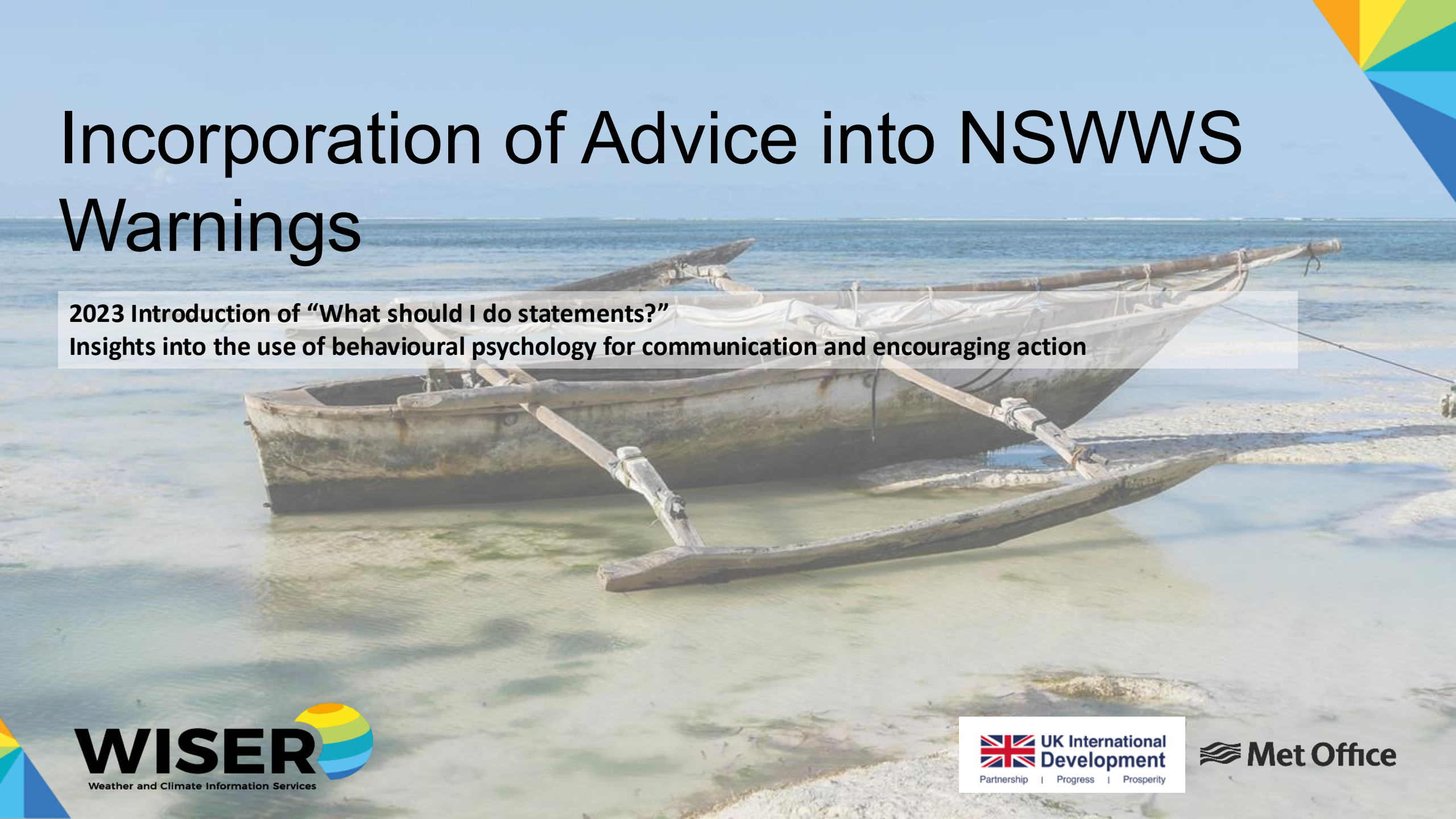
Incorporation of Advice into NSWWS Warnings

2023 Introduction of "What should I do statements?"
Insights into the use of behavioural psychology for communication and encouraging action



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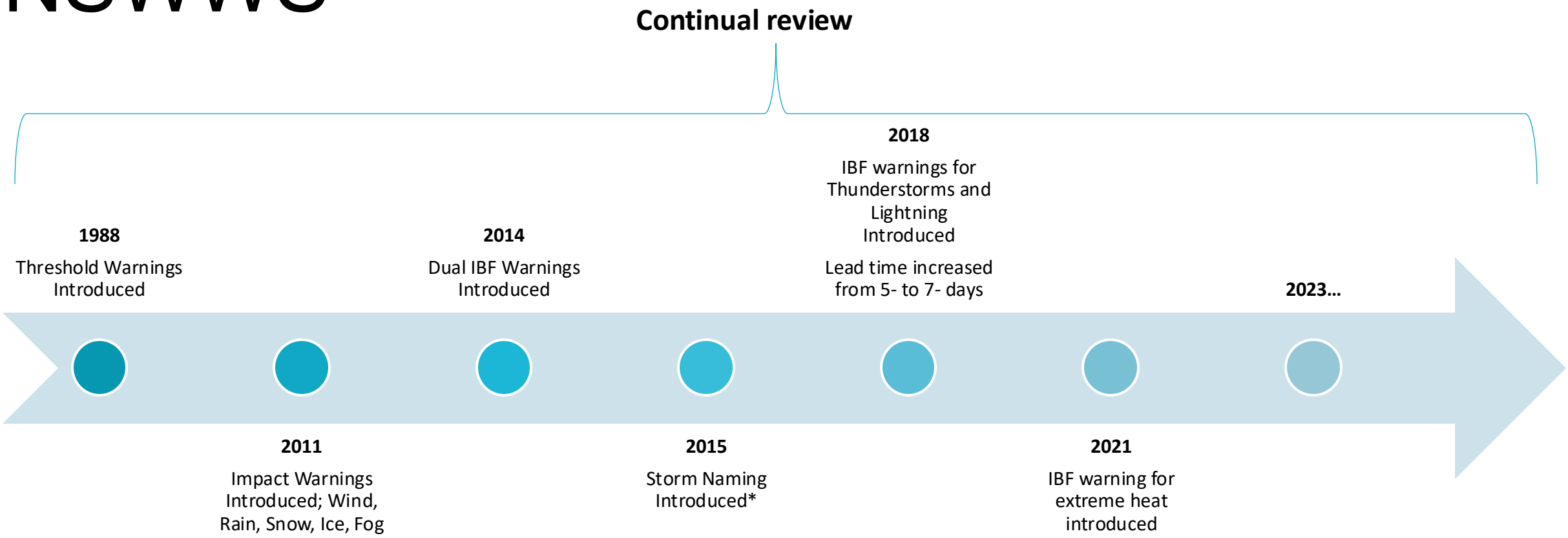
Timeline of Key Developments to NSWWS



*Not directly a development of the NSWWS service but used effectively in conjunction to increase awareness amongst the public.

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Advancing Impact-based Forecasts

Threshold

What the weather will ***be***

Impact

What the weather will ***do***

Are these warnings effective?

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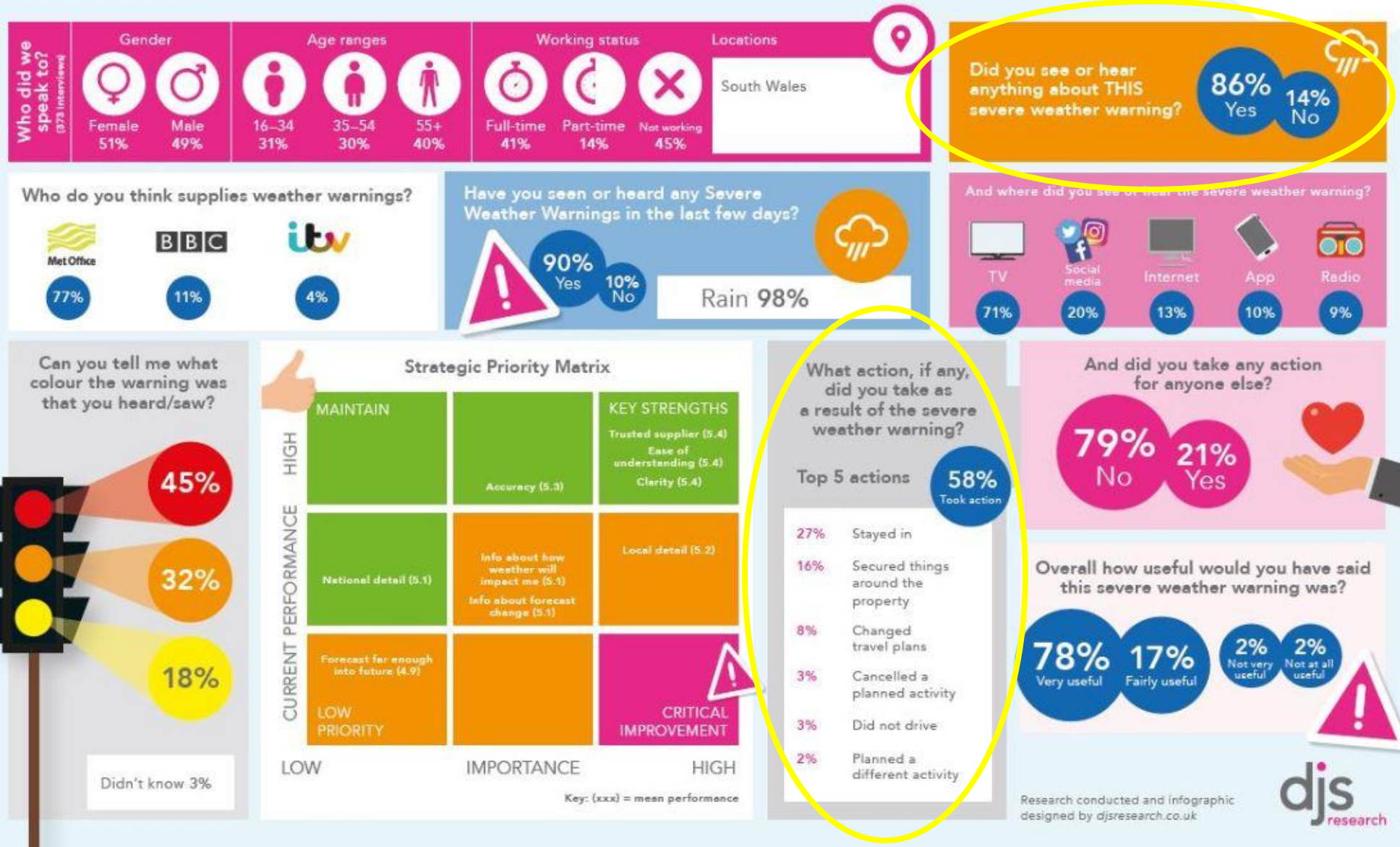
National severe weather warning: wave 32

A severe weather warning was issued on Thursday 13th February for rain in your area from 3pm on Saturday 15th until 3pm on Sunday 16th February 2020.

Met Office



86% aware

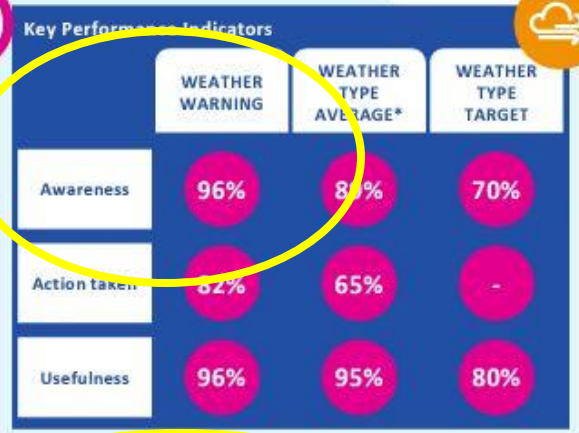
58% acted

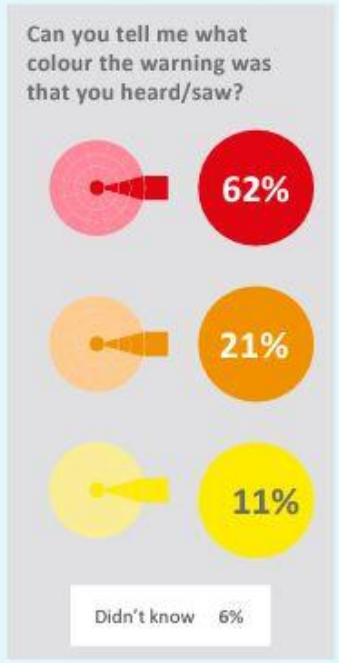
Storm Dennis

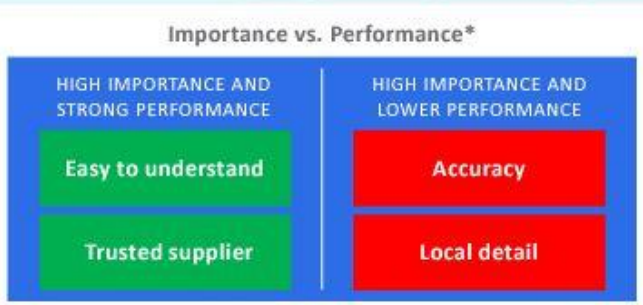
National severe weather warning: wave 40 – amber area

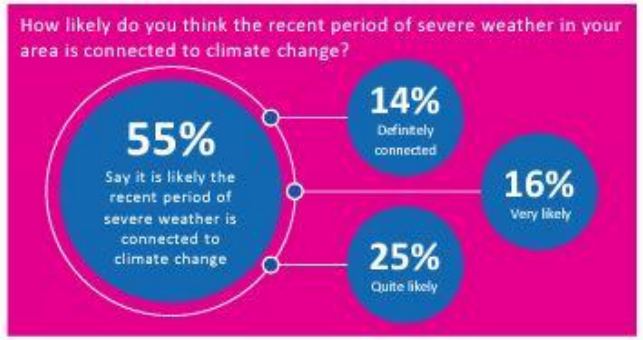
A severe weather warning was issued on Thursday 25th November for wind associated with Storm Arwen between 15:00 on Friday 26th and 09:00 on Saturday 27th November

Met Office

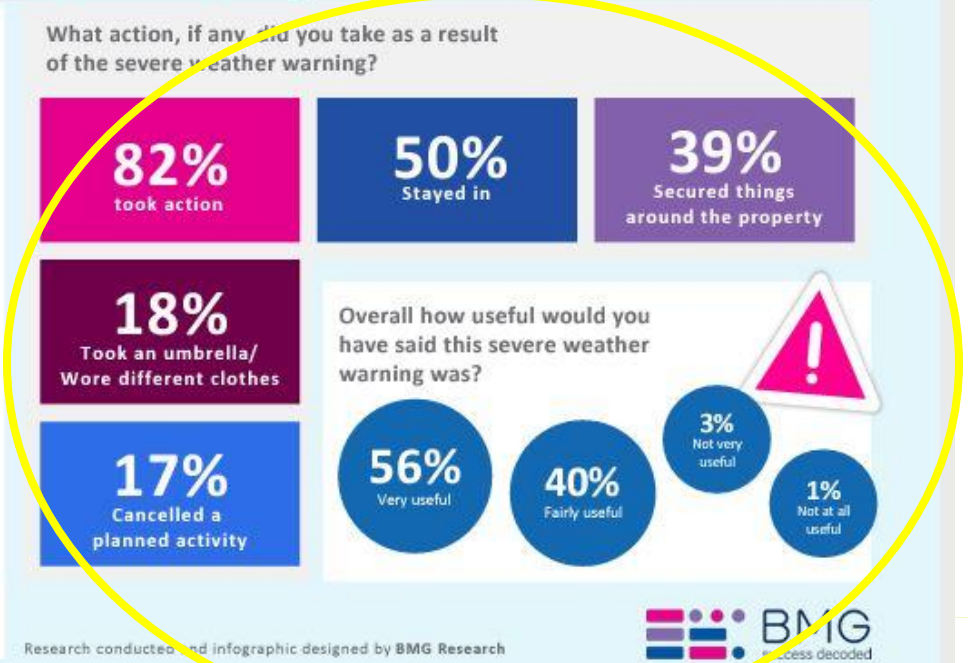








*Importance vs. performance across red and amber warnings for Storm Arwen



Research conducted and infographic designed by BMG Research

BMG Research

96% aware

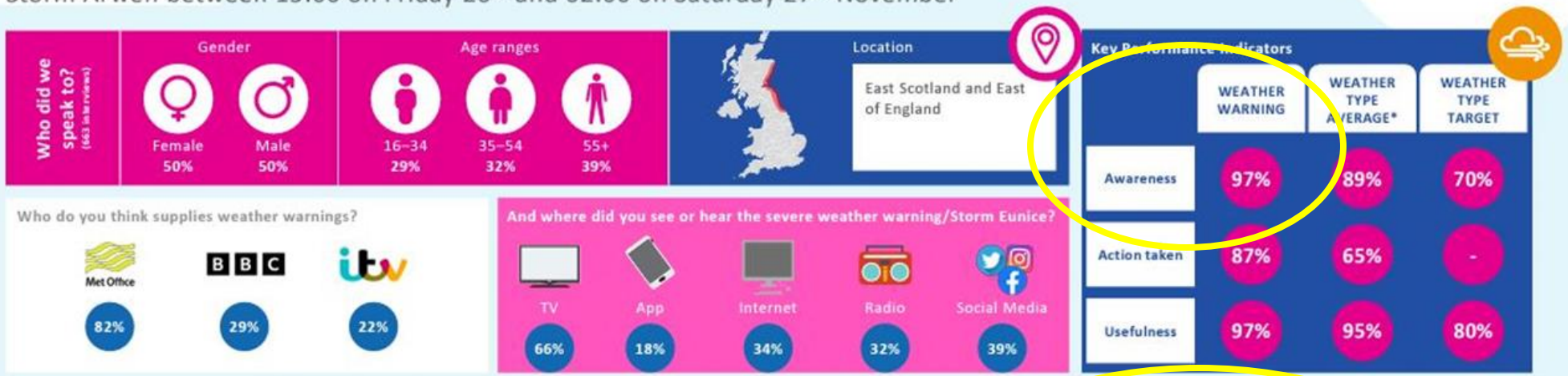
82% acted

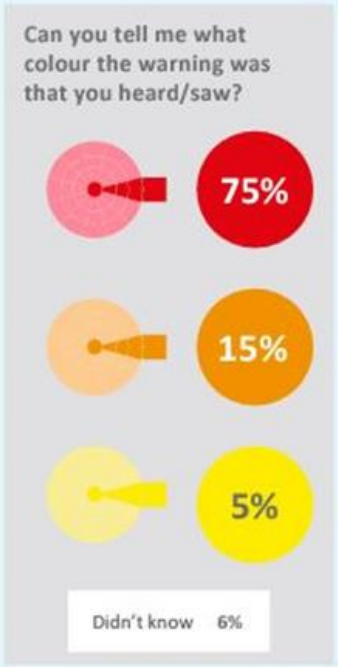
Storm Arwen (Amber)

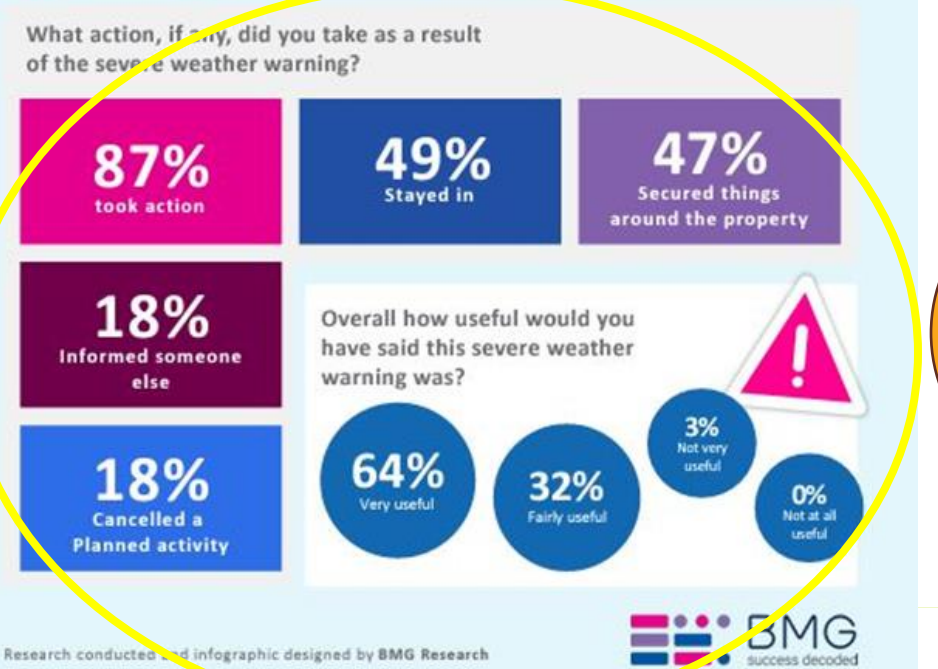
National severe weather warning: wave 40 – red area

A severe weather warning was issued on Friday 26th November for wind associated with Storm Arwen between 15:00 on Friday 26th and 02:00 on Saturday 27th November

Met Office







*Importance vs. performance across red and amber warnings for Storm Arwen

Research conducted and infographic designed by BMG Research

BMG success decoded

97% aware

87% acted

Storm Arwen (Red)

What are impact-based forecasts & warnings?

WARNING TYPE	EXAMPLE
Phenomenon-based warning	Rainfall accumulations of 150mm expected within 18 hours in [local Govt. region] tomorrow.
Impact-based warning	Rainfall accumulation of 50mm expected within 18 hours in [city] tomorrow, which may result in road closures due to flooding.
Impact warning	Expect traffic to be delayed tomorrow at rush hour in [city] due to road closures from flooding, caused by heavy rainfall.
Call-to-Action warning	Reconsider your commute home tomorrow evening in [city], as it is likely that traffic will be delayed due to flooding of roads, caused by heavy rainfall.

Action-led Forecasting

Threshold

What the weather will ***be***

Impact

What the weather will ***do***

Action

What needs to ***be done*** to mitigate the impacts of the weather

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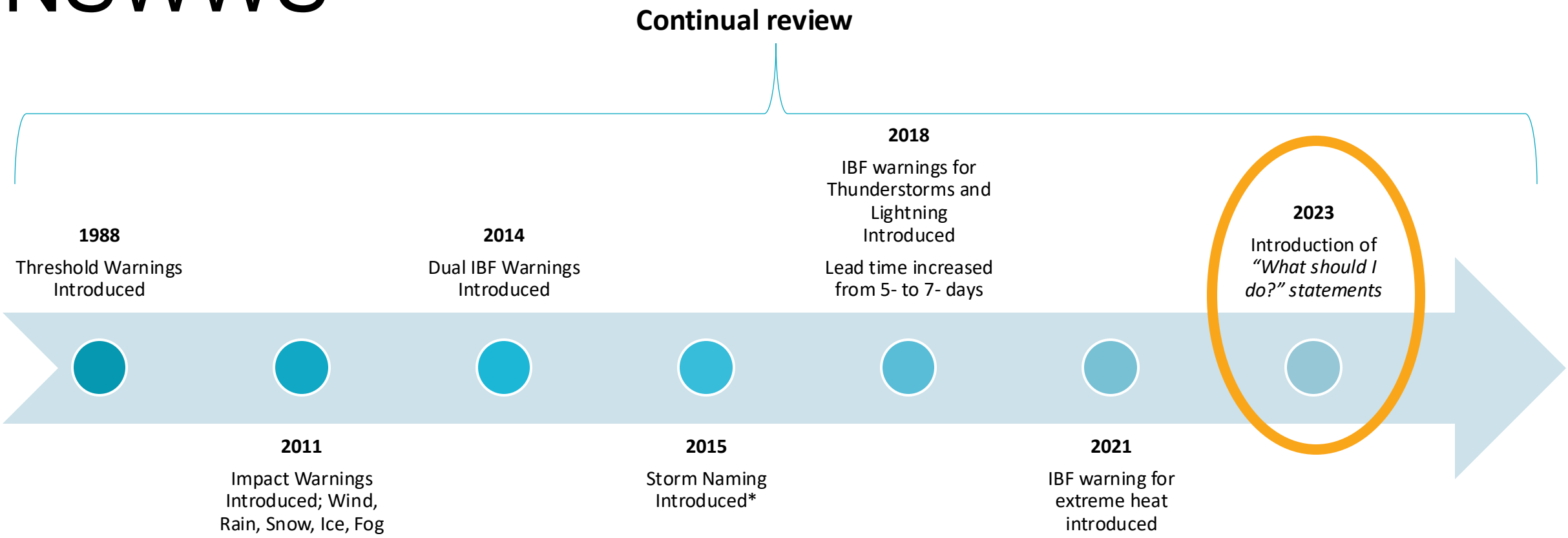
Timeline of Key Developments to NSWWS



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Action-Led Warnings

Weather hazard (considering nature, extent, duration, multi-hazards, location)

+

Impact assessment (considering vulnerabilities, exposure, location, time of day/year etc.,)

+

Behavioural science frameworks (How do we encourage people to take action?)

+

Appropriate advice (co-developed with partners to ensure it is effective and timely)

Action-led Warnings

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Process of moving towards action orientated advice in warnings

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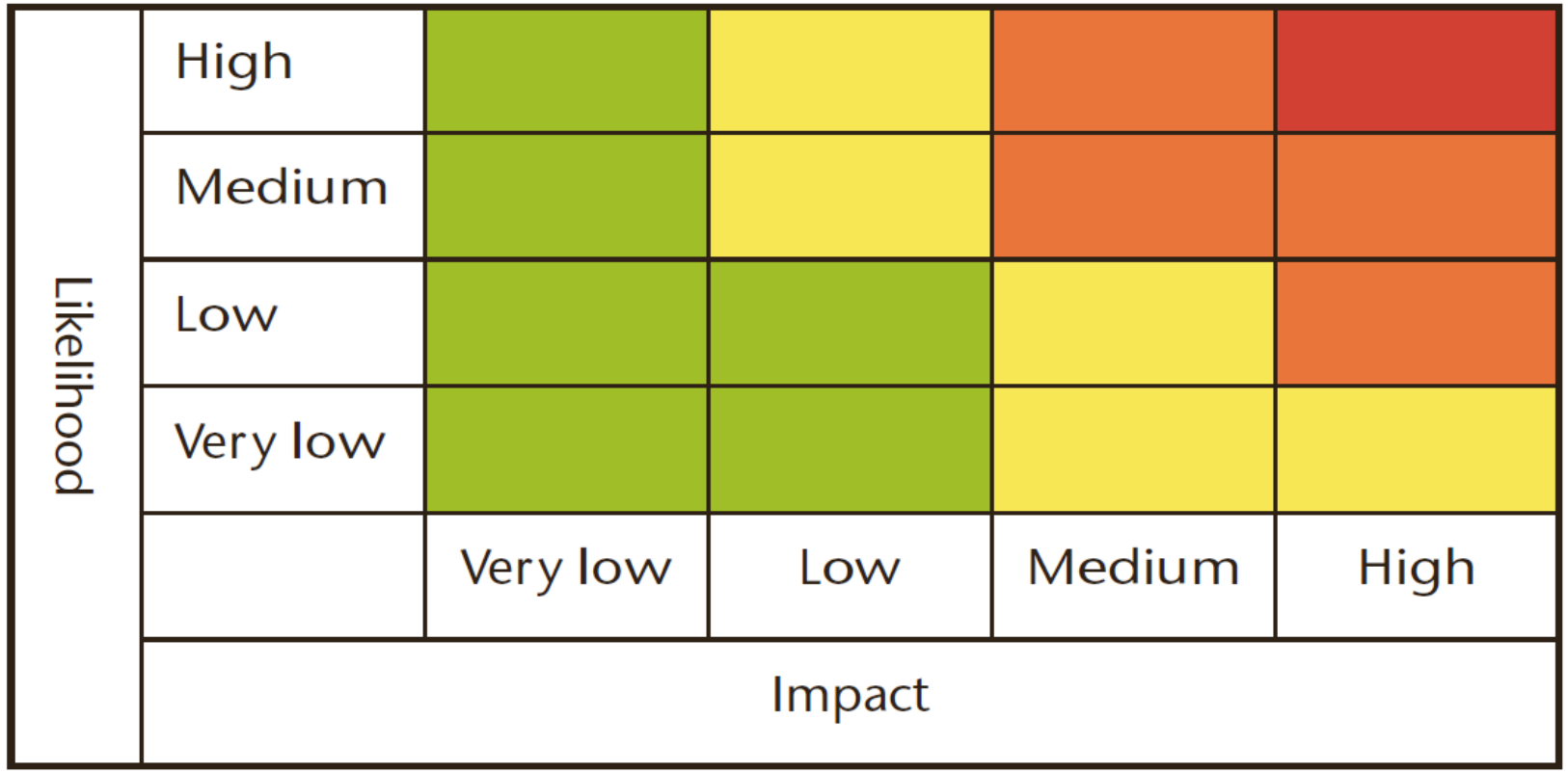
Impact Matrix

Likelihood of impacts occurring



Level of impacts expected

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Forecast Based Early Action (FBEA)

The goal of FBEA is to anticipate disasters, prevent, or at least significantly lessen, their impact, if possible, reducing human suffering and loss.

A **pre-agreed set of early actions** that will be implemented at the time of a **triggering forecast**.

The roles and responsibilities of everyone involved in implementing actions should be clearly defined.

Full commitment towards implementation of mitigations amongst involved stakeholders.

Triggering Action Plans

Medium / Significant Impacts FLOOD WARNING	 • Flood Warnings Issued • Medium / Significant Impacts reported • Level-3 Heat-Health Watch or Cold Weather Alerts	• Injuries with danger to life • Disruption to day-to-day routines and activities. • Short-term strain on emergency responder organisations. • Transport routes and travel services affected. Longer journey times expected. Some vehicles and passengers stranded. • Disruption to some utilities, infrastructure, and services. • Damage to buildings, property, and structures. • Some rural communities temporarily inaccessible due to deep snow or snow drifts or affected by flooding. • Small-scale evacuation of properties may be required.	• **Trigger** a TAG Teleconference for Medium Impact Snow and Ice Warnings. * • **Trigger** a TAG Teleconference where likelihood for <u>any</u> warning is Medium/High/Level 3 Heat Health or Cold Weather Alert • **Consider** the TAG Teleconference where likelihood is Low/Very Low • **Consider** the requirement for an TCG/SCG and MAIC • Warn and inform the public appropriately • **Consider** Ramping up and rostering resources • **Consider** voluntary sector support

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Responding to severe weather warnings:
Encouraging the UK public to engage with protective behaviours

> *"It is no longer enough to provide a good weather forecast or warning – people are now demanding information about what to do to ensure their safety and protect their property"*
>
> (World Meteorological Organisation, 2015)

Introduction

At a glance

Despite significant advances in science and in the ability to how reliably forecast weather, adver weather events continue to cause significant damage to peop wildlife, property, and infrastructure [1]. There is a clear mismatch between the ability to forecast weather events and people's ability, willingness, and drive to protect themselves. Addressing this challenge is paramount. Additionally, climate change means that severe weathe experiences are likely to become increasingly frequent [1]. The general public are already provided with information about what the weather will be and what the weather will do. However, they are currently not provided with (easily accessible) information regarding what they can or should do to keep themselves and others safe.

In 2020 Met Office completed a large-scale review of its warnings system. One of the key recommendations from the review was to: (1) include advice within the warnings, so that the public understand what to do, and (2) to ensure advice statements drive action. **We, Magpie, were asked to develop succinct advice statements that will drive the greatest level of behaviour change.**

What we did:

We used the following systematic approach in order to develop a behavioural science-informed and evidence-based approach for communicating weather warning advice:

- We conducted a comp of the interdisciplinary existing internal Met Office research
- We conducted key partners to behaviours they
- We developed Met Office alrea the partner inte the behavioural
- We evaluated t statements on action using a r
- We conducted a Randomised Controlled Trial (RCT) with impact of intentions
- We conducted focus groups to dig deeper into the nuances
- Finally, we collated e statements framework

Literature Research

1-to-1 Partner Interviews

Developed Statements

Evaluated Statements

RCT with members of public

Focus groups

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Key Findings

1. Both the desk research and our audience research show that **providing the public with advice is (1) wanted, and (2) effective** for engaging people in protective behaviours.

2. Using evidence-based and behavioural **science-informed messaging techniques is essential in order to most effectively drive engagement** in protective behaviours. In this report we provide a concrete framework that can be used and applied in the specific context of weather warnings.

3. In order to most effectively drive engagement with weather warnings and protective behaviours, it is worthwhile providing the general public with **easy and accessible information on the likelihood and impact level of the weather warning** (e.g. "there is a **small chance** of **very strong winds** for this local area").

4. Providing **advice statements seems to lead to the greatest level of behavioural change for the Amber and Red warnings**, however its effects are less consistent for Yellow weather warnings. Therefore, it is crucial that, for Yellow warnings, advice focuses on small and easy steps.

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Behavioural Psychology

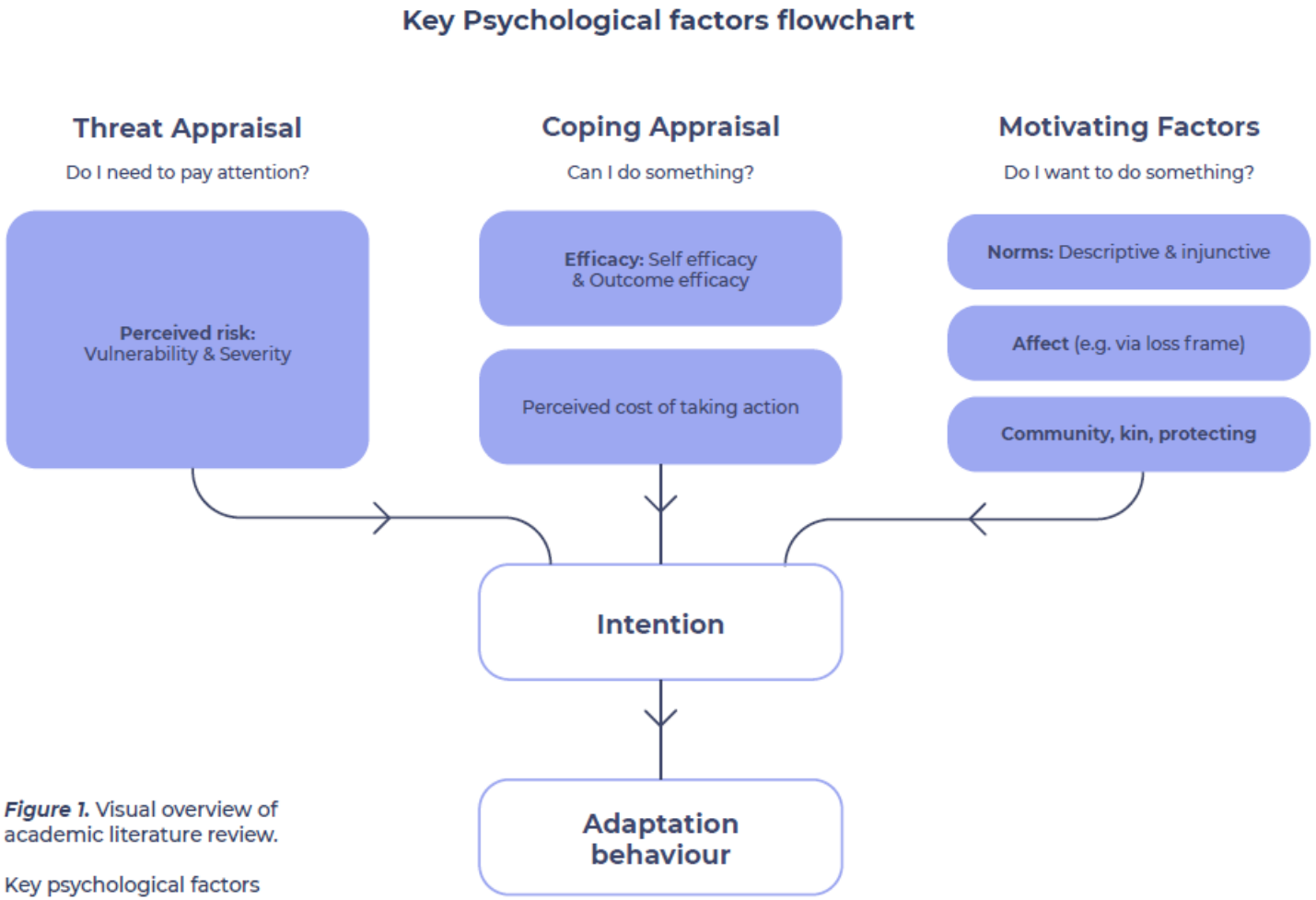

Figure 1. Visual overview of academic literature review.

Key psychological factors predicting people's willingness to engage in weather protection behaviours. Adapted from the Protection Motivation Theory [24]

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Capability
Psychological capability (understanding)
Public lack a good understanding of SWWs.
Public confused about the difference between yellow and amber.
Public are unsure what to do when there is a SWW.
Physical capability
Some people do not have the physical ability to undertake protective behaviours.
Opportunity
Physical opportunity (presentation and dissemination of info.)
Public would like more visuals. Some find the map difficult to use.
Met office app perceived as being too sophisticated and complex for general public.
Key devices used by public are mobiles, tablets, and TV but varies by age.
Social opportunity (looking to others)
Public (esp. younger) assume they will hear about a warning on the grapevine if it is serious enough.
Motivation
Automatic
Affect: Many people have not experienced negative effects from SWWs and thus have no negative associations.
Habit: Public tend to check general weather forecast but are not in the habit of checking SWWs.
Reflective
Self-relevance: Many do not think SWWs will affect them.
Self-relevance: Public want info. specific to their local area.
Self-efficacy: Many are unsure how to (and whether they are able to) undertake protective action.
Gauging risk: Public want and need information on severity. Public do not perceive yellow or amber as serious.
Cost: Many feel that yellow and amber are "not worth cancelling plans for". There is a fear of wasting time/resources.
Risk: Public is motivated by any perceived risk to life or health to self, family members, pets, neighbours, friends.
Inconvenience: Public is motivated by any perceived impacts of SWWs on disruption of daily routine (e.g. commute)
Damage: Public is motivated by any possible damage to their property or land.

Key psychological factors table

The **7 key behavioural areas** (or nudging techniques) to use for driving behaviour change are detailed here:

		Evidence-based and informed by:	
Behavioural frameworks:	**Description**	**Relevant academic paper**	**User information / reports**
Promote response efficacy	Messaging highlights that behaviour will have an impact	Van Valkengoed & Steg (2019)	B2B
Promote self-efficacy	Messaging highlights that behaviour is easy, achievable	Van Valkengoed & Steg (2019)	B2B
Clear and concrete	Messaging is clear and concrete	Taylor et al. (2019)	B2B, DJS, Met Office digital team
Self-relevant	Messaging highlights that highlights relevance to the people reading the warning	Bubeck et al. (2013)	B2B, DJS
Kin, protecting others	Messaging highlight impacts on family and friends	Van de Vyver et al. (2018)	
Loss frame	Messaging highlights possible losses of not taking action	Van Valkengoed & Steg (2019)	B2B
Gain frame	Messaging highlights possible gains of taking action	Van der Linden (2015)	

Co-development of advice

> *"Yellow - there are too many warnings and we don't expect people to really do anything. Amber and Red we need people to get ready and prepare themselves in advance - when the weather comes it is too late. Amber is when to take action."*

> *"Yellow is really a check - so it's more of a be aware. Keep an eye on it and be a bit more alert. Be informed. Drive with care. Check your speed. Adhere to speed limits. Be careful. Plan ahead"*

- Transport
- Danger to life
- Health
- Utilities
- Personal safety
- Protection of property

Of those partners and specialist agencies interviewed, they agreed that the **Met Office Weather warnings are intrinsic to the services they provide**. The Met Office is viewed as a key source of information, with forecasts relied upon as the most accurate. On receipt of a MET Office Severe Weather Warning all parties will set an action plan focused on the warning type and the area of most need. Partners felt that the relationship was inclusive and two way.

They felt that **offering advice** at the point of a warning **would work well to help the public** understand how the weather impacts on them.

It was seen as an **opportunity to join up all parties** that are active in an extreme weather warning event and enable echoing of each other's advice communications. Communicating messaging that covers both weather information and the impact of weather.

Think

- Understand the risks of different weather types to safety
- Take time to know what the weather really means and trust the warnings
- Understand the impact the weather can have on property and which adverse weather can lead to displacement and difficult situations
- Consider others in adverse weather, e.g neighbours and the elderly
- Understand what essential travel means
- Understand how a car responds in different conditions and drive appropriately
- Know how to manage a situation

Plan

- Check the weather and take notice of all weather warnings
- Check and plan five days in advance if possible
- Alter activity or location based on weather forecast. Replan where possible and be prepared to turn back
- Choose coast guarded beaches when there is wind or very hot weather
- Stick to main roads and check routes in bad weather
- Check the weather and tides
- Consider if they are elligible to be on a vulnerable persons list - based on health, young children and disability

Act

- Have a grab bag ready (and know what to have in it)
- Ensure you have a way to call for help if needed e.g. mobile phone, radio or whistle
- Check your vehicle, petrol and tyres
- Have appropriate screen wash for weather conditions
- Take water and appropriate clothing
- Make a call for help if required

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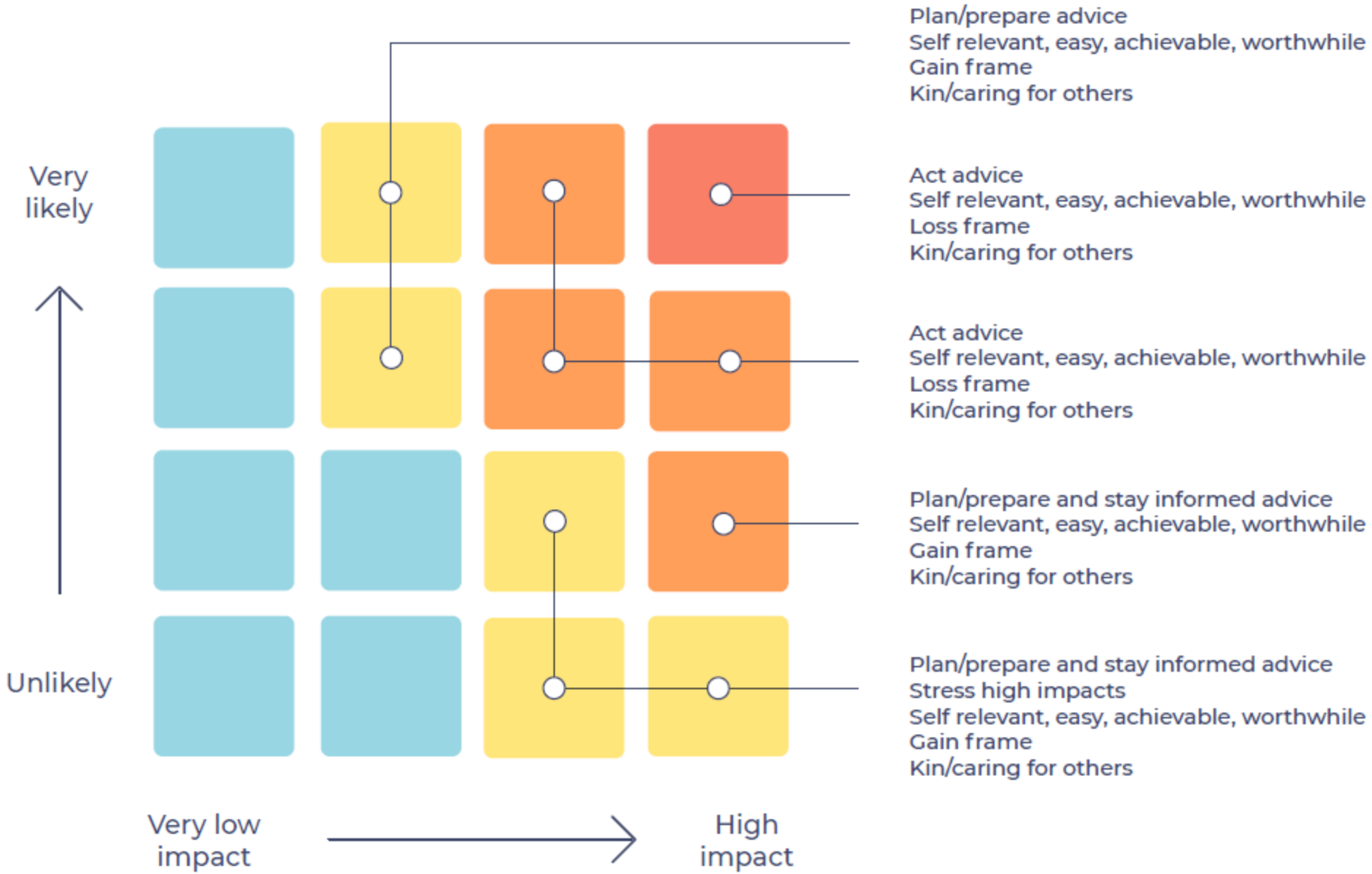
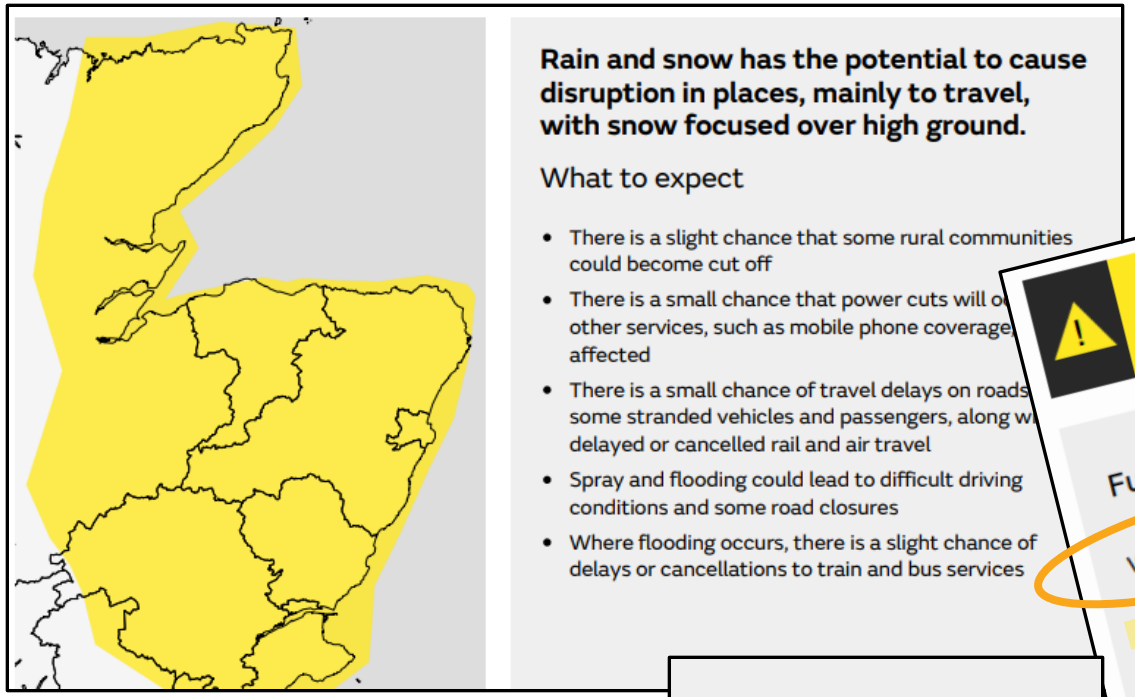
Weather warning advice: behavioural framework



Encouraging action…



Rain and snow has the potential to cause disruption in places, mainly to travel, with snow focused over high ground.

What to expect

- There is a slight chance that some rural communities could become cut off
- There is a small chance that power cuts will o other services, such as mobile phone coverage affected
- There is a small chance of travel delays on roads some stranded vehicles and passengers, along w delayed or cancelled rail and air travel
- Spray and flooding could lead to difficult driving conditions and some road closures
- Where flooding occurs, there is a slight chance of delays or cancellations to train and bus services

Yellow warning
Rain & Snow

Between
00:00 Tue 26 Mar 2024 and
12:00 Tue 26 Mar 2024

Further Details (continued)

What should I do?

Give yourself the best chance of avoiding delays by checking road conditions if driving, or bus and train timetables, amending your travel plans if necessary.

Snowy, wintry weather can cause delays and make driving conditions dangerous, so to keep yourself and others safe: plan your route, checking for delays and road closures, amending your travel plans if necessary; if driving, leave more time to prepare and check your car before setting off; make sure you have essentials packed in your car in the event of any delays (warm clothing, food, water, a blanket, a torch, ice scraper/de-icer, a warning triangle, high visibility vest and an in-car phone charger).

People cope better when they have prepared in advance for the risk of power cuts or being cut off from services and amenities due to the snow. It's easy to do; consider gathering torches and batteries, a mobile phone power pack and other essential items.

Be prepared for weather warnings to change quickly: when a weather warning is issued, the Met Office recommends staying up to date with the weather forecast in your area.

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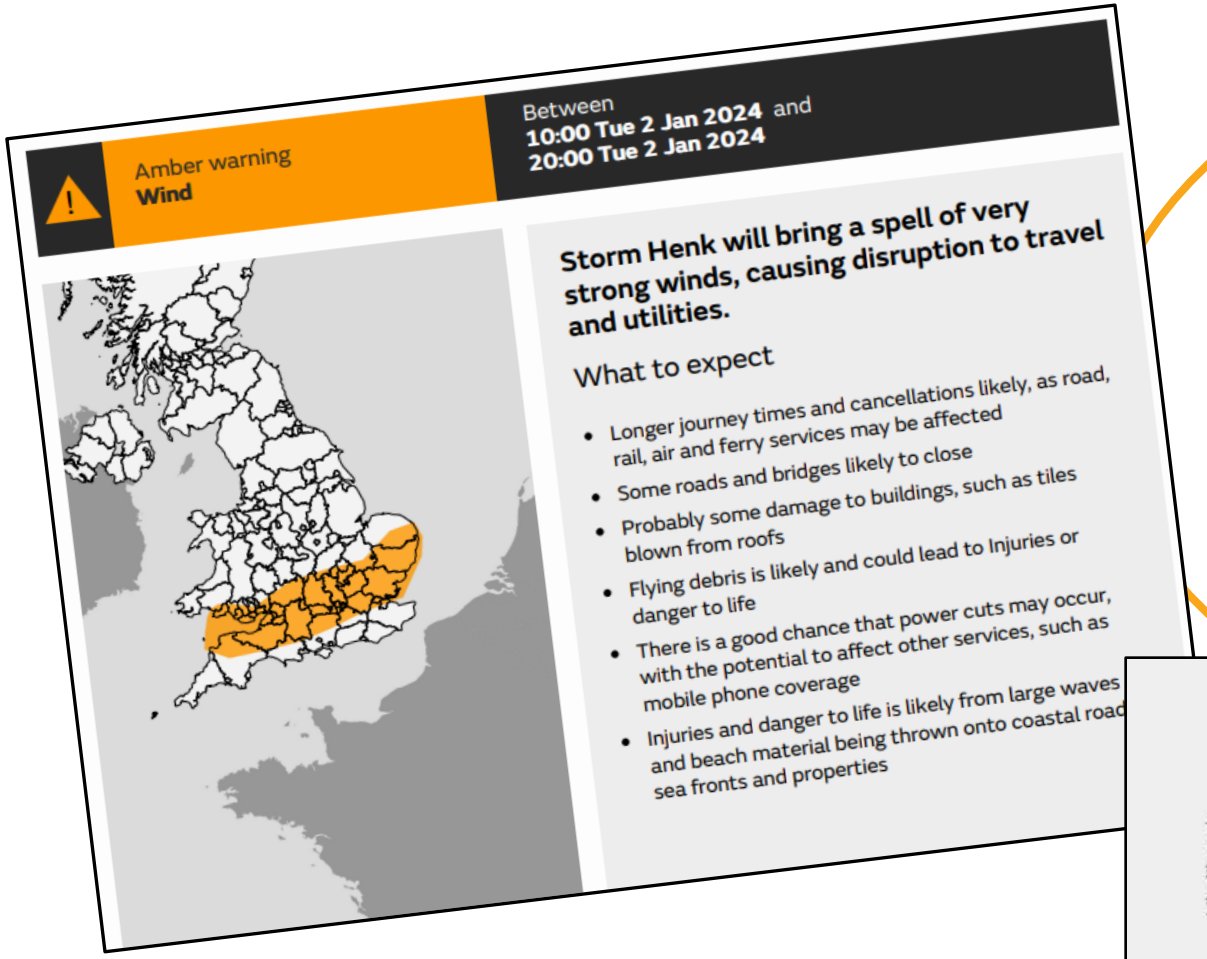
Encouraging action…



If you must drive, you can do this more safely by taking the following actions; drive slowly to minimise the impact of wind gusts, be aware of high sided vehicles/caravans on more exposed roads and be cautious when overtaking, and give cyclists, motorcyclists, lorries and buses more room than usual.

Being outside in high winds makes you more vulnerable to injury. Stay indoors as much as possible. If you do go out, try not to walk, or shelter, close to buildings and trees. In advance of high winds, check for loose items outside your home and secure them. Items include; bins, garden furniture, trampolines, tents, sheds and fences.

If you are on the coast, stay safe during stormy weather by being aware of large waves. Even from the shore large breaking waves can sweep you off your feet and out to sea. Take care if walking near cliffs; know your route and keep dogs on a lead. In an emergency, call 999 and ask for the Coastguard.

People cope better with power cuts when they have prepared for them in advance. It's easy to do; consider gathering torches and batteries, a mobile phone power pack and other essential items.

…her forecast for your area and follow advice from emergency services and local

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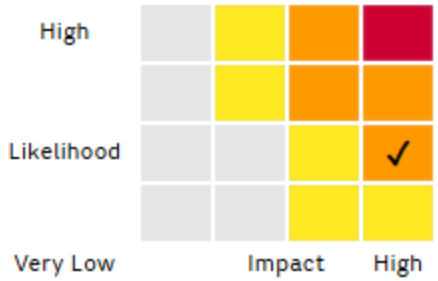
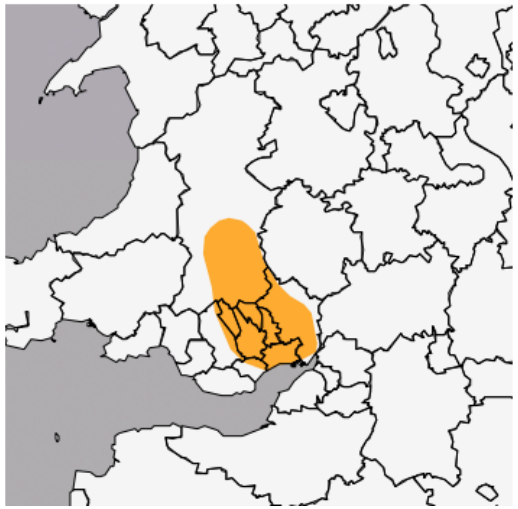
Impact matrix



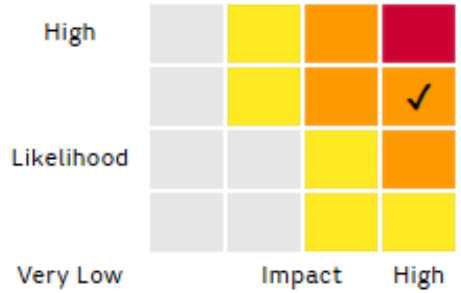


Storm Claudia is expected to bring very heavy rain leading to flooding and disruption on Friday

What to expect

- Fast flowing or deep floodwater is likely, causing danger to life
- Extensive flooding to homes and businesses is likely, which could lead to collapsed or damaged buildings or structures
- Road closures and bus and train service delays and cancellations likely
- Dangerous driving conditions because of spray and flooded roads

Impact matrix



What should I do?

Check if your property could be at risk of flooding. If so, consider preparing a flood plan and an emergency flood kit.

Give yourself the best chance of avoiding delays by checking road conditions. You may need to amend or even cancel journeys if driving conditions are dangerous. Keep up to date with bus and train timetables for delays or cancellations.

It is not safe to drive, walk or swim through floodwater, avoid it where possible and if you are affected by fast flowing or deep-water call 999, and wait for help.

People cope better with power cuts when they have prepared for them in advance. It's easy to do; consider gathering torches and batteries, a mobile phone power pack and other essential items.

Be prepared for weather warnings to change quickly. When a weather warning is issued, the Met Office recommends staying up to date with the weather forecast in your area.

What should I do?

Keep yourself and others safe; prepare to avoid travelling by road during potentially dangerous road conditions. If you must travel, ensure you watch for possible danger and drive cautiously.

It is not safe to drive, walk or swim through floodwater, avoid it where possible and if you are affected by fast flowing or deep-water call 999, and wait for help.

It's never too late to take action and prepare for flooding. Preparing a flood kit could save you from loss or damage due to flooding to your home or business. In your flood kit have: insurance and any other important documents; a torch & spare batteries; a first aid kit, prescription medicines and supplies for looking after your family members or pets; and warm, waterproof clothes, blankets, food and water.

Help to protect vulnerable people that you know including older people, those with underlying conditions and those who live alone; they may need support with food and medical supplies. If you are worried about your health or that of somebody you know, ring NHS 111 (or consult NI:DIRECT if in Northern Ireland).

Stay up to date with the weather forecast for your area and follow advice from emergency services and local authorities.

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Heat and Cold Warnings in UK

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Heat in UK…

1. Extreme Heat Warning – 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.
2. UK Health Security Agency (UKHSA) Heat Health Alert - An England only service considering the impact of prolonged extreme heat on public health, especially those with long-term health conditions.
3. Heatwave definition - a threshold-based meteorological definition designed to provide the media and public with consistent and reliable messaging.

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 geographical differences reflect the differences in climate across the UK. The threshold temperatures have been calculated using the 1991-2020 climatology of daily maximum temperature at the mid-point of the meteorological summer (15 July).

Met Office
Heatwave Threshold

UK'S HOTTEST JULY DAYS			
SITE	AREA	OB DATE	MAX TEMP
CONINGSBY	LINCOLNSHIRE	19/07/2022	40.3
CAMBRIDGE, BOTANIC GARDEN	CAMBRIDGESHIRE	25/07/2019	38.7
PITSFORD	NORTHAMPTONSHIRE	18/07/2022	38.2
HEATHROW	GREATER LONDON	31/07/2020	37.8
HEATHROW	GREATER LONDON	01/07/2015	36.7
WISLEY	SURREY	19/07/2006	36.5
CHELTENHAM	GLOUCESTERSHIRE	03/07/1976	35.9
FAVERSHAM	KENT	01/07/2025	35.8
CHELTENHAM	GLOUCESTERSHIRE	02/07/1976	35.7
CAMDEN SQUARE	GREATER LONDON	13/07/1923	35.6
FELSHAM	SUFFOLK	27/07/2018	35.6

UK'S HOTTEST AUGUST DAYS			
SITE	AREA	OB DATE	MAX TEMP
FAVERSHAM	KENT	10/08/2003	38.5
GREENWICH, OBSERVATORY	GREATER LONDON	19/08/1932	37.2
CHELTENHAM	GLOUCESTERSHIRE	03/08/1990	37.1
WORCESTER, BARBOURNE	HEREFORD & WORCEST	02/08/1990	36.6
GRAVESEND, BROADNESS	KENT	06/08/2003	36.4
KEW GARDENS	GREATER LONDON	07/08/2020	36.4
HEATHROW	GREATER LONDON	07/08/2020	36.4
CHARLWOOD	SURREY	11/08/2020	36.2
BRENT PELHAM	HERTFORDSHIRE	04/08/1990	36.1
KEW GARDENS	GREATER LONDON	09/08/2003	36

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Weather Warning and Alerting Co-production in action….

https://assets.publishing.service.gov.uk/media/67f3aeaed3f1efd2ce2ab897/WHA_User_Guide.pdf

GRN: Summer / winter preparedness
YLO: Response
AMB: Enhanced Response
RED: Emergency Response

Figure 1. Typical cascade of Weather-Health Alerts

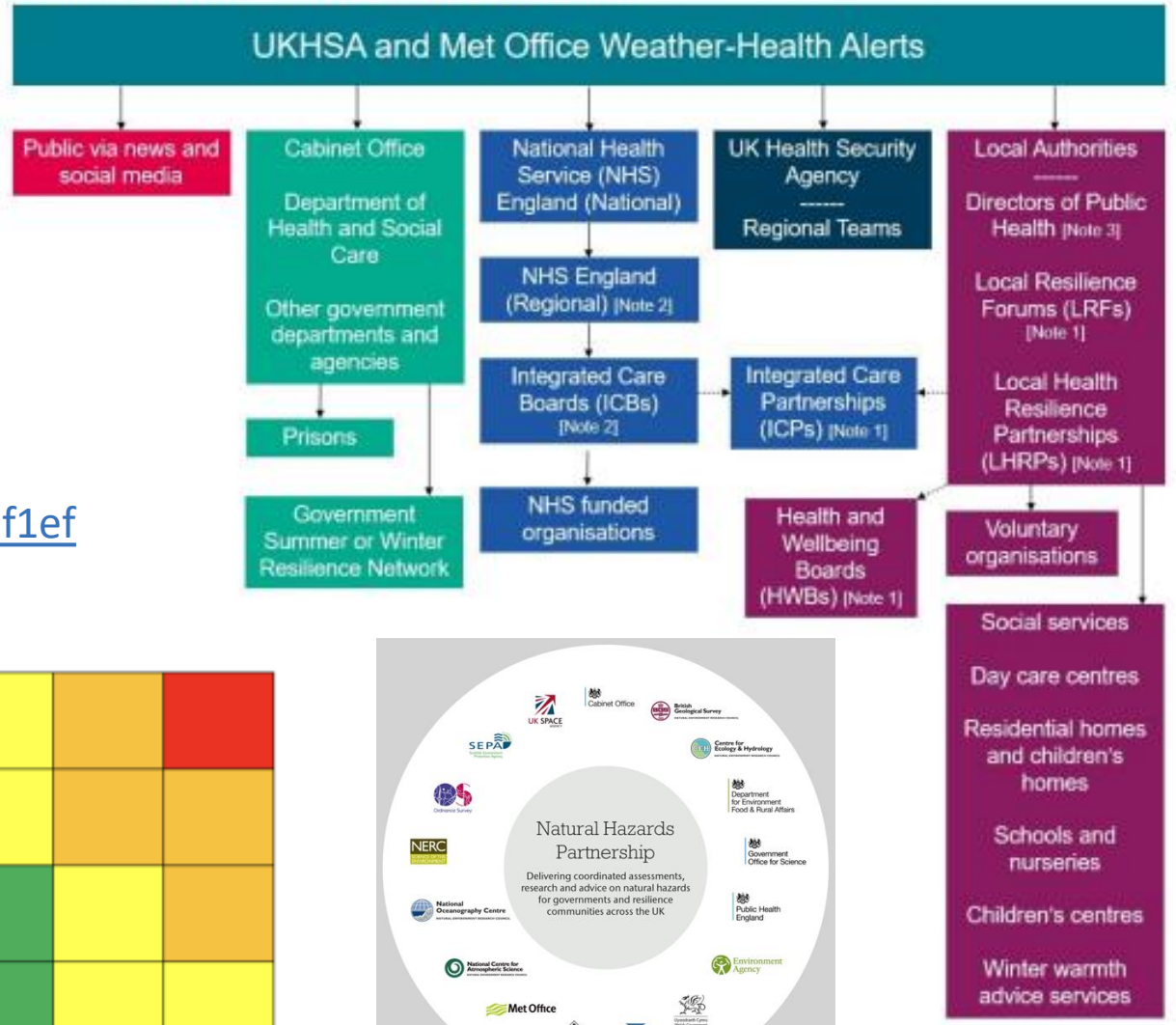
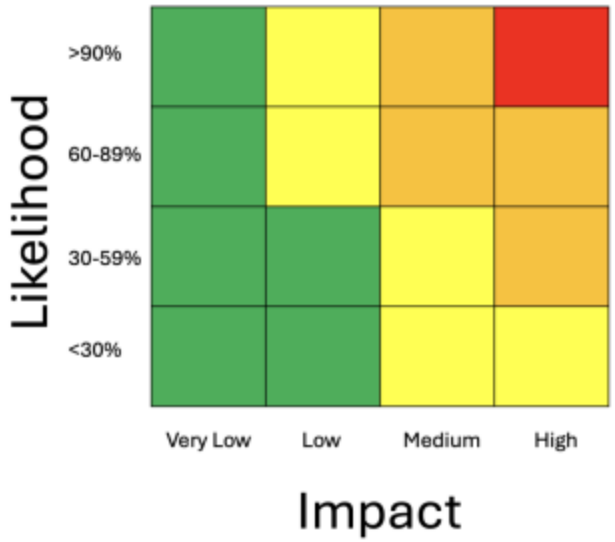


Figure 2. Impact and likelihood risk matrix



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Extreme Heat in NSWWS

(Heat) High Likelihood (H/H)

What should I do?

Keep yourself safe by following these simple steps to reduce the likelihood of the heat making you feel unwell; drink plenty of fluids, keep out of the sun and avoid any exercise between 11am-3pm when the sun is strongest and close curtains in rooms that face the sun. If you are going out take water with you, stay in the shade, wear sunscreen and a wide brimmed hat.

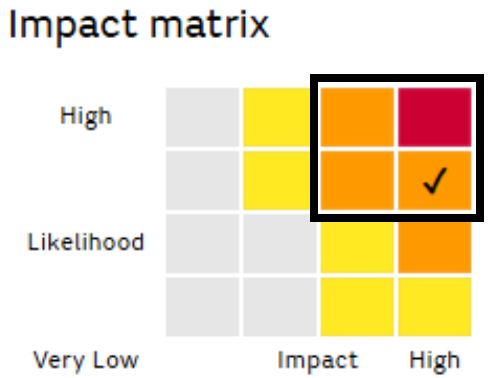
Give yourself the best chance of avoiding delays by checking road conditions if driving, or bus and train timetables, amending your travel plans if necessary. If using public transport, there are many simple things you can do to keep yourself safe; carry water with you, take a small hand-held battery powered fan, if you feel unwell get off at next stop for some fresh air, dress in light fabrics in light colours to help stay cooler, keep an eye on fellow passengers for signs they may be struggling.

Help to protect vulnerable people that you know including older people, those with underlying conditions and those who live alone; they may need support to keep cool and stay hydrated. If you are worried about your health, or that of somebody you know, ring NHS 111 (or consult NI:DIRECT if in Northern Ireland).

Keep yourself safe whilst enjoying the water in this weather by following these simple steps: enter the water gradually, avoiding jumping or diving straight in, to reduce your risk of cold-water shock, go to a lifeguarded beach or a supervised swimming area, and, if you, or anyone else, get into difficulty in the water, float on your back.

People cope better with power cuts when they have prepared for them in advance. It's easy to do; consider gathering torches and batteries, a mobile phone power pack and other essential items.

Stay up to date with the weather forecast for your area and follow any advice from emergency services and local authorities.



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Heat Alerts

Table 1. Heat-Health Alert temperature thresholds

Region	Impact level	Percentage increase in mortality above expected levels	Maximum daytime temperature	Night-time temperature
London	Very low	Not applicable	<28.0°C	95th percentile or higher*
	Low	10%	28.0°C to 31.9°C	
	Medium	20%	32.0°C to 39.9°C	
	High	50%	40.0°C<	
All other regions	Very low	Not applicable	<27.0°C	95th percentile or higher*
	Low	10%	27.0°C to 29.9°C	
	Medium	20%	30.0°C to 37.0°C	
	High	50%	38.0°C<	

* Top 5% of night-time temperature. Ninety-fifth percentile indicates evenings on which the night-time temperature is higher than 95% of all other summer nights. Only the top 5% of evenings in any summer are likely to fall within this upper range of night-time temperatures.

Table 2. Heat impact criteria

	Very low	Low	Medium	High
Population at risk	Little impact observed on health, healthcare services and social care provision.	Increased mortality amongst vulnerable population groups (for example an increase in those aged 65 years and over daily mortality dependant on time of year).	Observed increase in mortality across the population, particularly in those aged 65 years and over or those with health conditions, but impacts may also be seen in younger age groups.	Increased mortality expected across the whole population with significant mortality observed in older age groups.
Demand for and impacts on health and social care services		Potential for increased usage of healthcare services by vulnerable population. Internal temperatures in care settings (hospitals and care homes) maybecome very warm increasing risk of indoor overheating.	Increased demand for GP services, ambulance call out, remote healthcare services (NHS111) likely. Impact on ability of services delivered due to heat effects on workforce possible. Many indoor environments likely to be overheating, risk to vulnerable people living independently in community as well as in care settings. Staffing issues due to external factors. Patient medication regime may lead to increased risk of dehydration.	Significant increased demand on all health and social care services. Impact on ability of services to be delivered due to heat effects on workforce. Indoor environments likely to be hot makingprovision of care challenging and leading to increased risk of heatstroke and dehydration.

	Very low	Low	Medium	High
Other sectors			Non-health sectors starting to observe impacts (for example travel delays).	National critical infrastructure failures – power outages or major roads and rail lines closed due to melting roads or overheating rail lines.

Table 3. Interaction between the HHA and NSWWS extreme heat

HHA impact level	NSWWS
Very low	Not applicable
Low	Not applicable
Medium	Potential for amber extreme heat warning within high impact column – that is potential for severe impacts
High	Potential for red extreme heat warning

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Cold Alerts

Table 4. Cold-Health Alert temperature thresholds

Impact level	Temperatures
Very low	Average temperatures >2.0°C
Low	Average temperature of 2.0°C or below for 48 hours or more
Medium	1. Average temperatures below 2.0°C for 5 days 2. Average temperatures below 0.0°C for 48hrs or more
High	1. Average temperatures below 0.0°C for 5 days 2. Average temperatures below –2.0°C for 48hrs or more

Table 6. Interaction between the CHA and other Met Office NSWWS warnings

CHA impact level	NSWWS
Very low	Not applicable
Low	Potential for yellow weather warnings – in the low impact columns – for example snow, ice, wind
Medium	Potential for yellow or amber weather warnings in place (snow, ice, wind, and so on) within the medium or high impact columns – that is potential for significant and severe impacts or potential for significant flood warnings
High	Potential for amber weather warnings in place (snow, ice, wind, and so on) within the high impact column – that is potential for severe impacts or potential for red weather warning for snow, ice or wind or any flood warnings indicating significant or severe impacts occurring at the same time and same place

Table 5. Cold impact criteria

	Very low	Low	Medium	High
Population at risk	Little impact observed on health, healthcare services and social care provision.	Increasing mortality among vulnerable groups (for example those aged 65+ dependent on the time of year) in line with observed winter patterns.	Increasing mortality observed population-wide, focused on those aged 65+ and some other vulnerable groups (for example those sleeping rough) but with some observed effects among other groups (for example those with health conditions), and also may be seen in younger age groups.	Increased mortality expected across the whole population with significant mortality observed in older age groups and some other vulnerable groups (for example those sleeping rough).
Demand for and impacts on health and social care services	No discernible change in demand.	Increased health and social care service utilisation by those aged 65+ may be observed, in line with observed winter patterns.	Increased demand for GP services, ambulance call out, remote healthcare services (NHS111) may occur although this may be with a significant time lag. Staffing issues may arise due to external factors (for example transport disruption). Those using domiciliary care may not be able to access services because carers can no longer move easily between properties.	Significant increased demand on all health and social care services, though likely with a time lag. Impact on ability of services to be delivered due to cold effects on workforce – either through workforce attrition due to illness, or because staff are unable to visit those living at home.

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User guide – Weather-health alerting system

	Very low	Low	Medium	High
Other sectors	No or minimal wider sectoral impacts.	Contained impacts, for example disruption to public transport.	Non-health sectors starting to observe impacts which may have knock-on effects for delivery of key public services leading to short-term closures (for example for schools).	A broad spectrum of impacts may be observed in other sectors, for example: • widespread and severe disruption to public transport systems, with knock-on effects for public service delivery, for example school closures • critical infrastructure failures, for example power outages, water supply, gas supply shortages and disruption to communications networks • disruptions to critical supply chains influencing service provision in other sectors including health

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UKHSA Action Cards

Key resources for Heat-Health Alerting (HHA) system:

- **Summary - HHA system**
- HHA system - voluntary and community sector (action card)
- HHA system - commissioners (action card)
- HHA system - health and social care providers (action card)
- HHA system - national government (action card)

Summary actions for Yellow Alert

- ☐ Confirm that staff are aware of contingency plans and received the Heat-Health Alert
- ☐ Use the Heat-Health Alert impact matrix to inform the local risk assessment for, and response to, hot weather
- ☐ Share and emphasise the importance of Beat the Heat messages to clients and staff
- ☐ Raise awareness of heat illnesses and their prevention among clients and carers
- ☐ Support the provision of information about health risks from reliable sources – especially to vulnerable groups and underserved populations
- ☐ Operationalise cool rooms or areas (able to be maintained below 26°C)
- ☐ Monitor temperatures inside buildings, especially where people spend most time and aim to keep as cool as possible (for example by closing windows during the day and opening windows when it is cooler outside, such as at night)
- ☐ Review, prioritise and monitor individuals most vulnerable to heat-related illnesses
- ☐ Ensure sufficient cold water and ice are available to minimise risks from dehydration

Summary actions for Amber Alert

- ☐ Continue Yellow Alert actions
- ☐ Invoke local business continuity and/or hot weather plans
- ☐ Ensure individuals most vulnerable to heat-related illnesses have appropriate arrangements in place for monitoring

Summary actions for Red Alert

- ☐ Follow all local emergency response plans
- ☐ Monitor the current situation by checking the weather alerts or local news
- ☐ Continue Amber Alert actions

Summary actions for a yellow alert

- ☐ Conduct a local risk assessment for hot weather in your area and your organisation's response, consulting the Heat-Health Alert guidance and full action card
- ☐ Confirm that staff are aware of business continuity and hot weather plans and received the Heat-Health Alert. Share it with staff if they have not received it
- ☐ Share and explain the importance of Beat the heat messages to clients and staff, including raising awareness of heat-illness signs and prevention
- ☐ Ensure staff check thermometers are installed and working, and monitor temperatures inside buildings especially where people spend most time
- ☐ Ensure staff keep certain rooms or areas below 26°C, giving people a place to cool down, and keep the building as cool as possible (for example, by closing windows when it is hottest and opening windows when it is cooler outside, such as at night)
- ☐ Ensure staff monitor individuals most vulnerable to heat-related illnesses, by checking body temperature, heart and breathing rates, blood pressure, medication, hydration levels and fluid balance
- ☐ Assess staffing levels, recognising possible greater patient needs during hot weather
- ☐ Ensure medication is stored according to instructions
- ☐ Reschedule activities such as physiotherapy to cooler times of day
- ☐ Encourage and enable staff to carry water and stay hydrated, and report concerns about their own health promptly

Summary actions for an amber alert

- ☐ Continue yellow alert actions
- ☐ Follow local business continuity and/or hot weather plans
- ☐ Ensure that staff monitor the temperature of at-risk individuals and their environment
- ☐ Advise staff and patients to raise concerns quickly, as heat illnesses can worsen fast

Summary actions for a red alert

- ☐ Continue amber alert actions
- ☐ Follow all local emergency response plans and continue to monitor the current situation by checking the weather alerts or local news
- ☐ Actively monitor all patients during hot weather episodes and monitor compliance with actions to keep living areas as cool as possible and cool rooms or areas below 26°C

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Summary

Encouraging learning from UK experience

CAUTION: This may not work on a like for like basis / approaches from the UK experience may not drive the same action in other countries;

- Insight into the considerations and testing which took place to incorporate action orientated advice into UK NSWWS (IBF) statements are presented for discussions on appropriate strategies for communication in South Asia.
- Are there similar studies and/or understanding of the most appropriate way to encourage action?
- Can we test approaches / which approaches can we test, using behavioural psychology principles, as part of demonstration activities in South Asia?

Questions?

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