the responder community are provided with trusted, accurate and useful (timely, consistent, discoverable, innovative) forecasts, ensuring everyone makes better decisions to stay safe and thrive.</p>	<p><b>Yr. 1&amp;2 Enhance the relevance and useability of warnings for both the public and emergency responders:</b></p> <p><b>D1.3a</b> Provide advice within the NSWWS API and include within direct and indirect channels (<i>May 25</i>)</p> <p><b>D1.3b</b> Improve the simplicity of the visualisation of multiple or complex warnings at a national scale to support use and understanding by the public, broadcasters and national responders, enabling enhanced decision making and action of warnings. (<i>May 25</i>)</p> <p><b>D1.3d</b> Undertake a review of all warning types, including a review of the optimum timing and focus of the warnings, to drive maximum impact. (<i>Mar 25</i>)</p> <p><b>D1.3e</b> Based on an improved understanding of user need and known best practice, develop options for short notice and high impact events. (<i>Mar 25</i>)</p>
	<p><b>Yr. 1&amp;2 Strengthen Met Office partnerships across governments and their agencies to deliver better aligned warnings and comms:</b></p> <p><b>D1.6</b> Develop communications initiatives, alongside partners, to complement our warnings to drive greatest action and largest reach, for example, cold ahead of winter 24/25. (<i>Mar 25</i>)</p>
	<p><b>Yr. 3-5 Based on working in partnership across government and their agencies, develop a refined and common warnings approach that aligns with user feedback (public and emergency responder) and developing Met Office capabilities:</b></p> <p><b>D1.7</b> Identify opportunities with partners to align language, hazard matrices &amp; communications (<i>Oct 25</i>)</p>

5 Year Outcome	Objectives (in bold) for years 1&2 and years 3-5 and deliverables for years 1&2
<p><b>Increase in quality and authority of Met Office channels to the civil contingencies community</b></p> <p>Strengthen channels for the civil contingencies community, demonstrating thought leadership and innovation through high quality, compelling and trusted services.</p>	<p><b>Yr. 1 &amp;2 Continuous development of civil contingency services to ensure our service offering is fit for the future:</b></p> <p><b>D1.8a</b> Agree product life cycling for UK and international civil contingency products, including CHEMET, international services and the current backlog for Hazard Manager. (<i>Nov 24</i>)</p> <p><b>D1.8b</b> Agree service life cycling for UK and international civil contingency advisor and expert weather services. (<i>Nov 24</i>)</p> <p><b>D1.8c</b> Review Met Office provision as a Cat 2 responder into UK resilience community particularly during periods of severe weather, focusing on provision for Cat 2 responders, and organisations who provide ongoing services to the public (e.g. charities). (<i>Dec 24</i>)</p> <p><b>D1.8d</b> Improve and increase delivery of civil contingency services, including NSWWS, through 3rd parties such as ESRI, Meteoalarm, Warnings API users and Resilience Direct, including implementing the attribution policy. (<i>Nov 24</i>)</p>

Performance measure	Metric	Rating Frequency
<p><b>PM1.1</b> Deliver timely and accurate warnings to the public and responder community</p>	<p><b>PM1.1a</b> Accuracy of warnings should be baseline 80%, improving to a baseline of 82% by April 2026, verified by the Met Office and PWSCG (rolling 3-year average). 'Very Poor' guidance should constitute less than 20% warnings.</p>	<p>Monthly subjective verification meeting and RAG rating.</p>
	<p><b>PM1.1b</b> Accuracy of warnings should be stretch targets of 82% through 24/25.</p>	
	<p><b>PMD1.1a</b> Review how timeliness is assessed as part of the subjective verification process, report and implement any changes as part of PM1.1.</p>	<p>Nov-24</p>
<p><b>PM1.2</b> Ensure warnings reach as much of the UK population as possible</p>	<p><b>PM1.2a</b> Awareness of amber and red warnings should be at least 80%, based on ad hoc surveys.</p>	<p>RAG ratings as surveys are available</p>
	<p><b>PM1.2c</b> Snow warnings should be at least 85%.</p>	

Performance measure	Metric	Rating Frequency
<b>PM1.3</b> Increase the usefulness of warnings in order to increase action and drive behaviour change	Through ad hoc public surveys, Amber / Red Warnings verified at the following levels: <b>PM1.3a</b> 'Useful' at least 85% <b>PM1.3c</b> 'Action taken' is at least 80%	RAG ratings as surveys are available
<b>PM1.4</b> Maintain and develop the Met Office Civil Contingency Services	<b>PM1.4a</b> In biennial responder surveys, achieve 85% satisfaction with Civil Contingency Advisor (CCA) team.	Biennial RAG rating, next survey to be undertaken February 2026
<b>PM1.5</b> Ensure availability of products and services	<b>PM1.5b</b> The Hazard Manager IT system should be available to responders for 99.5% of the time when the system is being used.	Monthly RAG rating
	<b>PMD1.5c</b> Ensure agreed continuity plans and Recovery Time Objectives (RTO) are in place for NSWWS, Hazard Manager, mobile apps and website, PWMS and Weather Data Hub.	Plans and RTOs in place by May 2024. Thereafter report by exception.



Theme 2 performance measures, deliverables and reports

5 Year Outcome	Objectives (in bold) for years 1&2 and years 3-5 and deliverables for years 1&2
<p><b>Improvements in forecast accuracy available to all UK citizens, to help them make better decisions to stay safe and thrive.</b></p> <p>All UK citizens are provided with improved accuracy and consistency to help them make better decisions, when the weather really matters to them.</p>	<p><b>Yr.1 &amp; 2 Improve accuracy of forecasts provided through Met Office Direct and Indirect Channels for wet or dry, heavy rain, windy, warm and cold plus other customer measures:</b></p> <p><b>D2.5a</b> Pull-through of 7 day blended probabilistic site-specific forecasts in tables on web and apps. (<b>Oct 24</b>)</p> <p><b>D2.3b</b> Deliver 14-day forecast data to web &amp; app, demonstrating new ways of visualising the data and expose the same data via appropriate data platform for reuse. (<b>Mar 26</b>)</p> <p><b>D2.6a</b> Deterministic blended probabilistic forecast dataset used on web &amp; app (D2.5a) is made available for reuse. (<b>Dec 24</b>)</p>
	<p><b>Yr. 3-5-Improve accuracy of forecasts from pulling through the R&amp;I strategy into PWS products and services:</b></p> <p><b>D2.7</b> Further research into visualisation of ensembles for the public and develop roadmap (<b>Mar 26</b>)</p>

Performance measure	Metric	Rating Frequency
<p><b>PM2.0</b> Improve the accuracy of forecasts, particularly improving the accuracy of extremes and precipitation</p>	<p><b>PMD2.0a</b> Implement new verification scheme for forecasts that are available through web and app as follows:</p> <p>Precipitation: PoP – 50th percentile Underlying gridded from radar measurements Temperature: Via WOW Relative Extremes Civil Aviation Authority specific measures</p>	<p>Reported monthly once scheme is fully developed:</p> <p>Sep-24 2025 (exact date TBC) Apr-24 Sep-24 Jun-24</p>
<p><b>PM2.1</b> Ensure availability of products and services including digital channels, scripts, forecasts,</p>	<p><b>PM2.1a</b> Availability of digital channels - 99.5% <b>PM2.1b</b> Availability of products by the specified publication time.98.5%</p>	<p>Monthly RAG rating</p>

Performance measure	Metric	Rating Frequency
observations, and the Public Weather Media Service (PWMS)	<b>PMD2.1c</b> Review metrics to ensure the most suitable channels are still being monitored.	Sep 24
<b>PM2.2</b> The Met Office should be accurate when compared to other weather providers.	<p><b>PM2.2</b> The Met Office ranks in the Top 3 reported weather providers for accuracy. [ForecastWatch]</p> <p><b>PMD2.2a</b> Continue to review, develop and implement comparative accuracy, including measures for wet, dry and very wet weather symbols.</p>	<p>Quarterly report</p> <p>Mar-26</p>
<b>PM2.7</b> Public perceptions of forecast accuracy (Consumer Accuracy Index)	<p><b>PM2.7</b> Public perceptions of forecast accuracy (direct channels) measured by the Consumer Accuracy Index (CAI):</p> <p><b>PM2.7a</b> Improve composite scores from 72% (March 2025) to 75% by April 2026.</p>	<p>Reported quarterly, as an average at end of year.</p> <p>April 2026</p>
<b>PM2.8</b> Public perceptions of forecast accuracy (Public Perception Survey)	<p><b>PM2.8</b> Public perceptions of forecast accuracy (Met Office), measured via the Public Perception Survey.</p> <p>Weather forecasts should be viewed as:</p> <p><b>PM2.8a</b> 'Fairly accurate' or 'very accurate' by at least 92% of the UK public, based on Met Office specific score.</p>	Reported annually following survey.
<b>R2.1</b> Improved accuracy and consistency	Monitoring of the actual accuracy of the forecast (until the new verification scheme is in place).	Annual report at PAG2 each March.
<b>R2.2</b> Improved accuracy and consistency	Deliver improvements to actual accuracy of forecasts based on the Met Office Roadmap.	Annual report at PAG2 each March.
<b>R2.3</b> Improved accuracy and consistency	Deliver improvements to consistency of forecasts based on the Met Office Roadmap.	Annual report at PAG2 each March.

Theme 3 performance measures, deliverables and reports

5 Year Outcome	Objectives (in bold) for years 1&2 and years 3-5 and deliverables for years 1&2
<p><b>Increase in thought leadership and innovation applied to high quality, compelling and trusted direct channels</b></p> <p>Strengthen Met Office direct channels, through pulling-through new science capabilities and demonstrating new ways to communicate the weather story to the UK.</p>	<p><b>Yr. 1&amp;2 Continuous development of Direct Channels including new features to enable greater use of content and the ability to target segments of users whilst maintaining high usability standards required by public digital services:</b></p> <p><b>D3.4</b> "Telling the weather story" Iterate web &amp; app to improve our story telling ability (<i>Mar 26</i>)</p> <hr/> <p><b>Yr. 3-5 Implementation of the web and app strategy to ensure we remain innovative and thought leaders in this area, with the idea of consolidating the metoffice.gov.uk offering to become the shop door for Met Office services:</b></p> <p><b>D3.5</b> Develop future Web and App strategy, and develop a business case for implementation following agreement with the PWSCG. (<i>Mar 25</i> - regular updates to PWSCG)</p>
<p><b>Increased levels of citizen engagement with attributed Met Office information through indirect channels</b></p> <p>Ensuring Met Office data and information is used by the wider weather market.</p>	<p><b>Yr. 3-5 Working with strategic indirect partners e.g. Google, Amazon, Esri, Microsoft; to provide access to data services and lifecycle of Met Office data access services:</b></p> <p><b>D3.6a</b> Make first tranche of Met Office data available via an open data platform and create plan for future open data provision, in alignment with making data available for use internally. (<i>Sep 24</i>)</p> <p><b>D3.6b</b> Develop future Weather Data Hub product plan to deliver viable product in line with use and revenue. (<i>Mar 25</i>)</p>

5 Year Outcome	Objectives (in bold) for years 1&2 and years 3-5 and deliverables for years 1&2
<p><b>Expand the range of content available to citizens through direct and increasingly indirect channels.</b></p> <p>Ensuring timely, trusted and useful content is available through all the channels people use to access weather information.</p>	<p><b>Yr. 1&amp;2</b></p> <p><b>a. Deliver an enhanced capability to produce and distribute new content, that results in an increase in public engagement with Met Office content on direct and indirect channels.</b></p> <p><b>b. Improve the Met Office's ability to tell the weather story in the content, through new formats and channels.</b></p> <p><b>c. Continue to build literacy to improve the public's understanding of weather extremes.</b></p> <p><b>D3.7a</b> Produce a road map for content that will be delivered on direct and indirect channels, that includes:</p> <p>a. Content produced for specific audiences (to be defined but aligned to CES segments)</p> <p>b. Evergreen content</p> <p>c. Longform content (including review of all PWS written/script content)</p> <p>d. Content being made available for syndication and RSS</p> <p>e. Content for new and emerging channels.</p> <p>Commence delivery of new content roadmap from Oct 2024 (<b>Sep 24</b>)</p> <p><b>D3.7b</b> Expand indirect distribution channels, creating new RSS content feeds for Apple &amp; Google. (<b>Mar 25</b>)</p> <hr/> <p><b>Yr. 3-5 Be the recognised authoritative voice in weather and climate in the UK, by delivering engaging, entertaining, informative and innovative content that increases understanding and reduces misinformation:</b></p> <p><b>D3.8</b> Undertake discovery work to understand options to increase scalability of production and distribution of automated and expert content. (<b>Mar 26</b>)</p>

5 Year Outcome	Objectives (in bold) for years 1&2 and years 3-5 and deliverables for years 1&2
<p><b>Increase public trust in the Met Office for weather and climate.</b></p> <p>Met Office is the recognised engine and trusted source of weather and climate in the UK.</p>	<p><b>Yr. 1&amp;2</b></p> <p><b>a. Manage the reputation of the Met Office so that they continue to be the most trusted weather brand by the UK public, 'owning' the UK weather story and tackling increasing amounts of misinformation.</b></p> <p><b>b. Build public awareness of the depth and breadth of Met Office capability and expertise, the unique role that the Met Office plays in driving the whole UK weather industry and why they are relevant to everyone in the UK.</b></p> <p><b>D3.6d:</b> Raise public awareness of the unique role that the Met Office plays in the UK weather industry, and the range of places that they can access Met Office information. (<b>Nov 24</b>)</p> <p><b>D3.6e</b> Deliver a new campaign to promote WDH, PWDS, Mountain Weather Forecasts and other appropriate PWS services across industry, government and media leading to growth in the user base and therefore public engagement. (<b>Mar 25</b>)</p> <hr/> <p><b>Yr. 3-5</b></p> <p><b>a. Position the Met Office as thought leaders in UK meteorology.</b></p> <p><b>b. Ensure that the Met Office engage, directly or indirectly, with all socio-demographics:</b></p> <p><b>D3.9</b> Deliver communications activities to position the Met Office as thought leaders - focusing on ensembles and severe weather and climate change. (<b>Mar 25</b>)</p>

Performance measure	Metric	Rating Frequency
<p><b>PM3.6</b> Increase awareness of the Met Office as the recognised engine of weather in the UK</p>	<p><b>PM3.6a</b> Increase awareness of the Met Office as the UK's national weather service to 59% by March 25.</p> <p><b>PM3.6b</b> Increase awareness of the breath of services provided by the Met Office to 69% by March 25.</p> <p><b>PM3.6c</b> Maintain trust held by the public in the Met Office. Achieve or exceed 80% 'trust a little' or 'trust a lot' score</p> <p>All based on an average of the 4 Trust Tracker surveys across the year</p>	<p>Reported quarterly, with annual average.</p>

Performance measure	Metric	Rating Frequency
<p><b>PM3.7</b> Increased levels of citizen engagement with Met Office information through indirect channels.</p>	<p><b>PMD3.7a</b> Monitor the new form of measurement for demonstrating engagement via indirect Met Office channels. Implement new targets following sign-off by PWSCG in April 2025.</p>	<p>April 2025 then monthly reporting.</p>
<p><b>PM3.8</b> Strengthen Met Office direct channels, demonstrating thought leadership and innovation through high-quality, compelling and trusted services.</p>	<p><b>PMD3.8d</b> Monitor the new form of measurement for demonstrating engagement via direct Met Office channels. Implement new targets following sign-off by PWSCG in April 2025.</p>	<p>April 2025 then monthly reporting.</p>
<p><b>R3.2</b> Increased levels of citizen engagement with Met Office information through indirect channels.</p>	<p>Significantly grow indirect attributed reach in line with the Citizens Engagement Strategy.</p>	<p>Annual report at PAG3.</p>

## Annex A: Products and Services Catalogue

List of all the products and services that constitute the Met Office Public Task. Some of these products and services are not directly mentioned in the CSA but are included here for completeness.

All products and services are delivered against at least one of the Theme aims and are included only once in the below summary under the Theme they are most aligned to. However, please note that some products and services do contribute to the success of more than one Theme.

### Theme Products and Services

Theme 1 – Weather forecasts and warnings when it matters – Stay Safe	
UK	
Services	Civil Contingency Advisors Hazard Manager NSWWS [National Severe Weather Warning Service] (service) – includes supporting communications, engagement, and education provision. Avalanche support services Gov e-mail Delivery Expert Weather Hub guidance services (UK Operational forecast expertise)
Products	NSWWS (product) Daily Hazard Assessment Short notice warnings CHEMET (Area and Plume forecast for hazardous chemical releases) Three-month Outlook
International	
Services	RSMC (Regional Specialist Met Centre) – allocated by WMO for Atmospheric Transportation Modelling Services CTBTO [Comprehensive Nuclear Test Ban Treaty Organisation] (dispersion modelling) Meteoalarm (European warnings information service) Atmospheric pollution service Advice to Government Hurricane Season Forecasts Crisis Area Modelling International support services (briefing to UK government) Global Guidance Unit Services (GGU) (Global Operational forecast expertise)
Products	Global Long-Range Outlook (Produced by Science) Global daily weather impact assessment Global incident forecasts International atmospheric pollution services Severe weather assessments

Theme 2 – Weather forecasts and warnings everyday - thrive	
Services	Met Office Website Met Office Mobile Apps Met Office Mobile Widget Alexa skill and Flash briefing
Products	7-day site specific and mapped forecasts across the UK Operational Forecasts <ul style="list-style-type: none"> <li>National and Regional video forecasts</li> </ul>

	<ul style="list-style-type: none"> <li>• Text forecasts</li> <li>• Weather forecast charts</li> </ul> <p>Weather related website and App content (text chart and video)  Pollen forecasts (5-day pollen forecast service March-October)  Mountain forecasts  Beach forecasts  UK event forecasts  UK climate information  UV forecasts  Current Observations, including radar, satellite and surface based  Historical Observations</p>
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Theme 3 – Maintaining an authoritative voice – recognised as world leaders in weather and climate services.	
Services	<p>New and Emerging channels  Social Media Channels Management  Weather Desk (Met Office 24hr helpdesk)  National Meteorological Library and Archive (digital and analogue archives)  Public Weather Media Service (PWMS)  Presenter  Visual Cortex licence and support (with 3<sup>rd</sup> party funding)  Design Services  Press Office  Communications and weather campaigns  Syndication services  Marketing and market intelligence  Schools Programme of services</p>
Products	<p>Bespoke Graphics Production  Media Briefings from specialists (media services team and others)  Briefings and scripts  Downloadable weather-related curriculum for 7-14 year olds</p>
Data Services	<p>Weather DataHub (<a href="#">Link here</a>)  Datapoint (deprecated to be decommissioned) (<a href="#">Link here</a>)  Data Provisioning (PSI re-use data catalogue) (<a href="#">Link here</a>)  Weather observations Website (WOW) (<a href="#">Link here</a>)</p>

<p>Theme 4: National capability and international commitments - recognised as global leaders in weather and climate science</p> <p>Reports from Technical Services (Observations), Science, Operational Technology, International Commitments and Finance are provided to the PAG for assurance purposes, giving detail on the performance of service delivery and progress made in development activities which contribute to the lifecycle plans of products and services detailed above under themes 1 to 3.</p> <p>Observations, Science and Technology capabilities listed within tables below undergo regular life-cycling which includes transformation to cloud based technologies. Tables will be refreshed annually and may not precisely reflect the latest configuration of underpinning capabilities.</p>	
Technical Services (Observations)	<p>Global satellite reception  UK radar network  UK land observations</p>



	<p>UK upper air observations  Marine observations (Buoys, Voluntary observing ships, Argo Floats)  Lightning observations  UK AMDAR (Aircraft Meteorological Data Relay)  WOW observations (Weather Observations Website) (Also included above in Theme 3)  European and Global observations – exchange and collaborations  Spectrum and Safeguarding  Observations data quality control  Climate Observations Historical Data</p>
Science	<p><b><u>Forecast Models</u></b>  <i>Atmospheric NWP</i>  Global Model Deterministic  UK Model Deterministic  Local Area Model London  Global Ensemble  UK Ensemble</p> <p><i>Atmospheric – Extended range</i>  Met Office Global Seasonal Forecasting System – Monthly (with 3<sup>rd</sup> party funding)  Met Office Global Seasonal Forecasting System – Seasonal (with 3<sup>rd</sup> party funding)  Met Office Global Seasonal Forecasting System – Hindcast (with 3<sup>rd</sup> party funding)  (Data available for re-use through Copernicus – <a href="#">link here</a>)</p> <p><i>Dispersion Models</i>  NAME (Numerical Atmospheric Dispersion Modelling Environment) (Supports Theme 1  CHEMET, RSMC and CTBTO services)  UK Air Quality Unified Model (UK AQUM)</p> <p><i>Marine Models</i>  Global Wave Model  UK Wave Model  Atlantic Wave Model Ensemble  OSTIA Foundation Sea Surface Temperature and Sea Ice Analysis  Global Forecasting Ocean Assimilation Model (Global FOAM)  North West Shelf Seas Forecasting Ocean Assimilation Model European Shelf Seas  (AMM15) (with 3<sup>rd</sup> party funding)  UK surge model  UK surge ensemble model  Global Ocean (with 3<sup>rd</sup> party funding)</p> <p><i>Science Capability</i>  Atmospheric model evaluation &amp; development  Atmospheric physics &amp; parameterisations  Data Assimilation  Satellite applications  Verification (capabilities and outputs)  Dynamics research  Post processing (Gridded, Site specific, climatological record)  Impact modelling  Observation based research</p>

	<p>Observations systems research  Weather Science IT  Informatics  Atmospheric dispersion  Science partnerships  Ocean forecasting  Climate science IT  Climate monitoring &amp; attribution</p> <p><i>Other Centres - ECMWF</i>  European Centre for Medium Range Weather Forecasting (ECMWF)</p> <ul style="list-style-type: none"> <li>- Global Deterministic Model,</li> <li>- Global Ensemble Model,</li> <li>- Monthly</li> <li>- Seasonal</li> </ul>
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Technology	<p><b>Technology</b>  Supercomputing (HPC Exeter, HPC ECMWF)  Other Compute (Physical, Virtual, Container, Function)  Hosting (On Premise, Public Cloud)  Storage (Object, Block, File System)  Connectivity (LAN, WAN, Internet, Partner)</p> <p><i>Technology Applications</i>  Platform Engineering (Databases, IDAM, Machine Learning etc)  Software Development (Design, Build, Test, Integrate, Deploy)  Application Lifecycle Management (On-Board, Configuration, Customisation, Retirement)  IT Service Management (Design, Transition, Operation, Improvement, Retirement)</p> <p><i>Data</i>  Data Transport (Data Transfer, Data Traffic Management)  Data Management (Common Reference, Common Metadata, Data Catalogue, Common Functions)  Data Platform (Data Services, Data Pipelines, Data Lake, Interactive Data Environments)  Data Supply (Observation, Simulation, Standardise, Post-Processing, Productise, Supply)  <i>Data Science (Data Science Research)</i></p>

International Commitments	<p>World Meteorological Organisation (WMO)  European Centre for Medium-Range weather forecasts (ECMWF)  European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT)  EUMETNET (network of 31 European National Met Services)  WMO Voluntary Co-operation Programme (VCP)  European Economic Interest Group (ECOMET)</p>

## Annex B: Use of the National Capability by sector

The National Capability provided by the Met Office is not just used for PWS products and services. As can be seen in the table below, it is used in a wide range of other areas. Any change or cut to National Capability therefore will have impacts on other products and services provided by the Met Office. This table will be kept under review and will be updated annually.

Attribute	UK Defence	International Defence	Hydrology	Civil Aviation (Regulated)	Marine (Regulated)	Civil Contingencies	UK Media	UK Direct Reach	International Development
<b>Model Types</b>									
Atmospheric (incl. post processing)	Extensive	Extensive	Extensive	Extensive	Extensive	Extensive	Extensive	Extensive	Extensive
Marine	Extensive <sup>4</sup>	Extensive	Extensive	Extensive	Extensive	Occasional	Occasional	Limited	Limited
Dispersion	Occasional	Occasional	Occasional	Occasional	Occasional	Occasional	-	-	-
Air Quality	-	-	Limited	-	-	Occasional	Occasional	Limited	-
<b>Forecast Range<sup>1</sup></b>									
Nowcasting	Extensive	Extensive	Extensive	Extensive	Extensive	Extensive	Extensive	Extensive	-
Short-range	Extensive	Extensive	Extensive	Extensive	Extensive	Extensive	Extensive	Extensive	Limited
Medium-range	Extensive	Extensive	Limited	Occasional	Limited	Extensive	Extensive	Extensive	Limited
Long-range	Limited <sup>5</sup>	-	Occasional	Limited	-	Occasional	Occasional	Limited	Limited
Seasonal	Limited	-	Occasional	Limited	-	Occasional	-	Limited	Limited
<b>Deterministic/Ensemble</b>									
Deterministic	Extensive	Extensive	Extensive	Extensive	Extensive	Extensive	Extensive	Extensive	Extensive
Ensemble	Limited	Limited	Extensive	Extensive	-	Limited	Limited	Limited	Limited
<b>Domain (Model types)</b>									
Global	-	Extensive	-	Extensive	Extensive <sup>3</sup>	Occasional	Extensive	Limited	Extensive
UK	Extensive	Limited	Extensive	Extensive	Extensive	Extensive	Extensive	Extensive	Limited
Regional	Extensive - Custom	Limited	-	Limited	-	-	-	-	Extensive
<b>Guidance</b>									
UK	Extensive	-	Extensive	Extensive	Extensive	Extensive	Extensive	-	Limited
Global	Extensive	-	-	Occasional	-	Occasional	Occasional	-	Extensive
<b>Observations (Direct use)<sup>2</sup></b>									
<b>UK land surface</b>	Extensive	Extensive	Extensive	Extensive	Limited	Extensive	Extensive	Extensive	Occasional
<b>UK radar</b>	Extensive	Extensive	Extensive	Extensive	Limited	Extensive	Extensive	Extensive	Occasional
<b>UK marine</b>	Extensive	Extensive	Extensive	Limited	Extensive	Occasional	Occasional	Limited	-
<b>UK upper air</b>	Extensive	Extensive	-	Extensive	Limited	Occasional	Occasional	-	-
<b>Global</b>	Extensive	Extensive	-	Extensive	Limited	Occasional	Occasional	Limited	Extensive

<b>Required performance level is documented for key outputs?</b>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<b>Dependent custom capabilities used by sector</b>	Yes CAMs Tropical Africa 4km TDAs Visual Weather	Yes CAMs (Limited) TDAs Tropical Africa 4km CDA components Visual Weather	Yes Surge Models	Yes Custom diagnostics	Yes Custom diagnostics	Yes Impact	Yes Visual Cortex	No	Yes Tropical Africa 4km Tropical Cyclone tracking

### National Capability Glossary

Extensive – Capability is used semi-continuously (in time) and comprehensively (in scope)

Limited – Capability is used regularly, though limited in scope.

Occasional – Capability is used irregularly, perhaps responding to specific events (e.g. volcanic eruption), though may be used comprehensively (in scope).

Custom [Capability] – Capability has a clear dependency upon the outputs or capabilities of the National Capability but use by other sectors is either restricted or isn't required due to bespoke characteristics

'-' – Indicates no current usage of capability

<sup>1</sup> Nowcasting: 0 to 6 hrs, short-range: 6hrs to 7 days, medium-range: 7 days to 15 days, long-range: 15 days to 30 days, seasonal: 1 to 6 months

<sup>2</sup> Direct use includes visualisation, within products & services, interpretation & use by meteorologists, use within climate records and verification of outputs. It excludes in-direct use within models via data assimilation

<sup>3</sup> Regulated marine products issued under the SOLAS Convention, cover a domain out to 35 deg. W

<sup>4</sup> Includes use of FOAM, global & regional ocean models and Shelf-Seas Model

<sup>5</sup> Includes use of ECMWF to T+368

## Annex C: Glossary and Terms of Expression

Accuracy	There are three types of accuracy typically referred to by the Met Office. <b>Actual accuracy</b> represents how well the weather forecast at a particular location represents the true weather conditions observed at that location. <b>Perceived accuracy</b> represents how accurate Met Office users/customers believe the forecast(s) to be, based on feedback from market research. <b>Comparative accuracy</b> refers to how accurate the Met Office is compared to other weather providers, and this can be judged via actual accuracy measures or and perceived accuracy measures. However, the definitive comparison is based on actual accuracy
Ad hoc surveys following severe weather	The Met Office commission surveys a number of times each year in consultation with the PWSCG Secretariat after the issuing of an amber or red warning. The surveys aim to monitor the awareness and usefulness of the warnings and establish any actions taken by the public as a result. Up to 6 surveys are carried out per year.
Authoritative voice	The term ' <b>authoritative voice</b> ' is being used here as a general term to describe the Met Office as a trusted, expert service provider that partners choose to use. It should be noted that across the international meteorological community it is used for a more specific purpose, to describe the NMHS responsibilities for delivering non-discretionary services that provide safety of life services – such as NSWWS for example. It's a concept designed to guard against contradictory warnings in serious weather situations. Work is currently underway in the Met Office to better define the different uses of the term authoritative voice and this will be shared with the PWS Customer Group when it becomes available.
BGS	<b>British Geological Survey</b> is a partly publicly funded body which aims to advance geoscientific knowledge of the United Kingdom landmass and its continental shelf by means of systematic surveying, monitoring and research
CAA	<b>Civil Aviation Authority</b> is a DfT agency and the UK's specialist aviation regulator
CAI	<b>Consumer Accuracy Index</b> is an output measure from the Perceptions of Accuracy Omnibus survey which helps the Met Office to understand and monitor the drivers of consumer accuracy ratings amongst weather service users.
CCS	Cabinet Office <b>Civil Contingency Secretariat</b> supports the Prime Minister and Cabinet, and leads the wider government effort, on civil emergency planning and response.
Channels	<b>Direct channel:</b> Met Office provides content or services directly to the public and where the public are interacting directly with the Met Office. <i>E.g. Met Office website, Met Office app, Met Office weather desk, Met Office social media *</i> *Met Office social media really is a 'rented channel', e.g. through Facebook or Twitter, as the Met Office do not own the platform. However, it is included in direct as the public feel that they are interacting personally with the Met Office. <b>Indirect channel:</b> Met Office provides weather services to an intermediary, who then pass this on to the public. It may go through more than one intermediary and the initial content from the Met Office may change as it passes through an intermediary. <i>E.g. Public Weather Media Service and broadcast media, data services, content syndication, Met Office for Schools programme.</i>
CSA	<b>Customer Supplier Agreement</b> – the document which sets out what products and services the Public Weather Service will provide, which form the basis of the Met Office's Public Task. The CSA defines the key performance measures that will ensure PWS is being delivered to the required standard and deliverables that will need to be reached in order to ensure the ongoing development of the PWS.
DHA	<b>Daily Hazards Assessment</b> is a provided by the Natural Hazards Partnership, and is an 'at a glance' overview of potential natural hazards and health implications that could affect the UK over the next 5 days. It provides a hazards summary to help increase UK's ability to respond to and be prepared for multi-hazard events.

D	<b>Deliverables</b> are pieces of work designed to make improvements to PWS services. Deliverables are defined within the CSA and assessed for delivery. Note - Each deliverable has a unique identifier so that they can be tracked through the course of the CSA – therefore may not be seen in the CSA in sequence, however are tracked by the Secretariat.
EA	<b>Environment Agency</b> a Department for Environment, Food & Rural Affairs body which works to create better places for people and wildlife, and support sustainable development, and is responsible for flood warnings in England
ECMWF	<b>European Centre for Medium-range Weather Forecasts</b> a non-EU intergovernmental treaty organisation hosted in the UK. It is both a research institute and a 24/7 operational service producing & disseminating medium range numerical weather predictions to its Member States.
ECOMET	An economic interest grouping of European Meteorological Services which operates and maintains an administrative framework to increase access to data and products throughout Europe (for ECOMET Members and 3rd parties). Based in Brussels, Belgium.
Emergency responder survey	The Emergency responder survey is carried out by the Met Office every 2 years to get feedback from the responder community on Met Office services.
Emergency Responder workshops	The Met Office and PWSCG run workshops with the responder community, when appropriate, to test the effectiveness of the current service offer and to inform where changes and improvements to the service could be made in the future.
Engine	The Met Office should be the <b>Recognised Engine</b> or understood by the public to be the strong influence on the UK weather forecast.
EUMETNET	A non-EU grouping of 31 European National Meteorological Services that provides a framework to organise co-operative programmes between its Members in the various fields of basic meteorological activities
EUMETSAT	The <b>European Organisation for the Exploitation of Meteorological Satellites</b> (EUMETSAT) a non-EU intergovernmental treaty organisation responsible for the launch and operation of European weather satellites and delivering satellite data to National Met Services.
Hadley Centre for Climate Science and Services	The Met Office Hadley Centre — named in honour of George Hadley — is one of the United Kingdom's leading centres for the study of scientific issues associated with climate change. It is part of, and based at the headquarters of the Met Office in Exeter. See also (MO)HCCP.
Heatwave	A <b>heatwave</b> is an extended period of hot weather relative to the expected conditions of the area at that time of year, which may be accompanied by high humidity. A UK heatwave threshold is met when a location records a period of at least three consecutive days with daily maximum temperatures meeting or exceeding the heatwave temperature threshold. The threshold varies by UK county and can be found on the Met Office website <a href="#">here</a> .
Extreme Heat Warning	<b>The Extreme Heat Warning</b> is an impact-based warning designed to highlight the potential impacts of extreme heat to protect lives and property, helping people make better decisions to stay safe and thrive. These are UK wide impact-based warnings, with medium or high likelihood of medium or high-level impacts to transport, energy supply and other areas as well as health (i.e. amber or red warnings), will be distinct from the heatwave definition and heat health alerts described above, and cover impacts to the general population (not just the vulnerable) and to infrastructure.
HPC	<b>High Performance Computer</b> or supercomputer
MARG	<b>Media &amp; Reach Group</b> - a sub-group of PWSCG with the mandate to provide assurance to the Chair of the PWSCG in the following areas. The outputs of the Public Weather Service provide adequate 'reach' to help demonstrate value for money for PWS. There is consistency in the delivered message of those outputs across the various media channels. The Public Weather Media Service (PWMS) is operating in a way that meets the needs of the broadcasters using it.
MCA	<b>Maritime &amp; Coastguard Agency</b> – an Executive Agency of the Department for Transport, which works to prevent the loss of life on the coast and at sea.

MOB	<b>Met Office Board</b> - The main role of the Met Office Board (“the Board”) is to support, constructively challenge and provide leadership to the Executive Board, including the Accounting Officer. It should also ensure that the Met Office is working within a framework of prudent and effective governance arrangements and controls which enable risk to be appropriately assessed and managed.
(MO)HCCP	<b>(Met Office) Hadley Centre Climate Programme</b> - a programme of work which develops core UK climate science infrastructure and serves the needs of the UK Government by providing policy-relevant scientific evidence and advice in the post-Paris context.
MOSAC	The <b>Met Office Scientific Advisory Committee (MOSAC)</b> a committee of external independent experts which reviews the Met Office's science programmes annually and raises any scientific concerns in relation to the ability of the Met Office's research plans to meet its customer's requirements and its own strategic aims.
NHP	<b>Natural Hazard Partnership</b> is a collaboration between UK public bodies to provide authoritative, consistent, and useful, hazard, impact and risk assessment information to responder communities and governments.
National Capability	<b>National Capability</b> comprises the essential observations, <i>common</i> forecast capabilities and infrastructure that underpin all Met Office weather services for PWS and wider UK Government.
NMS	<b>National Met Service</b> an organisation whose mission is to observe, understand and predict the weather and climate of its country and to provide meteorological and related services in support of its national needs and international obligations. It thus involves an essentially five-fold mission of monitoring, research, modelling, service provision and international co-operation.
NRR	The <b>National Risk Register</b> describes the risks of major emergencies that could affect the UK in the next five years and provides resilience advice and guidance. This is the public facing version of the NSRA
NRW	<b>Natural Resources Wales</b> is a Welsh Government sponsored body, which aims to pursue sustainable management of natural resources in Wales and is responsible for flood warnings in Wales.
NSAG	<b>National Security Advisory Group</b>
NSRA	<b>National Security Risk Assessment</b> is designed to compare, assess and prioritise all major disruptive risks to the UK's national security.
NSWWS	<b>National Severe Weather Warning Service</b> is a service provided by the Met Office in the United Kingdom. The purpose of this service is to warn the public and emergency responders of severe or hazardous weather which has the potential to cause danger to life or widespread disruption.
NSWWS survey	An <b>NSWWS survey</b> is an online survey following severe weather events with Emergency Responders. They are commissioned when required.
PAG	<b>Public Weather Service Assurance Group</b> - a sub-group of Public Weather Service Customer Group which provides additional scrutiny of each theme of the CSA and provide assurance of the financial management of PWS funds by the Met Office.
PM	<b>Performance Measures</b> are metrics used to assess PWS performance during the year, as defined by the CSA. Note - Each performance measure has a unique identifier so that they can be tracked through the course of the CSA – therefore may not be seen in the CSA in sequence, however are tracked by the Secretariat.
PMD	<b>Performance Measure Deliverables</b> require the Met Office to complete a body of work to support the Performance Measure. Note - Each performance measure deliverable has a unique identifier so that they can be tracked through the course of the CSA – therefore may not be seen in the CSA in sequence, however are tracked by the Secretariat.
Perceptions of Accuracy Omnibus	The <b>Perceptions of Accuracy Omnibus</b> survey is performed to understand and monitor the drivers of accuracy amongst the Met Office and other weather service providers. Output is a Customer Accuracy Indicator.

PPS	The <b>Public Perception Survey</b> is commissioned annually by the Met Office (usually in the autumn) with the aim of assessing the satisfaction levels of the general public in respect of the weather forecasts generally and the services provided by PWS.
Public Sector Information	<b>Public Sector Information</b> means information produced, held or disseminated by the Met Office within its Public Task and in scope of the Re-Use of Public Sector Information Regulations 2015.
Public Task	<b>Public Task</b> means the delivery of the PWS Outputs, which the Met Office is empowered to deliver pursuant to the Meteorological Office Trading Fund Order 1996 No. 774 (as amended).
PWS	The <b>Public Weather Service</b> for the UK as set out in Section 2.
PWS Outputs	The deliverables for the PWS as set out in the Products and Services Catalogue at Annex A of Section 2.
PWMS	The <b>Public Weather Media Service</b> is a package of free (under licence) UK weather services, for eligible UK Broadcasters who sign up to the service, which is delivered by media-specialist Met Office forecasters. It provides Broadcasters with Met Office public weather service information for the UK (forecasts, weather warnings, observations, guidance, scripts and services), tailored for Broadcast media.
PWSCG	<b>Public Weather Service Customer Group</b> – acts as customer on behalf of the public and public sector users of the Public weather Service. Chair is a Ministerial appointment, membership includes an independent member (receives an honorarium from DSIT) to represent the views of the public, representatives from the emergency response community, the Devolved Administrations and Departmental and Arms Length Body users of the PWS.
Reach	<b>Met Office Reach</b> The number of people who see Met Office information or accesses its products or services via direct or indirect channels. Strongly branded Met Office reach through Met Office owned channels direct to the public. <b>Indirect reach:</b> Branded reach of Met Office forecasts of information achieved via a partner or 3 <sup>rd</sup> party. Information provided through a partner has a limited degree of intervention between the information leaving the Met Office and it arriving with the general public due to an agreement with the partner, and includes branded content. Information provided through a third party could be Met Office attributed and the Met Office has less control of the final message. <b>Indirect non-attributed reach:</b> Reach of Met Office data and presented via a third party, not attributed to or branded Met Office. Data often blended with other types of data.
Share of Claimed Usage	The Met Office's claimed share of usage is a statistic derived from Public Perception Survey responses about where and how often people access weather forecasts, which provides an indication of the most used sources of everyday weather information in the UK.
SEPA	<b>Scottish Environment Protection Agency</b> is Scotland's principal environmental regulator, protecting and improving Scotland's environment and is responsible for flood warnings in Scotland.
Thought Leadership	The Met Office should show that based on its experience and industry perspective, offers unique guidance, inspires innovation and influences other others.
Trust	Trust is a general brand perception measure. <b>Brand trust is defined as the willingness of the average consumer to rely on the ability of the brand to perform its stated function</b> (Journal of Global Strategic Management) The Met Office measures its trust score via its quarterly trust tracker survey via the following question: The Met Office is the UK's national meteorological service. It provides a range of weather and climate services for the public, governments and businesses. To what extent do you trust the Met Office in general?
UKHSA	<b>UK Health Security Agency</b> which exists to protect and improve the nation's health and wellbeing, and reduce health inequalities.
Useful	Useful is a basket term to include <b>timely, consistent, discoverable and innovative.</b>



Weather-Health Alert System	A Weather-Health alert system <sup>2</sup> is run by UKHSA in partnership with the Met Office. The heat-health alert (HHA) operates from 1 June to 30 September and the cold-health alert (CHA) operates from 1 November to 30 March. Both systems are based on the Met Office forecasts and data. Depending on the level of alert, a response will be triggered to communicate the risk to the NHS England, government, and public health system. Advice and information for the public and health and social care professionals, particularly those working with at-risk groups. This includes both general preparation for hot or cold weather and more specific advice when a severe heatwave or cold weather has been forecast
WDH	<b>Weather DataHub</b> service offers access to detailed and customisable weather data. This API data channel will ultimately become the single point of access for all Met Office Public Task weather data, replacing both Met Office DataPoint and Wholesale Data Services.
WMO	<b>World Meteorological Organisation</b> – the specialised agency of the United Nations for meteorology (weather and climate), operational hydrology and related geophysical sciences. It is an intergovernmental organization with a membership of 193 Member States and Territories.

## Annex D: PWS Reporting and Assurance

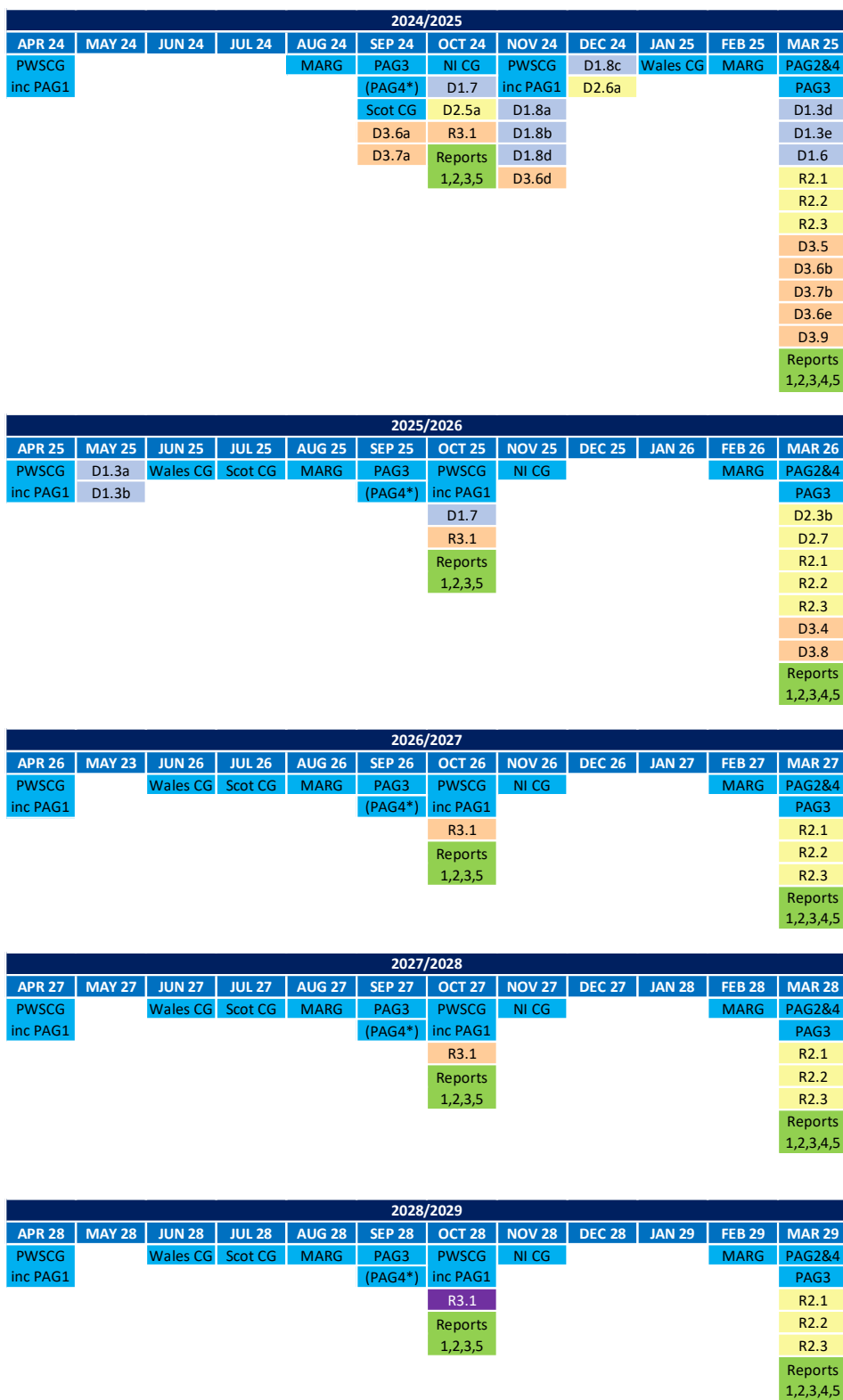
A high level of assurance is required by the PWSCG to ensure that services are provided to agreed standards. Performance Measures (PMs) and Deliverables (Ds) are used to define performance in the CSA. Governance mechanisms as outlined below will be used to review progress in delivering the PWS PMs and Ds and ensure that they undergo the appropriate scrutiny. Monthly performance review meetings will be used to monitor performance during the year, with summaries presented to the appropriate PWS Assurance Group (PAG). A timeline of deliverables, reporting and meetings can be found in Figure 10. The end of year sign-off process is completed based on criteria described below.

### Monthly Performance Review Meetings

This meeting is conducted on a monthly basis and is attended by the DSIT PWSCG Secretariat and Met Office PWS team. The purpose of the meeting is for the Met Office to update the PWSCG Secretariat on current performance relating to the PMs and Deliverables. A performance report will be provided by the Met Office PWS Team a few days before the meeting which includes a RAG (Red-Amber-Green) status for each activity. Stretch targets will not be scored as part of the RAG rating assessment. Other items which may have an implication for the Public Weather Service will also be raised by either party at the meeting. The meetings are timetabled by the Met Office PWS team and they will produce a short record of the meeting. In advance of each meeting the Met Office will ensure that appropriate governance procedures have been applied to performance data presented to the PWSCG Secretariat.

If a PM or Deliverable is rated as red for two consecutive months and the Met Office cannot provide sufficient assurance that the PM/Deliverable is likely to return to green or amber in month three, the PWS Secretariat team will request that the Met Office write an Improvement Plan for that PM/Deliverable. The Chair of PWSCG will be notified and the Improvement Plan will be shared with the Chair and at relevant PAG meetings as appropriate.

<sup>2</sup>[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1153477/User-Guide-impact-based-weather-and-health-alerting-system.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1153477/User-Guide-impact-based-weather-and-health-alerting-system.pdf)



Key Meeting Theme 1 Theme 2 Theme 3 Theme 4 Assurance Report  
 \* September PAG 4 meeting will be via correspondence and will not consist of a full meeting.

**Figure 10: Timeline of key CSA meetings and yearly deliverables. For full explanations of the deliverables, please see summary tables in Section 4. Please note, this does not include monthly and annual deliverables, and PWSCG Devolved Administration meeting dates are placeholders.**

## NSWWS Assessment Meetings

This meeting is conducted on a monthly basis if there have been any notable weather events within the preceding month for which a NSWWS has been issued, or for which evidence suggests that an event may have been missed. The meeting will be attended by the PWSCG Secretariat, a Met Office Civil Contingencies Advisor and a Met Office Senior Civil Contingencies Advisor. This purpose of the meeting is to subjectively assess the performance of each Amber and Red (and by exception, Yellow) NSWWS warning by reviewing a broad evidence base of impact information collated by the PWSCG Secretariat and the Met Office.

This performance measure acts as a target of the accuracy of PWS severe weather warnings (PM1.1a) and helps to ensure that the quality of NSWWS guidance is being continually improved.

All warnings provide:

1. An assessment of the impact level expected
2. An assessment of the area at risk from these impacts
3. A validity time during which we expect to see these impacts become apparent.

All three of these parameters will be assessed and measured for “accuracy”, with particular emphasis given to assessment of impact level. The three questions to be answered become:

1. Were the impact levels as predicted?
2. Did the warning’s area at risk accurately convey where these impacts occurred?
3. Did the warning’s validity time accurately convey when these impacts occurred?

In addition, the assessment should consider feedback from responders and the public, including ad-hoc surveys, storm naming, if any, and the timeliness of the issuing of the warning.

As a result of this assessment the warning will be placed in one of four categories:

- **Excellent Guidance:** The impacts, area, and validity time of the warning were closely in line with what was observed, and the warning was issued in good time before the onset of the event.
- **Good Guidance:** Generally the warning was of use to responders and the public, but could have provided more accuracy or usefulness in terms of impact levels, area covered, validity time and/or timeliness of issue.
- **Poor Guidance:** A warning was issued, but it was either issued too late after the onset of the event, or the impact levels, area and/or validity time were significantly different to those observed so that the warning was of limited use to responders and the public.
- **Very Poor Guidance:** A missed warning or false alarm, i.e. either at least medium impacts were observed without any warning being in place, or a warning was in place but no impacts were observed.

Evidence will be logged to support the assessment using the range of information available. This evidence will be presented to the PWSCG Secretariat at the monthly NSWWS Assessment Meetings where agreement is reached about the quality of the warnings. Should there be disagreement, either party may request for the decision to be reviewed by either the Cabinet Office, Scottish Government, Welsh Assembly or Northern Ireland Assembly representative on the PWSCG, as appropriate. The result of this review shall be final. The outcomes from the assessment meeting will form the PM1.1a (Warnings Accuracy) performance measure.

## PWS Assurance Groups (PAGs)

### **PAG 1 – Stay safe**

PAG 1 will assure the metrics and deliverables for theme 1. Including assessment of the National Severe Weather Warning Service (NSWWS) and Civil Contingency Services. This will include going through any Ad-

Hoc surveys, responder surveys etc. It will also assess and make recommendations regarding updates to deliverables and metrics for the yearly CSA update.

As this theme is such a fundamental part of the performance of the Met Office, all members of the PWSCG will be involved in this assurance. For this reason, assurance of the deliverables and metrics in theme 1, along with a review of the weather and warnings, will be a standing agenda item in each PWSCG meeting.

**PAG 2 – Thrive**

PAG 2 will assure the metrics and deliverables for theme 2 and will include agreement of the accuracy measures in year 1.

PAG 2 will meet once per year to assure all the deliverables and metrics in theme 2, including a full assessment of the accuracy measures, and will be run in conjunction with PAG 4 as below. It will also assess and make recommendations regarding updates to deliverables and metrics for the yearly CSA update.

This meeting will take place ahead of the PWSCG meeting in March in person, with the option to join by Microsoft Teams if necessary. The PAG will prepare a report for the PWSCG.

**PAG 2 Membership**

Chair PWSCG	Independent member
Civil Aviation Authority	Ministry of Defence
Environment Agency	Maritime and Coastguard Agency
Others on request	

**PAG 3 – Authoritative voice**

PAG 3 will provide assurance and scrutiny of the authoritative voice and parts of the accuracy theme of the PWS. It will also assess and make recommendations regarding updates to deliverables and metrics for the yearly CSA update.

The Group will normally meet twice a year – in late March ahead of the PWSCG meeting, and in September. These meetings may be fully virtual, or in person, with the option to join by Microsoft Teams if necessary. The PAG will prepare a report for the PWSCG.

**PAG 3 Membership**

Chair PWSCG	Independent member
Scottish Government	Welsh Government
Northern Ireland Government	Environment Agency
Maritime and Coastguard Agency	UK Health Security Agency

**PAG 4 – National capability and international commitments**

PAG 4 will provide the assurance and scrutiny for the national capabilities and the international commitments. The PAG is expected to use the existing assurance mechanisms within the Met Office to inform its work (e.g. the Met Office Audit Committee and Met Office Scientific Advisory Committee) and not duplicate the work of any existing assurance mechanism. The PAG will prepare a report for the PWSCG.

This group will meet once a year in March ahead of the PWSCG on the same day as PAG 2 to present the assurance reports as outlined in the CSA (and see table above). Interim reports will be sent around by correspondence.

#### PAG 4 Membership

Chair PWSCG	Independent member
Civil Aviation Authority	Ministry of Defence
Environment Agency	Others on request
Maritime and Coastguard Agency	

### **PWS Assurance Groups (PAG) Terms of reference**

#### **Purpose**

The PAG's are subgroups of the Public Weather Service Customer Group, set up to provide assurance of each of the themes in the Customer Supplier Agreement (CSA). These groups will provide independent assessment of the progress of the Met Office against the targets set out in the CSA.

#### **Responsibilities**

The responsibilities of the PAG's are as follows:

- a. Monitoring the performance and delivery of the PWS outputs against the agreed performance measures and deliverables of the relevant CSA theme, and considering in-period modifications as appropriate
- b. Attending meetings or reviewing papers as required
- c. Agreeing to a summary of each meeting or review to be delivered to the PWSCG meetings
- d. Making recommendations regarding requirements, targets and metrics for yearly CSA updates

### **PWS Customer Group (PWSCG) Meetings**

#### **PWSCG Formal Meetings**

PWSCG meetings will be the forum for strategic discussion, looking forward, discussing the bigger, more strategic issues and will set the direction of PWS. These meetings will include summaries of the PAG meetings.

Formal PWSCG meetings will normally be held twice a year in April & October. All members and Met Office delegates are expected to attend and if unable to do so are asked to provide a deputy. On an annual basis at the April PWSCG meeting, the members will form a recommendation to the Department for Science, Innovation and Technology (DSIT) as to delivery of the performance measures and deliverables, as defined within the CSA. These will have been run through in depth at the theme PAG's as described above. Official sign off or any challenges to sign off will be recorded at this meeting. Also, at this meeting the CSA for the subsequent FY will be agreed including the Public Performance Measures and Deliverables. The meetings are timetabled and coordinated by the PWSCG Secretariat.

A formal meeting of the PWSCG will be considered quorate provided no more than one half of members and one of the independent members are absent. An inquorate meeting may proceed in an advisory capacity to the Chairperson.

Voting will be on a two thirds majority basis and the Chairperson will have the casting vote.

The PWSCG may establish sub-groups or hold special interest meetings as it considers appropriate to deliver its terms of reference.

Additional meetings within the Devolved regions will take place most years and will be chaired by the PWSCG Member within the Devolved region. Representation will normally include the Chair and Independent Member of the PWSCG, Head PWSCG Secretariat and Head Citizens and Media Business (Public Weather Service) plus representation from across government departments within the Devolved region.

### **Media and Reach Sub-Group (MARG)**

The Media and Reach sub-Group (MARG) is a sub group of the PWSCG with the mandate to provide assurance to the Chair of the PWSCG in three principal areas. Firstly, that the outputs of the Public Weather Service provide adequate 'reach' to help demonstrate value for money for PWS. Secondly that there is consistency in the delivered message of those outputs across the various media channels. Thirdly, that the Public Weather Media Service (PWMS) is operating in a way that meets the needs of the broadcasters using it. The MARG provides challenge and steer to the Met Office to ensure adequate reach through UK broadcasters and where possible provide advice and direction in order to increase the reach of PWS outputs. The group provides challenge on behalf of the PWSCG on the form and function of the PWMS to ensure that the customers receive a fit for purpose service. The group will report back to the PWSCG on progress and set out any recommendations for actions. The Media and Reach sub-Group (MARG) is chaired by the independent member of the PWSCG. Membership of the MARG will comprise representatives from the PWSCG and its Secretariat, Met Office staff responsible for reach via the PWMS, and a cross section of users of the PWMS. The Chair of the PWSCG may attend at his discretion. The MARG will report to PAG(3) and PWSCG.

### **End of Year Signoff for performance measures**

- There are 16 Performance Measures in the 2024-2029 CSA, with some PMs comprising multiple elements.
- There are 9 assurance reports in the 2024-2029 CSA, with some comprising multiple elements.
- Monthly monitoring will be performed on all PMs and assurance reports as described above.
- The PWSCG expect that the Met Office will endeavour to ensure that all of the agreed performance measures are met and that the assurance reports are delivered. However, sometimes performance measures will not be met and that there may be circumstances beyond Met Office control which impact on PM delivery.
- To receive end of year signoff that the CSA has been delivered:
  - The Met Office are required to achieve all 16 PMs in the CSA;
  - The Met Office are required to deliver all 9 assurance reports as specified in the CSA;
  - However, if a PM does not meet the end of year target, then the PWSCG will accept a written description of why the target has not been met and will use the relevant PAG or PWSCG meetings to discuss whether the PWSCG will accept the missed target and approve it for signoff in the CSA for that year. The PWSCG will consider whether there have been circumstances that are beyond the control of the Met Office, situations whereby the monthly monitoring has highlighted an issue with a PM that requires an improvement plan, or other circumstances resulting in a missed PM and have the opportunity to signoff the PM.

### **End of year Signoff for Deliverables**

- To assure PWSCG members that each Deliverable has been met, the Met Office will submit a paper describing the outcome of the Deliverable to the DSIT Secretariat team on or before the due date of that deliverable.
- The paper will be discussed in detail at the relevant PAG meeting, and the PAG will make a recommendation to the PWSCG end of year meeting
- The PWSCG group will be asked to agree or disagree that the Deliverable should be signed off.

### **Business as usual items required to achieve signoff.**

In addition to the deliverables and performance measures described above, the Met Office will be expected to deliver the following items throughout the year:

1. An annual PWS performance report for the April PWSCG meeting;
2. Monthly advisor reports;
3. The Public Perception Survey and annual briefing for the PWS team at DSIT;

### **Annual CSA signoff**

- For the CSA to be signed off at the end of each year the Met Office must achieve all PM's, Assurance Reports and Deliverables are signed off – unless previously agreed as per above.
- This process will be reviewed annually.

### **Public Weather Service Customer Group Terms of Reference**

#### **Purpose**

The Public Weather Service Customer Group (PWSCG) is an independent body which acts as the customer on behalf of the public and public sector users of the Public Weather Service (PWS) and provides independent advice to Government ministers to enable the formal agreement of the PWS Customer-Supplier Agreement (CSA) between Government and the Met Office.

#### **Responsibilities**

The responsibilities of the PWSCG are as follows:

- a. Setting the current and future outputs required from the PWS and specifying its performance indicators and targets;
- b. Monitoring the performance and delivery of the PWS outputs against the agreed performance indicators and targets, and considering in-period modifications to the PWS as appropriate;
- c. Reviewing whether Met Office plans for the underpinning capability and international commitments are appropriately prioritised and have a demonstrable, value for money link to support the delivery of PWS outputs and other direct services to Government, the public sector and civil aviation;
- d. Reviewing the socio-economic benefits delivered by the PWS, commissioning additional research as necessary;
- e. Supporting cross-Government cooperation to increase the use of PWS outputs and raise issues relevant to wider Government, including through the Chair's representation on Met Office Governance groups;
- f. Providing independent advice to Government ministers on the PWS as required;
- g. Consulting widely with the public and the public sector users of the PWS, as appropriate, in order to effectively undertake its responsibilities above.

## **PWSCG Chairperson**

The Chairperson of the PWSCG will be a public appointment by a Government Minister, and is the single point within the PWSCG accountable to the Minister. The Chairperson's responsibilities are as follows:

- a. Chairing meetings of the PWSCG;
- b. Ensuring the proper execution of the PWSCG Terms of Reference;
- c. Keeping the PWSCG Terms of Reference under regular review and proposing any changes to the appropriate Government minister;
- d. Formally approving the PWS Customer-Supplier Agreement, and formally notifying the Met Office on behalf of the PWSCG as to the extent to which the Met Office has delivered the Agreement;
- e. Representing the interests of the PWSCG during Government Spending Reviews and in any other relevant cross-Government initiatives;
- f. Negotiating the PWS price with the funding Government Department and the Met Office, if necessary, to ensure appropriate financial provision for the PWS;
- g. Ensuring that PWS funds are spent with due regard to economy, value for money and the Government's drive for efficiency;
- h. Raising the profile of the PWS across the Government and Devolved Administrations, including increasing the integration of the PWS in wider Government initiatives and increasing the impact of the PWS across the UK;
- i. Reporting on the activities of the PWSCG and the delivery of the PWS to the Departmental Owners and Met Office Board;
- j. Providing a focal point for all PWSCG correspondence;
- k. Maintaining relationships with other PWSCG members and Met Office Executive between formal meetings of the PWSCG.

## **PWSCG Membership**

The membership of the PWSCG shall be drawn from the main public sector users of PWS outputs, other funders of the PWS and interested Government departments, and shall include a public appointment by the Chairperson to represent the public users of the PWS (referred to as the Independent Member of the PWSCG).

The Independent Member is appointed to represent the views of the general public and deputises for the Chair when required. This individual is independent of both the sponsoring department (DSIT) and the Met Office and is expected to have a good understanding of the mechanisms that can be used to gain insight into the public mood. This includes an awareness and knowledge of the various communications channels used by the PWS including social, digital and traditional media.

Membership shall include representatives from:

- Cabinet Office Civil Contingencies Secretariat
- National Police Chiefs Council
- National Fire Chiefs Council
- Local Government Association
- Scottish Government
- Welsh Government
- Northern Ireland Government
- Environment Agency



- National Highways
- Maritime and Coastguard Agency
- Civil Aviation Authority
- Department for Science, Innovation and Technology
- Ministry of Defence
- Department for Levelling Up, Housing and Communities
- UK Health Security Agency

The Chairperson may invite other organisations to be represented on the PWSCG that fulfil the conditions laid out above.

The Chairperson and Independent Member will be contracted for a fixed term and remunerated by Government through the PWSCG Secretariat.

### **PWSCG Secretariat**

The PWSCG will be supported by a Secretariat staffed by officials provided by the Government department responsible for the PWS. The Secretariat will be a dedicated resource to support the Chairperson and PWSCG in delivering their responsibilities outlined in these terms of reference. The Secretariat should provide policy and technical advice to the Chairperson and PWSCG on all matters pertaining to the PWS, and shall attend PWSCG meetings as advisors.

The Secretariat will ensure that documentation is published on the Met Office public website: This will include:

Minutes of the PWSCG meetings  
PWSCG annual report  
PWS Annual report  
PAG meeting summaries  
PWSCG TORs  
PWSCG membership

### **Duration**

The PWSCG is established on an on-going basis until no longer required, when it will be dissolved on instruction from a Government Minister.

## Annex E – Change Control Process

The purpose of this procedure is to distinguish between those changes to the PWS that are sufficiently fundamental to require sign off at a high level, and those that are essentially business as usual and can be signed off at a comparatively lower level. The following table summarises the approach:

CSA change required	Review and sign off team	Method of recording change
CSA heads of terms Financials beyond delegations of Met Office Markets Director or DSIT Deputy Director	<ul style="list-style-type: none"> <li>• Chair of the PWSCG</li> <li>• The responsible Director within DSIT</li> <li>• Chief Executive of the Met Office</li> </ul>	Exchange of letters
Strategy Customer outcomes Material changes in performance levels, the scope of deliverables and dates associated with metrics Assurance	<ul style="list-style-type: none"> <li>• Chair of the PWSCG</li> <li>• Wider PWSCG</li> <li>• The responsible Deputy Director within DSIT</li> <li>• Met Office Markets Director</li> </ul>	Minutes of PWSCG meetings or exchange of letters
Catalogues Minor (non-material) changes in the scope and dates of metrics Editorial changes to the CSA	<ul style="list-style-type: none"> <li>• Met Office Head Citizens and Media Business (Public Weather Service)</li> <li>• Head of the PWSCG Secretariat</li> </ul>	CSA updated by PWSCG Secretariat and changes recorded in the table below.

N.B. the PWSCG Secretariat will provide background and supporting evidence for all review meetings. The change control procedure laid down in this annex will apply for any change relating to the Agreement. For the purpose of this Change Control Procedure a material change may include but is not limited to:

- (a) change to the infrastructure of either Party's systems;
- (b) withdrawal of a Service;
- (c) change to the Services;
- (d) introduction of a new Service;
- (f) change in any law, regulation or Government policy or Spending Review which affects the provision of the Services;
- (g) procurement of additional equipment or premises;
- (h) reduction or withdrawal of Funding.

This change control procedure does not preclude informal discussions between the Parties concerning any change, but sets out the formal structure for incorporating and recording any changes agreed whilst this Agreement is in force. For pragmatic reasons the Parties may aggregate minor changes which are administrative or considered to have a low business impact into one Request for Change. References to 'in writing' can include electronic documents, provided the persons exchanging the electronic documents have appropriate delegated authority to act on behalf of his/her respective Party. Either Party may propose a

request for change in writing to the other Party which sets out a general description of the change (“Request for Change”). This will include but is not limited to the following details:

- (a) the reason for the change;
- (b) description of the change including any specifications;
- (c) provisional start date for the change;
- (d) benefit to the Parties of the change;
- (e) the potential financial implications of the change;
- (f) a unique identifier for the Change Request.

The Party receiving the Request for Change will respond in writing within the time specified in the Request for Change (“Response”). For changes which are material, the Response will include but is not limited to the following details:

- (a) the description of the solution for the change;
- (b) impact statement on the effect of the change on the operation of the Services;
- (c) an impact statement including costs and savings as a result of implementing the change;
- (d) whether the change requires any change in the existing sub-contracts supporting the operation of Services;
- (e) whether the change requires award of any new sub-contract to effect the change;
- (f) whether the change requires actions to be taken to comply with Procurement Regulations and what such actions will be;
- (g) any change is required in the terms of the Arrangement or its Schedules;
- (h) time scales to deliver the change;
- (i) validity period for the Request for Change; the Request for Change unique identifier.

The recipient of the Response will evaluate the Response within the period of validity of and may:

- (a) accept the Response and confirm acceptance by requesting the Secretariat update the controlled spreadsheet, or taking any other action as defined in the table above e.g. the filing of signed letters;
- (b) request that the Response is revised and/or a new Response is prepared; or
- (c) reject the Response.

Each Party will bear its own costs for the preparation of Requests for Change and Responses.

#### Change Control Spreadsheet

This Change Control spreadsheet is to be used by the Met Office and DSIT to record changes to the CSA when agreed by all relevant parties. Each entry is to be signed off by appropriate authorised persons representing all relevant parties. Changes agreed via the Change Control spreadsheet will be incorporated in the Agreement and/or Service Definition.

This spreadsheet is controlled and maintained by the PWSCG Secretariat held within the PWSCG Secretariat folders in DSIT, with appropriate levels of security and backup in place and is available on request.

Change id no. (000/FY)	Date agreed	Details	Change relates to document no:	Signoff (attach emails)