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UK Resilience Lessons Digest

Learning Together

Issue 1 | October 2022

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Contents

	Foreword by Director Mary Jones, Resilience Directorate	1
	Introduction by the Cabinet Office Emergency Planning College	2
	Issue 1: Summary Introducing the Digest	4
	About the UK Resilience Lessons Digest Timely analysis. Transferable lessons. Transformative insights.	8
	An Interconnected World Reflections on International Learning	16
	Adaptations and Evolutions In the National Learning Arena	20
	Learning Together An Analysis of Lessons Arising from Storm Arwen	26
	Academic Insight Information and Expectations in Power Outages	52
	Practical Tools for Change From Identification to Implementation	60
	Professional Insights on Implementation An interview with Chief Superintendent Dawn Morris on city-wide learning from counter-terrorism exercises and malicious attacks	66
	Learning in the Local Tier Collaboration and Integration for Continual Improvement	72
	Resources	76



Foreword

by Director Mary Jones, Resilience Directorate

I am delighted to introduce this first edition of the UK Resilience Lessons Digest. This is the debut of what will be a regular publication, which, importantly, is easily accessible through the Cabinet Office Emergency Planning College (EPC) website.

Learning is integral to managing risks. Embedding the learning from lessons is necessary to drive continual improvements in the competencies of individuals, capable teams, organisations and partnerships that make-up the UK resilience community.

As a community, you have always recognised and prioritised this through existing lessons platforms and channels. However, with such a large number of lessons and recommendations, produced from a diverse array of exercises, incidents and inquiry reports, across all sectors and services - both nationally and globally – there are challenges in absorbing, synthesising and sharing these effectively and quickly. These precise challenges were identified in recent House of Lords select committee and Committee of Public Accounts reports.^{1,2}

We have committed to do better, starting with this UK Resilience Lessons Digest.

It has been commissioned by the government, and researched and designed by the Cabinet Office EPC, in collaboration with the Cabinet Office Resilience Directorate, JESIP's Joint Organisational Learning Team, other Lead Government Departments and existing lesson platforms.

The Lessons Digest will draw on a wide range of relevant resources to provide timely analysis of lessons and recommendations of relevance to local challenges. It will support local stakeholder organisations and wider communities in lesson implementation. It will also inform the development of resilience doctrine, standards, good practice, training and exercising, as one of a suite of tools to demonstrably build national resilience capability.

To energise the 'learning from lessons' conversation across our broadest resilience community, the Digest is a balance of easily readable, conversational style articles, featuring personal reflections, professional expertise, academic insights and practical tools on varied topics. Being rooted in established learning theories, it will also raise awareness of applied principles for embedding lessons in practice.

I hope you find the UK Resilience Lessons Digest a valuable resource and, to ensure the Digest is a learning endeavour in and of itself, please do share your comments and thoughts for future editions.



Mary Jones
Director, Resilience Directorate
Economic & Domestic Secretariat

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- 1 HM Government, 2022. Government response to Preparing for Extreme Risks: Building a Resilient Society, p.10. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1061424/government-response-preparing-extreme-risk.pdf
 - 2 HM Treasury, 2022. Treasury Minutes: Government Response to the Committee of Public Accounts on the Forty-Third to the Forty-Eighth report from Session 2021-22, pp.22-23. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1075264/E02750583_CP_678_Treasury_Minute_PRINT.pdf

Introduction

by the Cabinet Office Emergency Planning College

The COVID-19 pandemic forced us all to learn at speed, making rapid changes as our understanding of the virus evolved. Governments, local responders and resilience professionals put in place a dynamic response to mitigate risks and negative impacts. As the risk landscape shifted, essential services and societal systems adapted. Priorities were realigned, resources reallocated, and day-to-day operations re-organised.

More than two years later, many narratives have shifted to focus on learning to live with the virus. Even amid personal and collective losses, continued covid impacts and wider emergencies, the learning curve continues. As we recover, rebuild and now review evolving threats, one thing is clear:

We are all learning together.

The new UK Resilience Lessons Digest has been designed to support our processes of learning lessons from exercises and emergencies. It recognises that learning is both innately human, and contextually complex. It also acknowledges that the learning arena belongs to all.

This is well illustrated by a quick Google search on ‘lessons from Covid’, which at the time of writing already returns more than 388,000,000 results in just 0.61 seconds. These come from a range of perspectives, contexts and sources. Amongst them are many significant, evidence-based lessons that will be of wider relevance across the resilience community.

Reaching beyond the pandemic, lessons identified and ‘lessons learned’ from other emergencies and exercises multiply significantly. Widening scope even further to include learning from disasters past, the quantity of lessons relevant to the Digest work becomes necessarily vast.

To synthesise lessons from exercises and emergencies, it has therefore been necessary to create some organising structures in which they can be accommodated. The ‘About the UK Resilience Lessons Digest’ section on pg.9 speaks to these structures, outlining the purpose, principles, processes that have guided its development. These have been informed by conversations with the resilience community and used to help ensure onward analysis ‘makes sense’ in the wider UK emergency management context. It also sets the publication in context and highlights some of the onward potential as the programme of work progresses.

Consideration has also been given to the organisation of Digest content. The timely synthesis of learning themes and transferable lessons from exercises and emergencies will always sit at its heart. This is accompanied by relevant supporting articles that bring professional practice and relevant academic insights on the process of learning lessons into a shared space.

A helpful Issue Summary of the collective content is provided at the start each e-publication. Individual articles are also colour coded, making it possible to ‘digest the Digest’ in a single sitting, or dip and dip out of content according to interest.

Following each publication, the Cabinet Office Emergency Planning College will also host a ‘Learning Together’ Webinar. This will be delivered live on-line, offering an informal opportunity to engage with an overview of publication content. We will be joined by guest speakers and invite those who attend to feed into question and answer sessions. Upcoming webinar dates and times will be promoted by the EPC in due course.

Finally, in the spirit of learning together, and as mentioned in the Foreword, the Digest will continue to welcome your feedback. To share your views with us, please follow this link:
<https://forms.office.com/r/YiGaCKXLfG>

We hope you find Issue 1 ‘Learning Together’ an insightful read, and look forward to hearing from you.



Deborah Higgins
Head of Cabinet Office
Emergency Planning College



Lianna Roast
Resilience Knowledge Coordinator
Emergency Planning College

Issue 1: Summary

Introducing the Digest

Introducing the Digest

The publicly available UK Resilience Lessons Digest is part of a programme of work at the Cabinet Office Emergency Planning College (EPC) to synthesise lessons learned from all major exercises and emergencies.

These summary pages provide an overview of Issue 1 content, in line with the Digest's three key objectives. These are:



To **Summarise** transferable lessons and themes from a wide range of relevant sources



To **Share** lessons across responder organisations and wider resilience partners



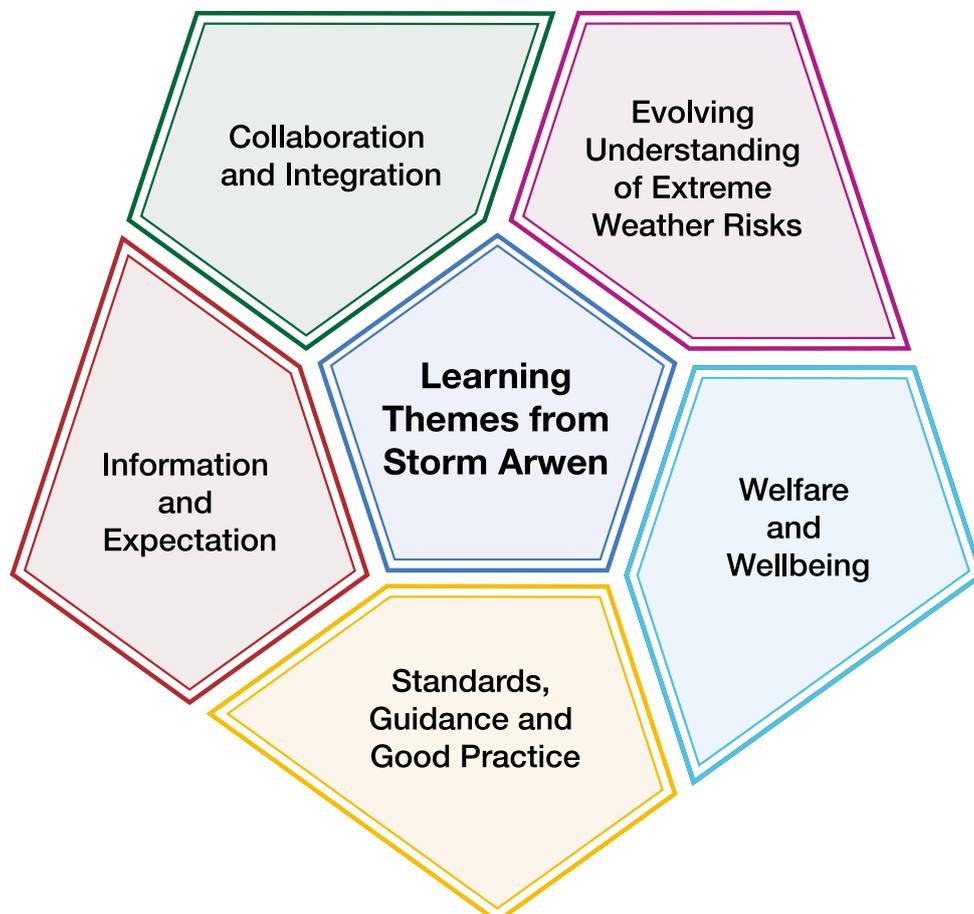
To **Coordinate** knowledge to drive continual improvements in doctrine, standards, good practice, training and exercising



Summarise

A timely review and analysis of the latest published learning on the impacts of Storm Arwen in late 2021

Figure 1: Key learning themes from the analysis of Storm Arwen





Share

Four articles that focus on lessons and learning at international, national, regional and local levels

International Learning

Learning in an Interconnected World reflects on UNDRR's recent Global Assessment Report (GAR2022). It highlights the need for both fast-paced 'adaptations' and long-term 'evolutions' in response to the lessons we identify. (p.17)

National Learning

Contributions from JESIP and the National Fire Chiefs Council (NFCC) review some of the recent adaptations and strategic evolutions in the UK's national learning arena. (p.21)

Regional Learning

Chief Superintendent Dawn Morris shares her professional experiences and personal insights of leading strategic, city-wide learning from malicious attacks and counter-terrorism exercises. (p.67)

Local Learning

Tracy Davies, Associate Director of Emergency Planning Resilience and Response in Hampshire and Isle of Wight LRF, shares her insights on the importance of informal, collaborative learning for continual improvements in the Local Tier. (p.73).



Coordinate

Two insight pieces offering applied knowledge to support lesson implementation and continual improvements

Academic Insight: Information and Expectations in Power Outages

Understanding how information and expectations shape individual emotions and behaviours during unexpected power outages can support person-centred planning for extreme weather events. This article provides an overview of a study by Mahdavian et al. (2020) that examined societal resilience to a hypothetical 72-hours power failure in Germany and France. It provides some interesting insights that relate to the lessons identified in the review of learning on Storm Arwen. (p.61)

Practical Tools for Change: From Identification to Implementation

Thinking about how systems operate, connect and interact is an important step when developing lesson implementation strategies and designing for change. The Digest invited Government Office for Science (GO-Science) to share some of their knowledge on the topic. This article looks at how to create a Theory of Change, which can be used to support the implementation planning process in response to lessons identified. (p.53)



About the UK Resilience Lessons Digest

Timely analysis. Transferable lessons.
Transformative insights.

Purpose

The UK Resilience Lessons Digest is part of the government's commitment to strengthening whole-society resilience. It sits at the heart of a programme of work at the Cabinet Office Emergency Planning College (EPC) to synthesise lessons learned of all major exercises and emergencies.³

As outlined by the Director of the Resilience Directorate in the Foreword,

'The Lessons Digest will draw on a wide range of relevant resources to provide timely analysis of lessons and recommendations of relevance to local challenges. It will support local stakeholder organisations and wider communities in lesson implementation. It will also inform the development of resilience doctrine, standards, good practice, training and exercising...'

The Digest has three key objectives:



To **Summarise** transferable lessons and themes from a wide range of relevant sources



To **Share** lessons across responder organisations and wider resilience partners



To **Coordinate** knowledge to drive continual improvements in doctrine, standards, good practice, training and exercising.

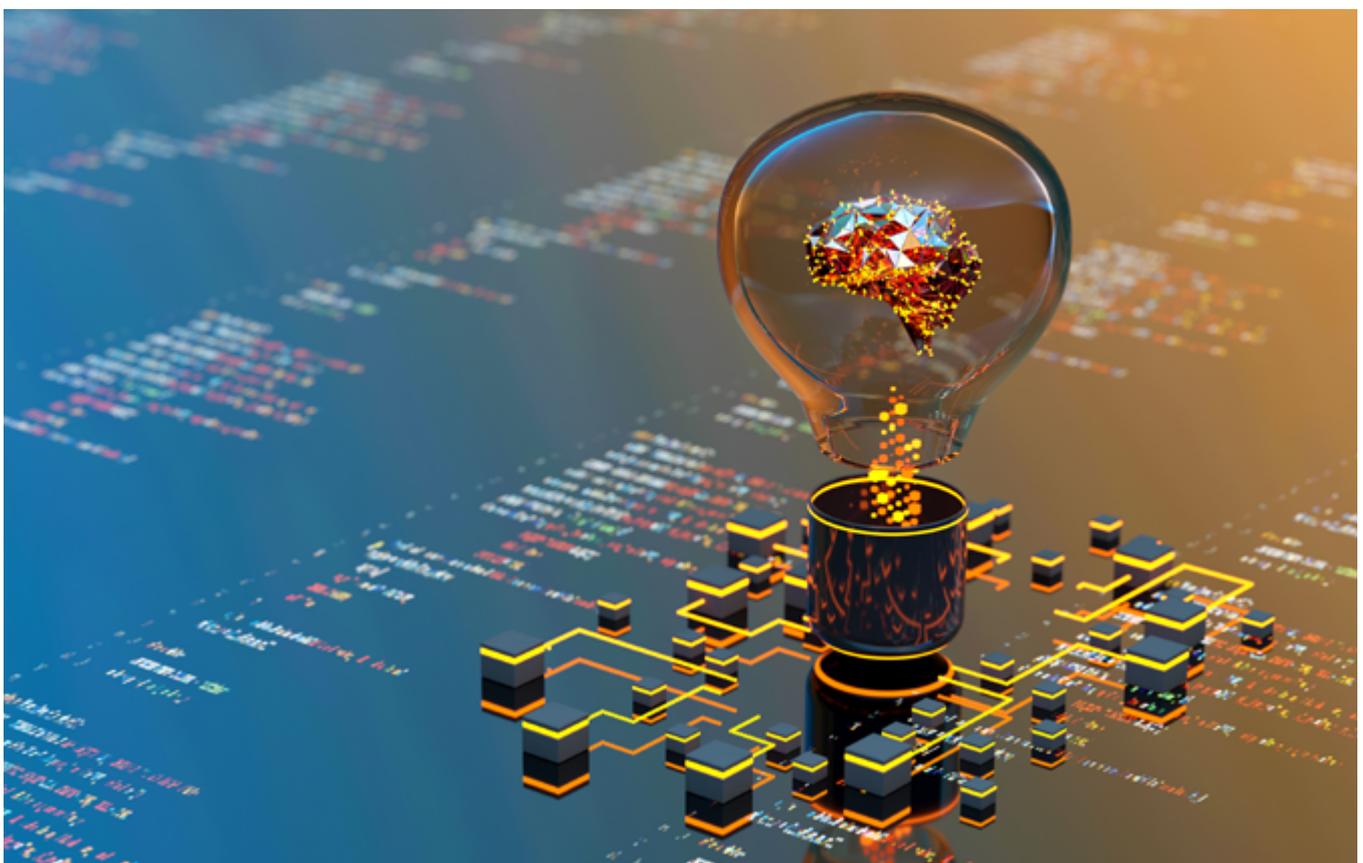
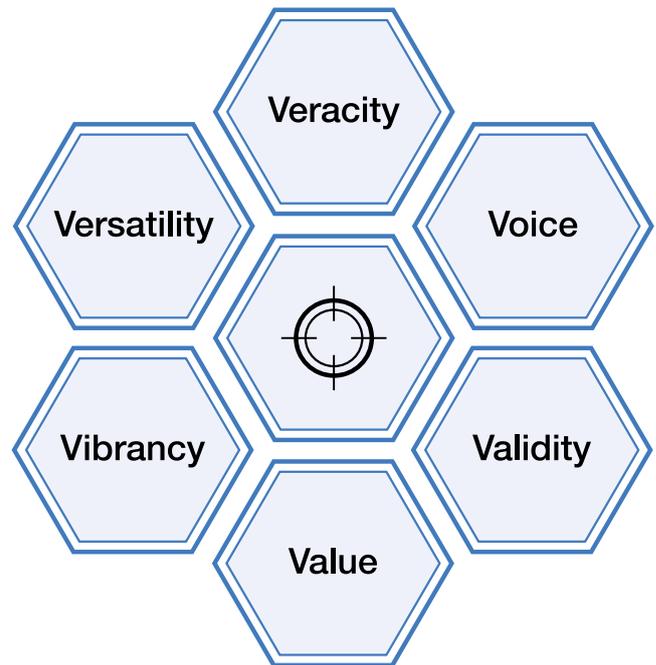
To help achieve these aims, a 6-point vision framework (see Figure 2) has been established. It has been used to guide the development, direction and design of Digest:

1. **Voice:** The Digest has been designed to 'give voice' to learning by raising awareness of lessons arising from a wide range of open-source reports and relevant government material. It will also use its voice to help build a positive learning culture, drawing in relevant insights, professional expertise and lived experience via case studies and interviews.
2. **Validity:** The Digest is committed to ensuring that the transferable lessons and learning themes presented have a valid evidence base. Lessons are also aligned in analysis with risks as specified on the National Risk Register. This anchors the learning into established risk narratives and valid assessment methods.
3. **Veracity:** The Digest knows what it is, and what it is not. It is committed to taking an authentic, factual approach to consistently deliver on its aims. It acknowledges that the learning process is inherently human, and that the learning arena belongs to all. It is a new collaborative tool for learning together. It will help to 'digest' the large quantity of lessons arising, and pass on insights to strengthen resilience in thought and practice.

3 HM Government, 2022. Government response to Preparing for Extreme Risks: Building a Resilient Society, p.10. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1061424/government-response-preparing-extreme-risk.pdf

4. **Vibrancy:** The Digest has been designed to be a vibrant, inclusive, web-based publication that utilises digital media and modern technologies to support engagement with content.
5. **Versatility:** The digest has been designed with versatility in mind. It is poised to pivot, and ready to respond, with potential for 'special issues' or interim content when public inquiries or other key reports are published.
6. **Value:** The Digest is committed to 'adding value' in the current lessons space. It also committed to delivering applied value in practice, amongst a range of responder organisations, local stakeholders and wider resilience partners.

Figure 2: The Digest 6-point vision framework



Process

Work on the Digest began in May 2022. The processes involved since are shown in Figure 3.

As part of this process a live webinar launch event will follow each Digest publication. The session will be free to attend. It will provide an overview of the analysis presented in section 6 (p.26), feature guest speakers and include a question-and-answer session.

Looking beyond the publication, the Digest also has an in-built 'Do, Review and Improve' process to ensure it evolves to remain relevant for local resilience partners going forwards. This includes a monitoring and evaluation strategy that will capture both quantitative measures and qualitative feedback to better understand how it has been received and whether it has been helpful to those who read it. This means that there is an open opportunity to engage and provide feedback to inform Digest development. This can be done via the following link: <https://forms.office.com/r/YiGaCKXLfG>.

Over the coming weeks there will be a period of collating this feedback to inform the development of the second issue, due in 2023. This feedback process will be available after every publication.

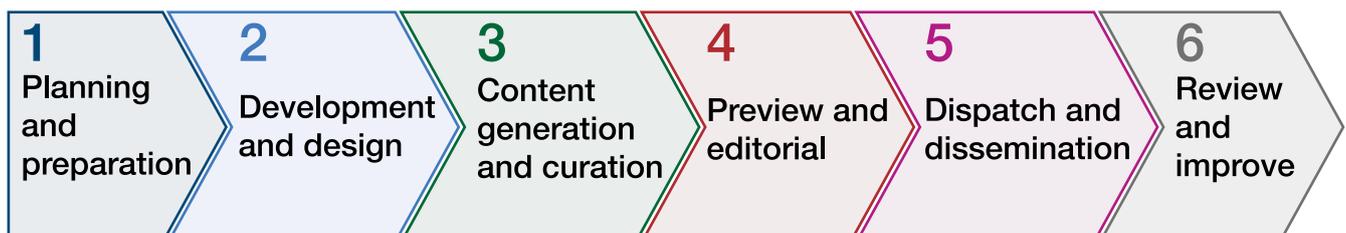
Principles

Three principles have been developed to help organise the lessons we identify from exercises and emergencies. These have been informed by conversations with resilience partners and are purposed to help ensure onward analysis 'makes sense' in the UK risk and resilience context.

Principle 1: Lessons are time-sensitive, not time-limited.

It is important to capture the 'latest' learning, whenever it becomes available. The timeframe between lesson identification and implementation can be critical - a point that is explicitly articulated in the professional 'Insights on Implementation' on page 67. This makes lessons time sensitive, and the Digest will be noting report publication dates to inform timely analyses going forward. However, this does not make lessons time limited, or subject to 'expiration'. Many lessons came at great cost, require time to address and remain relevant. The Digest is also committed to revisiting and reviewing lessons from the past. Emergency events and the learnings that arise from them should be rightly remembered and reviewed. In the act of remembering, it is important that lessons are continually 'learnt and re-learnt' by new and existing generations of students, responders and resilience professionals.

Figure 3: Process stages in the development of the Digest





Principle 2: Lessons must be anchored into a shared understanding of risk

All lessons reviewed by the Digest are tagged to the hazard or threat that precipitated the emergency (or exercise) which gave rise to them. This aligns learning with the risks as specified on National Risk Register,⁴ anchoring every report into a common methodology and shared understanding of risk. Organising and contextualising lessons in this way will help to guide applied relevance for future scenarios. It also supports the review of lessons arising from emergencies with shared risk and common consequence, for example between Lakanal House fire in 2009⁵ and the fire at Grenfell Tower in 2017⁶ going forward.

Principle 3: Lessons analysis should deliver applied value

The analysis of lessons is committed to demonstrating both academic rigor and applied value in practice. To help articulate the relationship between analytical outputs and real-world actions, transferable learning highlighted in the Digest is aligned with process stages in the Integrated Emergency Management Cycle. It is also linked to existing National Resilience Standards. This aims to support the application and integration of lessons and learning themes into existing practice, where it can be used to influence increasingly resilient outcomes.

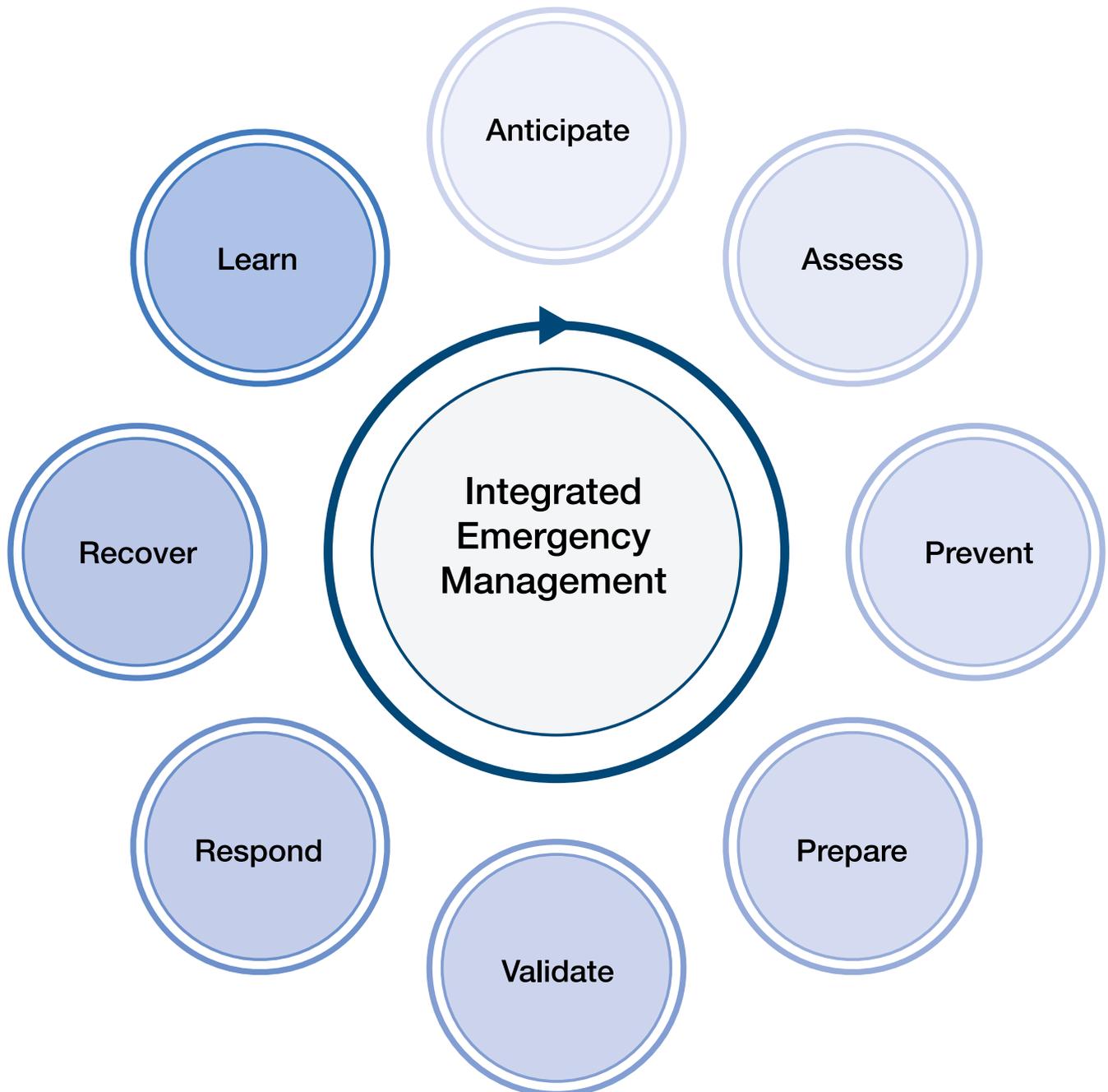
4 HM Government, 2020. National Risk Register. Available from <https://www.gov.uk/government/publications/national-risk-register-2020>

5 Barling, K. (2017) 'We've been here Before', *British Journalism Review*, 28(3), pp. 30–35. doi: 10.1177/0956474817730766

6 Grenfell tower Inquiry Phase 1 Report. Available from: <https://www.grenfelltowerinquiry.org.uk/phase-1-report>

To help articulate the relationship between analytical outputs and real-world actions, transferable learning highlighted in the Digest is aligned with process stages in the Integrated Emergency Management cycle, as below:

Figure 4: The Integrated Emergency Management Cycle (IEM)



Publication

Each issue of the Digest will include a synthesis and analysis of lessons of relevance to the audience. This will sit at the heart of the publication. The methods used for this will always be outlined ahead of the results, so that there is transparency around how findings were determined.

The following **key terms and definitions** may be helpful when navigating the articles and analysis include in each issue:

Learning Theme – ‘a theme that captures something important about the data in relation to the research question and represents some level of patterned response or meaning within the dataset’. This directly aligns with the definition of a ‘theme’ as described by Braun and Clarke,⁷ who provide a leading academic authority on the analytical method of Thematic Analysis. In this case, themes refer to patterns of recurring lessons or notable practice relating to challenges in achieving shared situational awareness, or testing and exercising an emergency response.

Transferability – This term is taken from the ‘Criteria for qualitative research’, as outlined by Lincoln and Guba⁸ (1985). It is defined as ‘the extent to which the results can be generalized or transferred to other contexts or settings’. Well-documented examples here include lessons that could be applied to strengthen resilience outcomes across multiple threats or hazards E.g., the provision of psychosocial support for those impacted by emergencies.

Transactional vs. Transformational Lessons – These terms are adapted from leadership theory⁹ and applied in the lessons context. Transactional lessons are based on exchange. They tend to have more tangible causes and are suited to practical resolution in the near or short-term. Transformational lessons, on the other hand, tend to have more intangible qualities, requiring longer-term solutions to establish and embed meaningful change.

7 Braun, V. and Clarke, V., 2006. Using thematic analysis in psychology. *Qualitative research in psychology*, 3(2), pp.77-101. (p.32).

8 Lincoln, Y.S. and Guba, E.G., 1985. *Naturalistic inquiry*. sage.

9 Bass, B.M., 1985. Leadership: Good, better, best. *Organizational dynamics*, 13(3), pp.26-40; Bass, B.M. and Avolio, B.J., 1994. Transformational leadership and organizational culture. *The International Journal of Public Administration*, 17(3-4), pp.541-554; Zagoršek, H., Dimovski, V. and Škerlavaj, M., 2009. Transactional and transformational leadership impacts on organizational learning. *Journal for East European Management Studies*, pp.144-165.

Potential

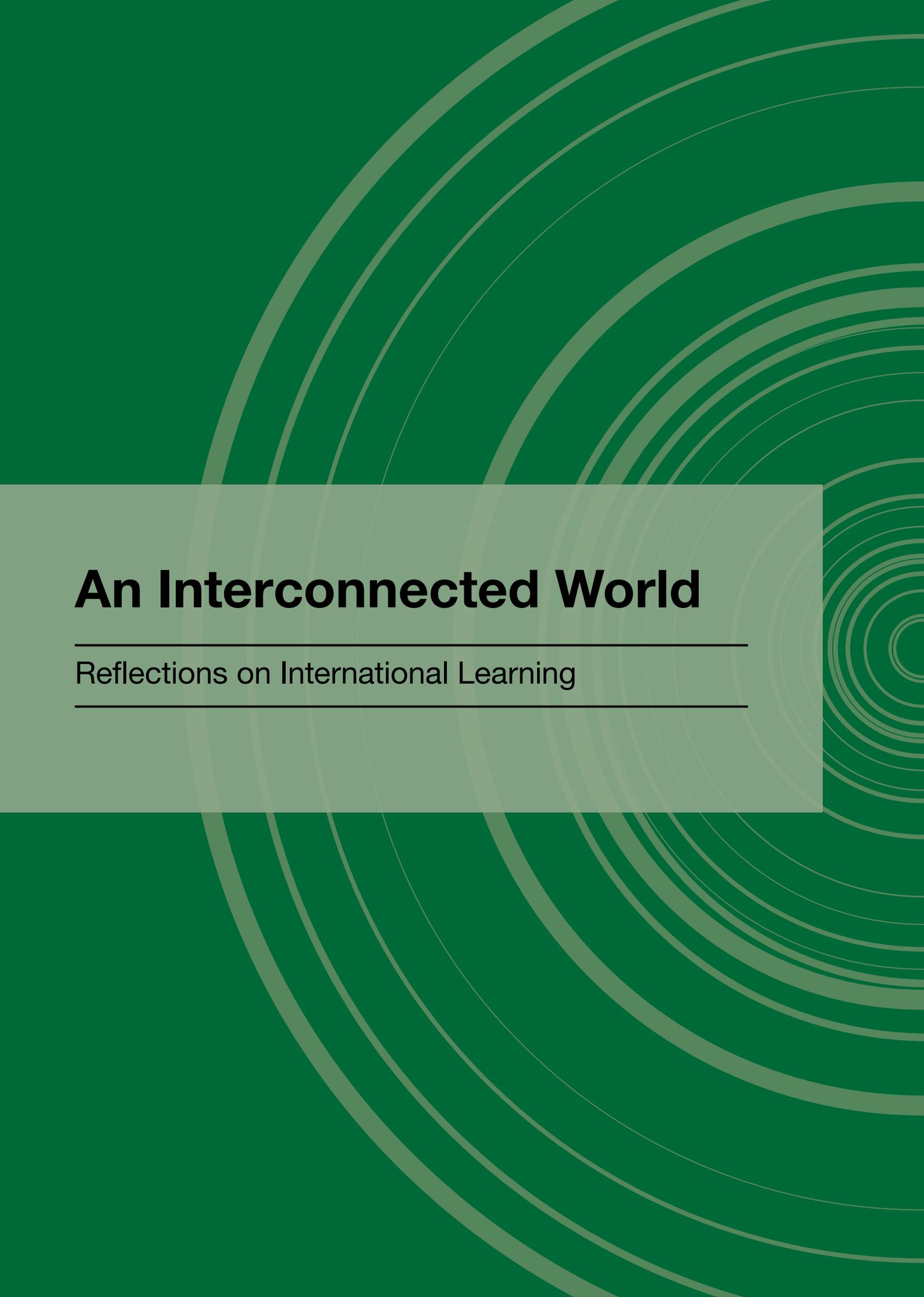
Looking beyond the Digest publications to the wider scheme of work on synthesising lessons, the Digest will also act as a springboard into further opportunities for informal lesson sharing, valuable networking and engagement via the Emergency Planning College, after what has been a very challenging few years.

To sign up and receive all the latest news and updates from the EPC click here: <https://www.epcresilience.com/communications-sign>

You can also find out about upcoming events via the College website: <https://www.epcresilience.com/>

Acknowledgements

We would like to thank colleagues from across the resilience community who have contributed to early conversations about the Digest. This includes the JESIP and JOL team, National Organisational Learning at NFCC, Scotland's SMARTEU and many other individuals from responder organisations, LRFs and academia, who contributed their insights towards development. We would also like to thank central government colleagues in the Cabinet Office Resilience Directorate, Home Office, Department for Levelling Up and Communities and Government Office for Science for their support.



An Interconnected World

Reflections on International Learning

In April 2022 the United Nations Office for Disaster Risk Reduction (UNDRR) published their biennial UN Global Assessment Report on Disaster Risk Reduction (GAR 2022).¹⁰ The report entitled “Our World at Risk: Transforming Governance for a Resilient Future”, clearly evidenced and projected the increasing nature of disaster events. In the face of evolving risks, it also makes ‘valuable recommendations to reduce risk and increase resilience’ going forward:

The GAR2022 focuses on how change is possible, and how governance systems can evolve to respond to an increasingly challenging planetary and socioeconomic environment. It highlights how tools and approaches already in place in the disaster risk reduction (DRR) community can be adjusted, enhanced and scaled up to help create a risk-resilient future.¹¹

As such, the report provides a wealth of insights, case studies and supporting research that can be applied to inform resilient strategies and solutions at national and local levels.

Helpfully, recommendations in GAR 2022 have also been condensed into a 3-point call to action (Figure 5). These reflect broad areas of international learning on: the impacts systemic risks¹² on the achievement of sustainable development goals; the impact of individual thought and

action on risk reduction strategies; and the requirement for governance systems to evolve in response to an increasingly complex, evolving risk environment.

This international learning, combined with experiences of Covid-19 and the lessons analysis that follows on pg 26 has inspired reflection on two key points:

1. The processes involved in learning lessons to reduce risk and increase resilience require ‘rapid adaptations’ and longer-term ‘evolutions’ in combination – not competition.

Some lessons identified during COVID-19 informed rapid adaptations to promote survival and deliver an effective, integrated emergency response. These highly contextualised, experiential learnings have been vital, for example, in the treatment of patients and vaccine research. They demonstrate clear value, lend to real-time application and generate positive outcomes in both the short and longer-term.

However, other lessons articulated within the GAR indicate a need for longer-term ‘evolutionary’ changes. An example here is the need for governance systems to evolve in response to global challenges and shifting risks in the socioeconomic environment. This ties in with the recent learning in UK, which included a call for ‘preparedness to evolve’¹³ in response to extreme weather risks, following the impacts of Storm

10 UNDRR, 2022. UN Global Assessment Report on Disaster Risk Reduction (GAR 2022). “Our World at Risk: Transforming Governance for a Resilient Future”. Available from: <https://www.undrr.org/gar2022-our-world-risk#container-downloads>

11 UNDRR, *ibid.* p.1

12 See UNDRR, 2022. BRIEFING NOTE ON SYSTEMIC RISK, ISBN/ISSN/DOI10.24948/2022.01 (DOI). Available from: <https://www.preventionweb.net/publication/briefing-note-systemic-risk>

13 Scottish Government, 2022. Storm Arwen review. Available from: <https://www.gov.scot/publications/storm-arwen-review/>

Arwen. Unlike the rapid adaptations above, these lessons speak to changes in the ‘fundamental attributes’ of societal systems, shifts in policy and guidance or changes in legislation.¹⁴ They require longer-term term, learning and incremental change.

This means that a combination of near-term adaptations and longer-term evolutionary changes are both required to address the lessons we identify. Often it can seem the two modes of action are in competition with each other, especially when trying to achieve ‘evolutionary’ changes on adaptive timescales. However, both have unique and important parts to play in a holistic learning process.

2. An understanding of human factors, including individual cognitive and behavioural aspects, remains inextricably linked to advances in international disaster risk reduction.

It is fascinating that in 2022, for all our technological advance and expertise, that the role of individual human minds still

make it into the top three international call to action. This emphasises the point that an understanding of human thinking on risk – including individual-level learning in response to it – should be well integrated into attempts to up-scale learning across organisations.¹⁵

From a lessons perspective this reminds us that embodied human learning remains one of the few means by which the challenges of the future can be met.¹⁶

Overall, the GAR2022 demonstrates that we are not learning alone. It also provides some interesting case studies of what this looks like in local communities across the globe.

Picking up on these reflections, the next section looks a little closer at ‘Adaptations and Evolutions’ in the UKs National Learning Arena. Later in this Issue, the Digest also features interviews and case studies that consider what learning in community looks like at regional, and local levels.

To access and download the UNDRR GAR 2022 report and supporting materials, visit: <https://www.undrr.org/gar2022-our-world-risk#container-downloads>

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- 14 UNDRR, 2022. UN Global Assessment Report on Disaster Risk Reduction (GAR 2022). “Our World at Risk: Transforming Governance for a Resilient Future”. Available from: <https://www.undrr.org/gar2022-our-world-risk#container-downloads> (p.179); Intergovernmental Panel on Climate Change (IPCC), 2014. Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, R.K. Pachauri and L.A. Meyer, eds. Geneva. www.ipcc.ch/site/assets/uploads/2018/02/SYR_AR5_FINAL_full.pdf
 - 15 Roast, L., 2021. Learning that can save lives: Psychological perspectives on the process of learning from major incidents and disasters. National Preparedness Commission. Available from: <https://nationalpreparednesscommission.uk/2021/09/learning-that-can-save-lives/>
 - 16 Donahue, A. and Tuohy, R., 2006. Lessons we don’t learn: A study of the lessons of disasters, why we repeat them, and how we can learn them. Homeland Security Affairs, 2(2). p.22.

Figure 5: The GAR2022 call to action



Adaptations and Evolutions

In the National Learning Arena

National Level Learning

Over the last decade, the UK's national learning landscape has been evolving, and responder organisations have been adapting to new emerging risks.

From a multi-agency perspective, the launch of the Joint Organisational Learning (JOL) platform in 2015, which grew up and out of the 2012 Joint Emergency Services Interoperability Programme (JESIP),¹⁷ provides a national, 'inter-organisational' example. As JESIP heads into its second decade, Deputy Senior Responsible Officer Carl Daniels and JOL Coordinator Lizzie Jones revisit some of the key milestones in the development of JOL and give insight into the latest national learning arising from shared lessons identified at the local level.

From a single-agency perspective, the development of National Operational Guidance and National Operational Learning (NOL) in the UK Fire and Rescue Services (UKFRS) provides an insightful case study on the impact of intra-organisational learning of relevance to wider resilience partners. Using the example of lessons recently identified from experiences of fires involving lithium-ion batteries, NOL Lead Scott Cameron explains how connecting the dots across incidents at the national level has driven critical updates in a shared understanding of the risks. In collaboration with subject matter experts, this has gone on to inform key operational response guidance and led to updated training resources.

JESIP: A Decade of Interoperability



In 2012 the Joint Emergency Services Interoperability Programme (JESIP) was established in response to a number of lessons identified regarding the way the emergency services responded to a range of major incidents. This led to the publication of the first ever 'Joint Doctrine', providing an interoperability framework to drive improvements in 'the extent to which organisations can work together coherently as a matter of routine'. A decade later, JESIP has expanded beyond the emergency services and now encompasses all responder organisations, becoming the standard for interoperability in the UK and receiving international recognition. The third edition of the **Joint Doctrine: the interoperability framework**¹⁸ was published online last year, and sets out an updated, standard approach to multi-agency working, along with training and awareness products for responding organisations to train their staff.



Carl Daniels,
JESIP Deputy Senior Responsible Officer

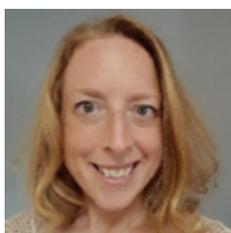
¹⁷ JESIP, 2022. JESIP. Available from <https://www.jesip.org.uk/>

¹⁸ JESIP, 2022. Joint Doctrine. Available from: <https://www.jesip.org.uk/joint-doctrine/introduction-to-the-joint-doctrine/>

A Commitment to Joint Organisational Learning



One of the original, core objectives of JESIP and a key element of the 'Joint Doctrine: The Interoperability Framework' was to embed a national, joint organisational learning strategy. This led to the launch of the Joint Organisational Learning (JOL) platform in 2015,¹⁹ which recognised the need for continued emphasis on learning from exercises and emergencies across responder organisations. Following a user led revamp in 2017 the platform is now known as 'JOL Online' and it continues to provide a safe, secure space for organisations to share lessons identified from incidents, exercises, training or other debriefing activities. It brings lessons relating to interoperability and national resilience capabilities, that have been identified at local, regional and national levels into a centrally curated and coordinated process. The lessons are then analysed through liaison with national subject matter advisors to identify where these might be used to improve the response to future incidents. The JOL arrangements are coordinated by the JOL Coordinator and the process is discharged via the JOL Working Group(s).



Lizzie Jones
Coordinator

Identifying Recurring Lessons and Themes

Where lessons identified have a high impact and/or are recurring and represent a trend, there will be escalation of learning through the JESIP Interoperability Board.²⁰ This can result in the production of 'Action Notes', which are designed to communicate requests for intervention across multi-agency partners (police, fire, ambulance services and Local Resilience Forums), and support the transition from lessons identified to lessons learned.

The JESIP Interoperability Board provides robust governance for JOL. This chief officer level board is chaired by the police National Strategic Lead and JESIP Senior Responsible Officer. Board membership spans strategic leads for the police, ambulance and fire & rescue sectors, cross-government departments, Local Government Associations, Military, HM Coastguard and Devolved Administrations. Together, this means that the JESIP Leads and wider Board members can take a critical view of recurring issues and learning themes identified across lesson submissions. Together, along with the activities of the JOL Working Group, they can then consider what evidence-based, expert-informed actions can be implemented by multi-agency partners to improve interoperability going forwards.

Most recently, due to a trend identifying significant issues with interoperability at water rescue/submerged patient incidents, a JOL Action Note²¹ was issued for urgent attention of responder organisation by the JESIP Interoperability Board. Services have been required to respond within 2 weeks of the note being issued and to give detail of actions taken against the recommendations which will lead to improvements in working together, saving lives and reducing harm.

19 JESIP, 2022. Joint Online Learning. Available from: <https://www.jesip.org.uk/joint-organisational-learning/>

20 JESIP, 2022. Interoperability Board. Available from: <https://www.jesip.org.uk/governance-structure/>

21 Responder organisations can view the Action Note via on JOL via ResilienceDirect

Looking Ahead

Over the last decade, the introduction of the Joint Doctrine: The Interoperability Framework', and the initiation of JOL represent significant, positive shifts in shared doctrine, training and organisational learning. Looking forward, there is still further to go and more to be done. The Grenfell Tower fire and Manchester Arena attack have both highlighted ongoing challenges in the delivery of interoperable responses in complex situations and embedding multi-agency learning. As JESIP heads into its second decade the national strategic focus is on ensuring responder organisations continue to embed JESIP into their business-as-usual activities, continually improving the response, and 'working together, saving lives'.

For further information on JESIP and JOL, visit the JESIP website: <https://www.jesip.org.uk/>

UKFRS: National Operational Guidance and National Operational Learning



NFCC
National Fire
Chiefs Council

Every fire and rescue service faces a multitude of incidents daily and there is a need for guidance for fire and rescue services to respond to these incidents.

National Operational Guidance (NOG)²² is the foundation for operational policies for the fire and rescue service.

Ultimately the guidance is used to keep operational personnel safe and effectively respond to incidents. As fire and rescue services differ, the guidance designed flexibly to accommodate for each fire and rescue service's individual assessment of risk.

The guidance has been designed alongside a range of subject matter experts and builds on and improves the now archived generic risk assessments and training manuals. A rigorous governance process is in place to make sure it is updated in a timely fashion and remains fit for purpose throughout its lifetime.

It is a single framework of guidance split down in different activities that are found at operational incidents and contains hazards, knowledge and actions to carry out these activities. It provides strategic actions for the fire and rescue service as well as individual actions that an incident commander or firefighters may have to take at an incident.

National Operational Learning (NOL)²³ sits alongside NOG and was designed as a mechanism to capture operational learning from both UK fire and rescue service as well as the international fire and rescue sector.

22 NFCC, 2022. National Operational Guidance. Available from: <https://www.ukfrs.com/nog>

23 NFCC, 2022. National Operational Learning. Available from: <https://www.ukfrs.com/national-operational-learning-0>

Since the inception of NOL there have been over 450 submissions into the dedicated online tool. The submissions are then analysed against the current guidance, to check that it is fit for purpose, subject matter experts are engaged for their opinions and recommendations are created.

The recommendations are both internal for the NFCC and external for the UK fire and rescue service and wider emergency response sector through avenues such as Joint Organisational Learning.

Internally, recommendations are used to make changes to NOG, this is particularly important when a new hazard has been identified. We also feed our learning into the different programmes of the NFCC²⁴ such as the prevention programme where they produce guidance and packages to help keep members of the public safe in their day to day lives.

Externally, NOL shares learning with the wider sector for fire and rescue services to consider and make a change to their policies when necessary or share with the personnel for their members of staff.



NOL CASE STUDY: Lithium-ion battery hazards

Lesson Identification

During 2021 the NOL team received in excess of 20 submissions from fire and rescue services around Lithium-ion batteries. Services reported coming across these batteries at more incidents, this ranged from electric vehicle fires to commercial battery energy storage systems (BESS).

Major fires within energy storage systems were starting to appear within both domestic and international media with several firefighter fatalities reported internationally.

Understanding Lithium-ion battery hazards

The main issue with lithium-ion batteries is the potential for the battery to enter 'thermal runaway' this is where the temperature of the battery increases and escalates beyond control causing the internal chemical reactions to become unstoppable. Thermal runaway makes extinguishing a fire within a battery extremely difficult and it needs significant amounts of water to continuously cool it over a long period time.

Alongside this issue is the potential for reignition. Reignition has been known to happen days (sometimes weeks) after the initial incident. This had led to fire and rescue services being recalled to incidents and damage happening to properties where batteries have been stored. When dealing with fires in vehicles, reignition has also been known to happen when they have been loaded onto recovery vehicles.

24 NFCC, 2022. <https://www.nationalfirechiefs.org.uk/About>

However, the most dangerous hazard that responders face is vapour clouds that can be produced from the batteries. These clouds are often mistaken for smoke or steam but are in fact, a super-hot mix of toxic and flammable gases commonly including Hydrogen cyanide (HCN) and Carbon monoxide (CO). These clouds are extremely volatile and can lead to a vapour cloud explosion with the potential for serious harm.

Wider Environmental Risks

There are also significant environmental hazards that batteries pose if they are involved in a fire. The hazard comes with the application of significant amount of water leading to water run-off. The run-off contains heavy metals, which have the potential to contaminate water courses.

As society becomes more environmentally responsible there have been significant investments in renewable technology such as solar panels and BESS systems, which are now adding to hazards at property fires, in both the domestic and commercial setting.

Lesson Implementation: An Evidenced-based Response

Responding to Lithium-ion battery hazards

With this large body of evidence, we have worked with subject matter experts from academia to produce a body of guidance for fire and rescue services and their personnel to help keep them safe when dealing with Lithium-ion batteries.

This guidance has also been complemented with a learning materials package developed by the NFCC which has been made available to every fire and rescue service. The package has been accessed by over 550 different individuals and has also been made available to download, so that fire and rescue services can upload it onto their own learning management systems.

NOL has also sent out an action note to fire and rescue services to embed the guidance and the training package within their services.

Working alongside the United Kingdom Rescue Organisation the NFCC has also produced a webinar with subject matter experts, case studies from firefighters and commanders who have attended these incidents.

As well as fire sector responses, we have shared these lessons with other responding agencies, and with Joint Organisational Learning to help other emergency services respond to these incidents.

Looking Ahead

The NFCC has now appointed an Emerging Energies Technologies Lead. This position will consolidate information related to the subject and assist in the production of guidance for all aspects of the fire and rescue service going forward.

For any queries or questions related to this, please get in touch with the National Operational Learning team through NOLmail@nationalfirechiefs.org.uk

Learning Together

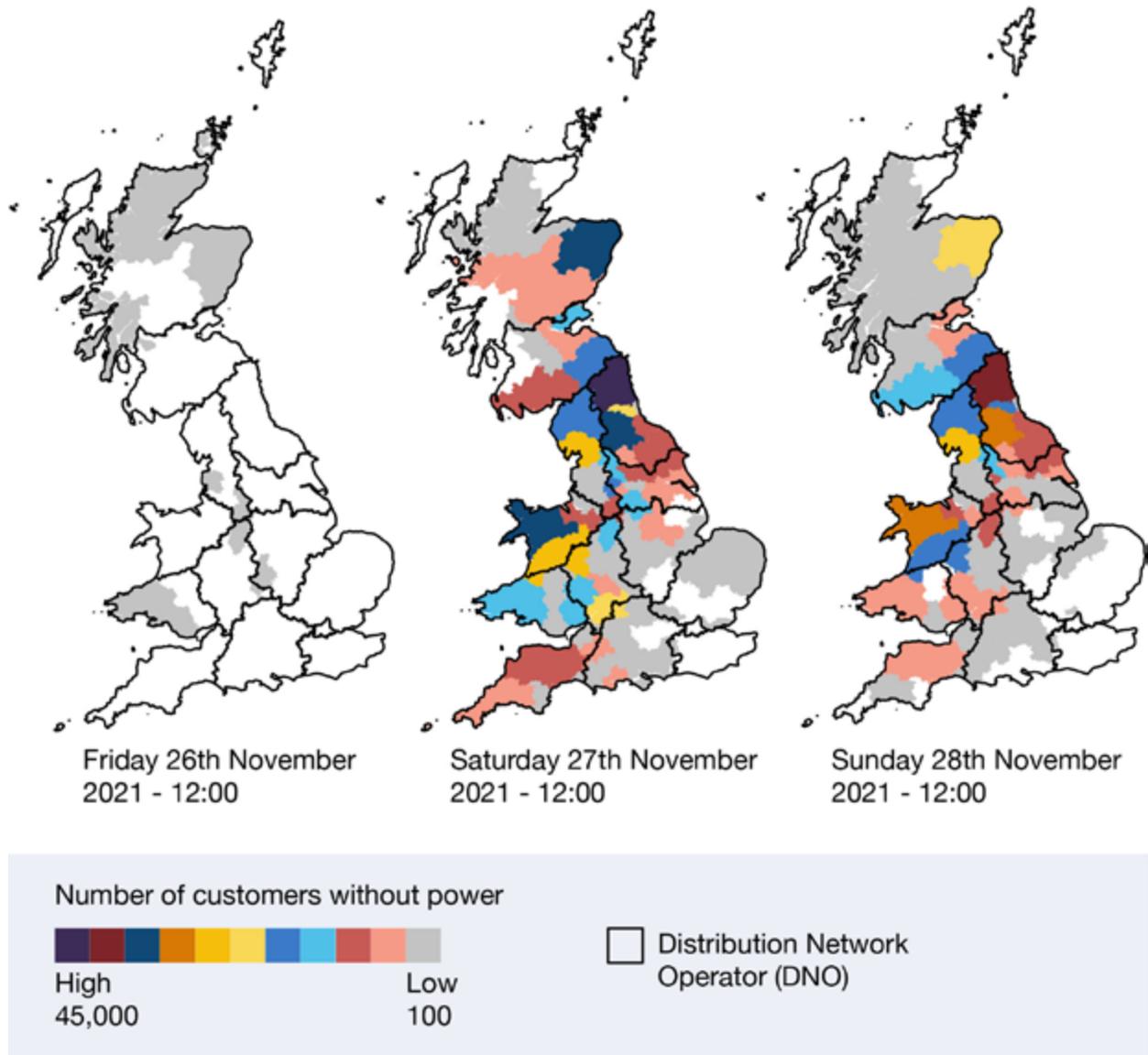
An Analysis of Lessons Arising from Storm Arwen

About Storm Arwen

Storm Arwen caused widespread disruption across the UK in November 2021. The MET Office had issued a red weather warning for wind on the 25th, before the storm tracked south to north-east between the

26–27th of that month.²⁵ The storm brought gusts of wind of up to 98 mph in some areas, and lives were tragically lost due to falling debris.²⁶

Figure 6: Ofgem Storm Arwen power outages map²⁷



25 Kendon, M. 2021. MET Office National Information Centre. Storm Arwen, 26 to 27 November 2021. Available from: https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/learn-about/uk-past-events/interesting/2021/2021_07_storm_arwen.pdf

26 Kendon, 2021. Ibid.

27 Ofgem, 2022. Storm Arwen Report. p.18. Available from: <https://www.ofgem.gov.uk/publications/storm-arwen-report>

Storm Arwen impacted a wide range of systems across the country. In particular it had significant implications for the energy network, with more than one million customers losing power.

According to Ofgem, approximately 40,000 remained without supply for more than three days, and almost 4,000 customers went without power for more than one week.

Even though network providers stood up their storm response capabilities when warnings were issued, a surge of engineers worked incredibly hard to support repairs, and industry-wide mutual aid agreements were activated, many customers received inadequate services from energy Distribution Network Operators (DNOs).²⁸

According to Ofgem, impacts were often coupled with poor communications, inadequate recovery support and insufficient compensation.

The imperative to learn lessons from Storm Arwen was acknowledged swiftly. In early December whilst local debriefs were still ongoing, the Deputy First Minister for Scotland announced the launch of a strategic review to ensure key lessons were learned.²⁹ The Secretary of State for Business, Energy &

Industrial Strategy commissioned the Energy Emergencies Executive Committee (E3C) to undertake a comprehensive review of the incident.³⁰ The energy regulator Ofgem also brought ‘consumers, Members of Parliament, Members of Scottish Parliament, Councillors, trade union and consumer groups and the NHS Alliance’ together to identify lessons and inform recommendations to improve resilience for severe weather going forwards.³¹

In June 2022, both the E3C and Ofgem published their final reports on Storm Arwen.³² The Scottish Government also provided a progress update on recommendations made earlier in the year.³³

Whilst a number of actions were directed at the energy sector, there are also related actions of key relevance to responding organisations and a range of local stakeholders.

The reports also contain widely applicable learning themes that can be used to improve preparedness for extreme weather events, e.g. through Winter Preparedness Programmes. Finally, voice is given to lessons demonstrating transferable features of relevance to multi-hazard preparedness across the resilience community.

28 Ofgem, 2022. Ibid, p.7

29 Scottish Government, 2022. Storm Arwen response: Deputy First Minister statement - 30 November 2021. Available from: <https://www.gov.scot/publications/storm-arwen-review/>

30 Storm Arwen electricity distribution disruption review. Available from: <https://www.gov.uk/government/publications/storm-arwen-electricity-distribution-disruption-review>

31 Ofgem, 2022. Storm Arwen Report. p.6

32 BEIS, 2022. Energy Emergencies Executive Committee Storm Arwen Review Final Report. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1081116/storm-arwen-review-final-report.pdf

33 Storm Arwen review recommendations update: June 2022. Available from: <https://www.gov.scot/publications/storm-arwen-review-recommendations-update-june-2022/>

The Research

This research on the latest published national learning on Storm Arwen is intended to provide a timely start to the work on synthesising lessons. The findings are intended to add immediate value in the context of on-going winter preparedness activity.



Research Aims

The aims of the research were to answer the following questions:

1. **Can common learning themes of relevance to the resilience community be identified and evidenced across the selected reports?**
2. **Do lessons identified demonstrate transferable features that can be used to inform preparedness activity and drive continual improvements in response?**
3. **Do learning themes and transferable lessons relate to existing National Resilience Standards, or provide insight to inform standards going forwards?**
4. **What practical actions do reports suggest that responder organisations and local resilience partners can take to strengthen resilience against extreme weather risks this winter?**

A list of documents included in the lessons synthesis is found below under 'Lessons Arising'. To add depth and open opportunities for insight, a selection of supporting reports and documentation with thematic relevance were also reviewed.

The document list was capped at a total of 15 to ensure the richness of content in individual reports was not lost. Overall, the documents represented a combined total of 214 observations, lessons identified and/or recommendations.

Publishing Body		Report Title	Date
Lessons Arising			
1	Scottish Government	Storm Arwen Review	2022
2	OFGEM	Storm Arwen Report	2022
3	UK Government Department for Business, Energy and Industrial Strategy (BEIS)	Energy Emergencies Executive (E3E) Committee Storm Arwen Review	2022
4	Scottish Government Performance, Delivery and Resilience Directorate	Storm Arwen Review: Recommendations Update June 2022	2022
5	UK Government Department for Transport (DfT)	Emergency Preparedness, Response, & Recovery: Identifying lessons learned by the UK highway sector from extreme-weather emergencies (2015-2020) Published 2021	2021
Supporting Reports and Documentation			
6	UK Government Cabinet Office (CO)	Civil Contingencies Act 2004: Post-Implementation Review Report (2022)	2022
7	UK Health Security Agency (UKHSA)	Flooding and Health: Assessment and Management of Public Mental Health	2022
8	British Red Cross	Ready for the Future: Meeting People's Needs in an Emergency	2021
9	Voluntary and Community Sector Emergencies Partnership	VCSEP Briefing: Vulnerabilities and At-risk Individuals and Communities	2020
	UK Government, Department for Environment, Food & Rural Affairs	Local Nature Recovery Strategy Pilots: Lessons Learned	2021
11	Met Office National Climate Information Centre	Storm Arwen, 26 to 27 November 2021	2021
12	MIND	Mental Health Impacts of Covid-19	2020
13	OFWAT	Resilience in the Round	2017
Academic Research and Case Studies			
14	International Journal of Disaster Risk Reduction (Mahdavian, et.al., 2020)	Communication Blackouts in Power Outages: Findings from Scenario Exercises in Germany and France	2020
15	Lancaster University (Whittle et.al., 2010)	After the Rain—Learning the Lessons from Flood Recovery in Hull	2010

Methodology

The methods used in each of the reports to collect and interpret lessons identified from exercises and emergencies can vary widely. This means that there are a range of vehicles for bringing lessons into the public domain, including public inquiries, reports, reviews and the capture of lived experiences. Each differ in terms of their context, focus and means of presenting findings. Being mindful of these underlying differences, or variables, is important when choosing an appropriate methodology for reviewing lessons in the round.

To synthesise lessons, analyse common themes and identify transferable learning a qualitative metasynthesis has been applied. This method arose from the medical profession as a way of bringing non-numerical data from patient focus groups and case studies into a shared space for review.³⁴

Essentially it is an ‘umbrella term referring to the bringing together of findings across multiple qualitative reports’³⁵ to create new insights informed by the whole.

The goal is to make findings increasingly accessible and useful for informing policy and practice.³⁶

Inevitably, a level of interpretation by the researcher is required for this kind

of analysis. To help minimise the risks of individual bias in results, the Digest has taken a ‘descriptive’³⁷ approach to the synthesis. This means that unaltered text from the reports is used to identify and evidence themes across reports, rather than inferring meaning from them.

The practical identification of learning themes and transferable lessons arising were reviewed using a process similar to that used in Thematic Analysis. This included: report familiarisation; coding; theme development and then theme revision.³⁸

By combining these complimentary aspects of qualitative methodology, the Digest has been able to identify themes, analyse lessons, and report patterns in a rigorous and methodical way, that describes the ‘data set in (rich) detail’.³⁹ The key findings are presented below.

Findings

Learning Themes

Learning themes were drawn out from written report content within and across the nine documents listed under ‘lessons arising’. This was done to help ensure a more holistic, augmented approach to compliment the analysis of transferable lessons which has a more narrow and explicit focus on the observations, identified issues and recommendations articulated in each.

34 Finfgeld, D.L., 2003. Metasynthesis: The state of the art—so far. *Qualitative health research*, 13(7), pp.893-904; Sandelowski, M., Docherty, S. and Emden, C., 1997. Qualitative metasynthesis: Issues and techniques. *Research in nursing & health*, 20(4), pp.365-371.

35 Finfgeld, 2003. Ibid. p.895

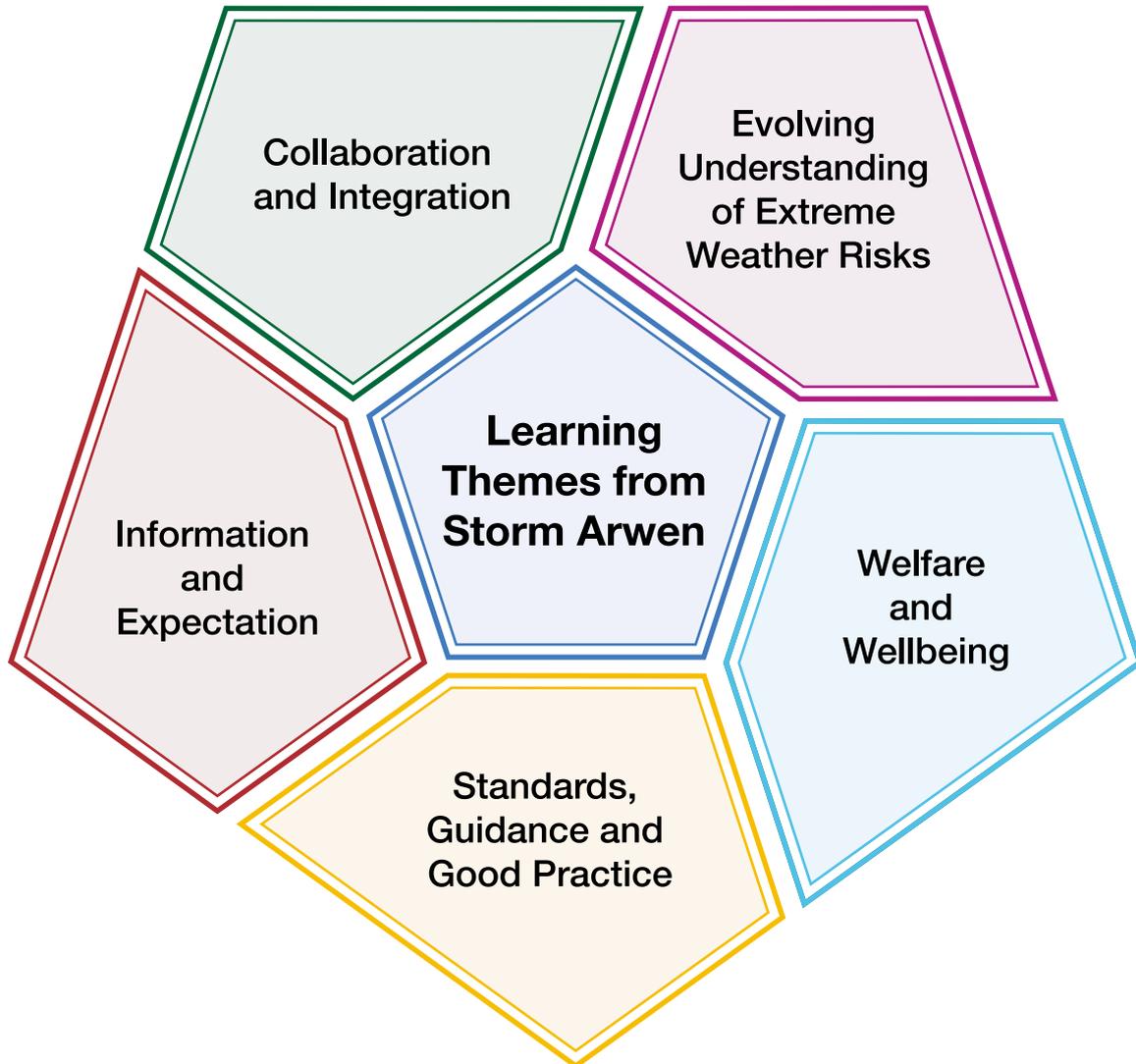
36 Finfgeld, 2003. Ibid.

37 Finfgeld, 2003. Ibid. p.897

38 Braun, V. and Clarke, V., 2006. Using thematic analysis in psychology. *Qualitative research in psychology*, 3(2), pp.77-101.

39 Braun and Clarke, 2006. Ibid. p.79.

Figure 7: Key learning themes from the analysis of Storm Arwen



Across the reports, the predominant learning themes can be evidenced and summarised under the following headings:

- **An Evolving Understanding of Extreme Weather Risks**
- **Welfare and Wellbeing**
- **Standards, Guidance and Good Practice**
- **Information and Expectation**
- **Collaboration and Integration**

Key examples of these themes as described in the documents are evidenced below.

Each led to the development of practical suggestions or recommendations for action. In line with the scope and focus of the selected reports, a number of these were primarily and predominantly for the attention of Distribution Network Operators.

However, the resulting actions and learning points may be of keen interest to a range of local stakeholders, and clearly demonstrate consistent, wider transferable learning for the wider resilience community.

Learning Theme 1: An Evolving Understanding of Extreme Weather Risks

Across reports there was evidence that agencies' perceptions and understanding of extreme weather risks is evolving. Experiential learning from Storm Arwen had clearly challenged both personal expectations and corporate planning assumptions. Notable, common use of words such as 'rare'; 'exceptional' 'most challenging' and 'unusual' highlight the severity of storm Arwen. However, these were not used to mount a case for inaction. Instead, the storm's exceptional features were balanced with consensus across reports that high-impact, extreme weather events should be anticipated with increased frequency in the future.

Learning in this theme relates to the following aspects of the Integrated Emergency Management Cycle:⁴⁰



The following descriptions taken directly from the document content supported the identification of this theme, both in relation to Storm Arwen, but also more widely from research that drew on the learnings of the Highways Agency in relation to extreme weather between 2015–2020. They also start to point towards transferrable learning points that follow below.

'Following the 2013 storms, planning scenarios were prepared to enable an improved storm response from the networks. However, Storms Arwen and Eunice exceeded those planning assumptions, indicating a need to review the scenarios... Storm Arwen resulted in electricity disruption which went well beyond the expectations of both government and society'.⁴¹

'Local resilience partners and DNOs have long experience of working together and in many areas have well established practices in place. However, due to the longevity of the disruption during Storm Arwen, there were some processes that had not been tested'.⁴²

'We found that whilst all companies initiated their emergency plans several days before the storm hit, these were not sufficient to deal with the scale of damage that resulted from Storm Arwen. Some DNOs did not adapt their resources or strategies quickly enough to respond'.⁴³

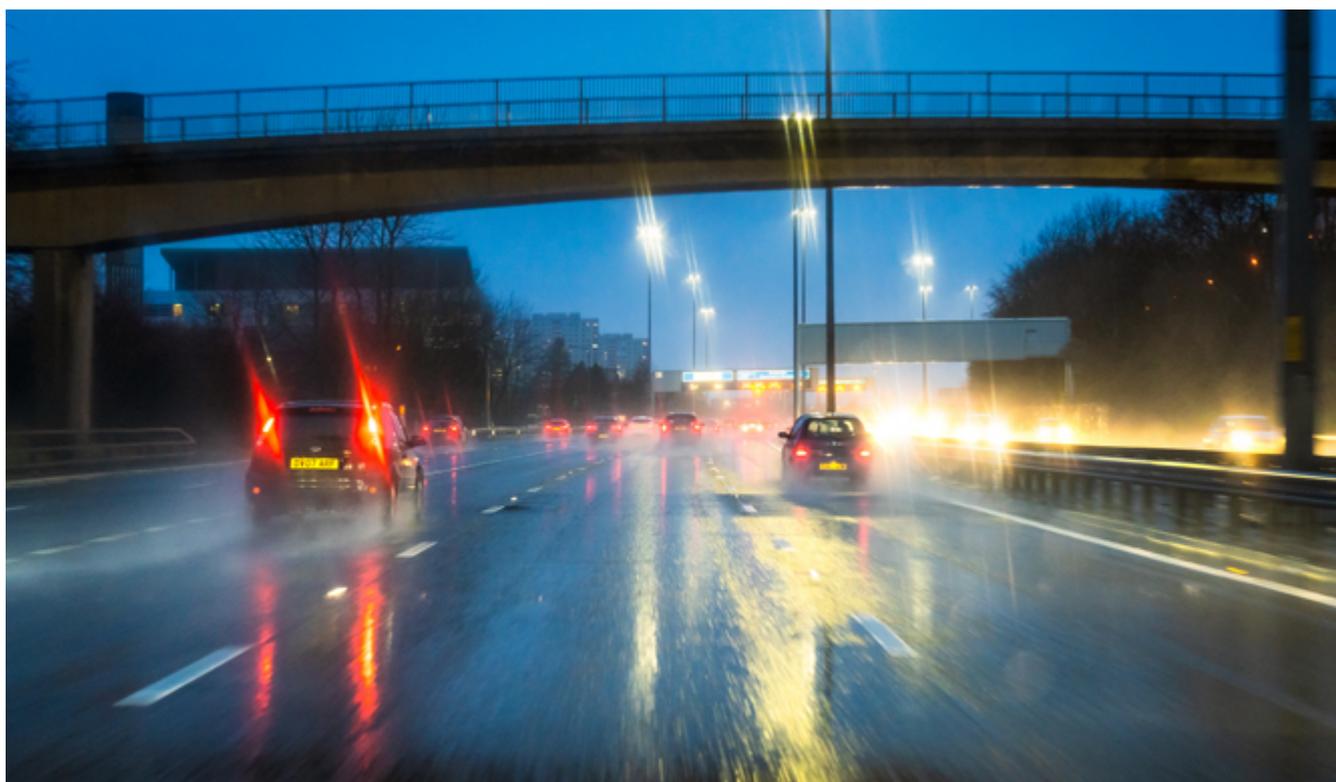
40 HM Government, 2012. Guidance: Emergency preparedness. Chapter 1 Introduction Revision to Emergency Preparedness. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/61024/Chapter-1-Introduction_amends_16042012.pdf
 41 E3C, 2022. Storm Arwen Review. P.10-11. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1081116/storm-arwen-review-final-report.pdf
 42 E3C, 2022. Ibid. p.34
 43 Ofgem, 2022. Ibid. p.10

‘Projections suggest that extreme-weather emergencies may occur with increasing intensity and/or frequency in the future. Preparing personnel for their role during all types of extreme-weather emergency (i.e., not just winter weather) should be regarded as a fundamental component of any authority’s continual professional development programme’.⁴⁴

This resulted in an evidenced theme around the evolving, dynamic nature of extreme weather risk and the subsequent lesson that action was needed to update Reasonable

Worst-Case Scenarios (RWCS), planning assumptions and Winter Preparedness Plans in response to it.

Examples of how these lessons were expressed are evidenced below. When considered in a more generalised, holistic manner, it is clear that these transferable lessons can be applied to inform extreme weather preparedness much more widely. This is especially the case given the recent challenges posed by extreme heat in the UK, which could also be described a ‘rare’ event, but nonetheless is anticipated to demonstrate increased frequency going forwards.



44 HM Government, 2021. Department for Transport. Lessons learned from extreme-weather emergencies on UK highways: Identifying the effects and impacts on the UK highway sector from extreme-weather events (2015 to 2020). P.101. Available from: <https://www.gov.uk/government/publications/lessons-learned-from-extreme-weather-emergencies-on-uk-highways>

Transferable Lessons

E3C Storm Arwen Report

Ref	Action	Owner	Delivery Date
E5, p.12	Electricity Task Group to update the reasonable worst-case scenarios for testing response plans against and provide updated planning assumptions for other sectors to plan against.	E3C – Electricity Task Group	01 July 2022

OFGEM: Storm Arwen

Ref	Action	Owner	Delivery Date
13, p.47	DNOs should improve their assumptions for estimating restoration times and improve the quality of their communication to customers, so that customers can make informed choices about meeting their needs	DNOs	30 Sept. 2022

It was also recommended that RWCS planning assumptions ‘for customer call volumes...should be updated to reflect the scenarios developed’, and that these updates should be shared with resilience partners to inform an integrated understanding of assumptions. This ‘customer communication architecture’ should also be stress-tested against them to ensure adequate capacity during severe weather events.⁴⁵ This represents a widely transferrable point for call handling in relation to emergencies across the wider resilience community as winter pressures mount.



Sidelight

Call-handling capacity and capabilities were also raised under ‘Emergency Calls’ in the Phase 1 Inquiry into the Grenfell Tower Fire. It was recommended that a combination of policies for ‘Simultaneously handling a large number of Fire Survival Guidance calls’ and ‘more effective refresher training for call handlers should be implemented’.⁴⁶

45 Ofgem, 2022. Ibid. Recommendation 6.17, p.38

46 Moore-Bick, M., 2019. Grenfell Tower Inquiry: Phase 1 Report. Available from: <https://assets.grenfelltowerinquiry.org.uk/GTI%20-%20Phase%201%20full%20report%20-%20volume%204.pdf>

This theme also made the need to look beyond a static RWCS evident, acknowledging the dynamic nature of the extreme weather. This was articulated as a need to consider how the preparedness could inform a scaled response as required. Under ‘Restoration and Response’, E3C specifically recommended action that severe weather escalation plans should include trigger points and resulting preparatory actions, to ensure all relevant factors that can influence scale of impacts are considered (e.g., wind direction).⁴⁷ This was equally evident in the report from Scottish Government, who recommended that Resilience Partnerships ‘review thresholds for activation and deactivation’ to ensure that the ‘nuance of each weather system’ can be taken into account.⁴⁸

Finally, there was also the recommendation for direct, two-way engagement between utilities and local resilience partners in strategic planning, a recommendation that DNOs should submit their winter preparedness plans for 2022/23 to Ofgem by September 30th 2022,⁴⁹ and a direct engagement action from Local Resilience Forum/Partnership Chairs in supporting this process:

Further details of mandatory legal requirements, good practice and examples of leading practice in relation to this learning theme can be found in National Resilience Standards⁵⁰ for LRFs:

- **Standard 1: LRF Governance and Support Arrangements**
- **Standard 2: Local Risk Assessment**
- **Standard 4: Emergency Planning**
- **Standard 8: Exercising**

E3C Storm Arwen Report

Ref	Action	Owner	Delivery Date
Code: L4, p.37	DNOs to work with local resilience partners to develop an agreed Joint Winter Preparedness strategy that can include an appropriate mix of exercising, workshops, scenario planning and information sharing. LRF/P chairs to provide assurance specific learning objectives have been embedded before winter 2022.	E3C – Electricity Task Group	30 Sept. 2022

47 E3C, 2022. Ibid. R7, p.18.

48 Scottish Government, 2022. Recommendation 3. Available from: <https://www.gov.scot/publications/storm-arwen-review/#recommendations>

49 Ofgem, 2022. Ibid. Action 5, p.11.

50 HM Government, 2020. Guidance: National Resilience Standards for Local Resilience Forums (LRFs). Available from: <https://www.gov.uk/government/publications/national-resilience-standards-for-local-resilience-forums-lrfs>

Learning Theme 2: Welfare and Wellbeing

The inherently human aspects of welfare and wellbeing speak to an ethic of care that repeatedly generates recommendations across emergencies, major incidents, and disasters.

With people at the heart of local communities and the emergency response, there is always further to go and more to do in caring for those impacted.

The learning from Storm Arwen was no exception, and clearly indicated that there were shortcomings⁵¹ (to various degrees) across DNOs responding to the storms in terms of engaging and identifying with vulnerable customers, supporting those impacted and compensating them for loss of service.

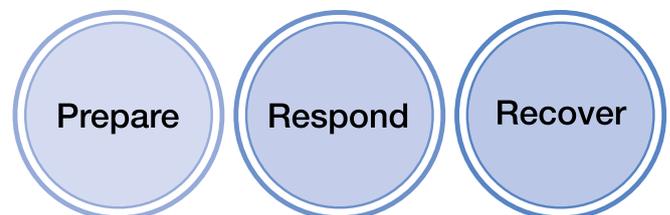
However, there was also shared learning for local resilience partners who were impacted by the loss of telephony systems and disrupted internet services. Where in place, the storm provided an opportunity for a range preparedness activity, including newly

emerging schemes and updated systems for identifying vulnerable individuals and communities, to be put to the test.

‘Some communities, particularly rural communities, suffered disproportionately from the loss of essential services during Storm Arwen. Electricity infrastructure in more remote communities is inherently less resilient, as they are often reliant on a single LV connection, and this can be compounded by less resilience to loss of other essential services...

‘Strategic planning is necessary to ensure the best and most efficient support is available to the most at-risk communities, and all resilience partners can inform on both area risk assessments and appropriate contingency planning.’⁵²

Learning in this theme broadly relates to the following aspects of the Integrated Emergency Management Cycle:



51 Ofgem, 2022. Ibid, p.5

52 E3C, 2022. Ibid. p.21

Transferable Lessons

This theme was identified across reports, resulting in onward recommendations and actions, with examples of transferable actions evidenced below:

Scottish Government

Recommendation	Description
R6 (HTML)	<p>ImpW authorities work together to complete the final implementation of PARD (Persons at Risk Distribution) with any local authorities who wish to participate, and thereafter to ensure its use is integrated into wider response plans.</p> <p>Resilience Partnerships ensure they have adequate plans in place to allow for the strategic coordination of large-scale door-to-door welfare checks, and that these plans are tested and exercised.</p>

OFGEM: Storm Arwen

Ref	Description	Owner	Delivery Date
Recommendation 5, p.11	We recommend that DNOs should submit their winter preparedness plans for 2022/23 to Ofgem. This will provide assurance that DNOs have taken the necessary steps to ensure that all customers, including those in vulnerable situations, can be effectively supported in power disruptions.	DNOs	30 Sept. 2022

This a theme that has been amplified in learning from previous emergencies, including extreme weather events and most recently the Covid-19 pandemic. As such, it is interesting to draw in relevant and recently published research-based guidance, from the UK Health Security Agency, on the impacts of flooding and mental health (opposite). The transferable lesson (below), clearly resonates with this learning theme from Strom Arwen.

‘Experiencing disruption as a consequence of flooding can have mental health impacts even in the absence of being flooded. Loss of gas, water and electricity services, loss of access to health and social care services and health concerns are significant stressors associated with flood-related mental health burden.’⁵³

53 UKHSA, 2022. Flooding and health: assessment and management of public mental health Available from: <https://www.gov.uk/government/publications/flooding-and-public-mental-health-assessment-and-management/flooding-and-health-assessment-and-management-of-public-mental-health>

UKHSA: Flood and Health: Assessment and Management of Public Mental Health

Summary message	Description
R6 (HTML) 1:HTML (See references)	To prepare vulnerable communities in advance of flooding, LAs and agencies play a key role in helping build community resilience. This can be through identifying households and areas with higher vulnerability to the impacts of flooding to offer targeted and tailored interventions and communications.



Sidelight

It is also helpful to remember and recall lessons from the 2010 report: 'After the Rain – Learning the Lessons from Flood Recovery in Hull – Final Project Report'.⁵⁴

This reminds us that mental health impacts are not exclusive to flooding, and are in many cases 'what is in fact "a normal reaction to abnormal events"'.⁵⁵

Transferrable lessons from this case study are still relevant, both for flooding, other weather extreme weather events, and wider response/recovery scenarios.

UK Government have produced the following guidance: 'Identifying people who are vulnerable in a crisis: guidance for emergency planners and responders'.⁵⁶

54 Whittle et al. (2010) After the Rain – learning the lessons from flood recovery in Hull, final project report for "Flood, Vulnerability and Urban Resilience: a real-time study of local recovery following the floods of June 2007 in Hull", Lancaster University, Lancaster UK

55 Convery et al. 2008, cited in Whittle et.al., 2010, p.8 (Original article: Convery, I., Mort, M., Baxter, J. and Bailey, C. (2008) Animal disease and human trauma: Emotional geographies of disaster, Palgrave Macmillan: Basingstoke

56 HM Government, 2008. Guidance: Identifying people who are vulnerable in a crisis: guidance for emergency planners and responders. Available from: <https://www.gov.uk/government/publications/identifying-people-who-are-vulnerable-in-a-crisis-guidance-for-emergency-planners-and-responders>

Lancaster University: After the Rain – Final Report

Chapter	Description
6 – The recovery gap: Learning the lessons, p.119	<p>Many people had to cope with the double trauma that occurs when the first disaster (the flood) is compounded by a secondary disaster in the form of poor treatment from the various companies and agencies that are supposed to be helping with the recovery</p> <p>The impacts of “flood” are also felt by front line workers who can be vulnerable in the recovery process after disaster. This is particularly so for those in the dual role of worker/resident, for whom the difficulties involved in frontline work may be amplified.</p>

The Voluntary and Community Sector Emergencies Partnership produced complimentary guidance during the Covid-19 response on ‘how the sector can help identify vulnerable and at-risk communities and collaborate with local authorities and local resilience forums’. The briefing, ‘Vulnerable and at-risk individuals and communities’⁵⁷ may be useful for local partners in helping to understand ‘where ‘unknown’ needs lie to help ensure that no person goes unsupported’ during a crisis.⁵⁸

Further details of mandatory legal requirements, good practice and examples of leading practice in relation to this learning theme can be found in National Resilience Standards for LRFs:

- **Standard 5: Community Resilience Development**
- **Standard 13: Local Recovery Management**



57 VCSEP, Vulnerable and at-risk communities. Available from <https://static1.squarespace.com/static/60539edbc36b936b4ff448ad/t/605795ae9d0803023baef68d/1616352687089/Voluntary-and-community-partnership-vulnerability-briefing+%282%29.pdf>

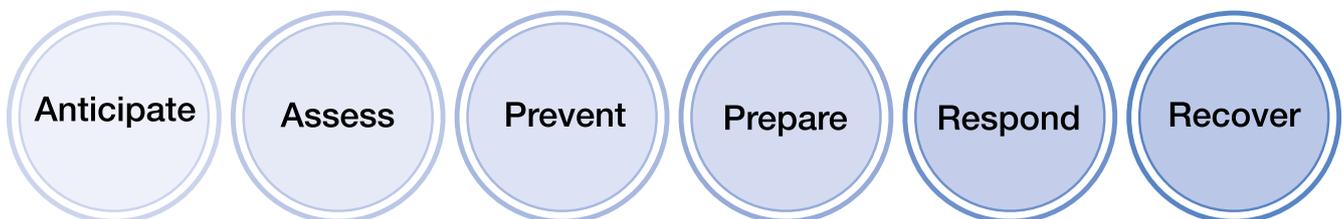
58 VCSEP, 2020. Ibid.

Learning Theme 3: Standards, Guidance and Good Practice

Recommendations to set, review and/or update standards, guidance and good practice represented another learning theme from Storm Arwen. This was evidenced across reports:

- The E3C recommended that proposals were out forwards ‘for **an outcomes-focused physical network resilience standard** to set public and government expectations and industry targets to guide planning and funding decisions by industry and the regulator’.⁵⁹
- Ofgem proposed that the ‘E3C should review current network **infrastructure standards and guidance**’ and ‘should assess the feasibility and benefits of developing a standard-based approach to organisational resilience to improve the speed of customer restoration during severe weather events.’⁶⁰
- In relation to welfare and well-being in response and recovery, it was also noted that ‘Current resilience standards are solely defined as measures to be implemented rather than specific consumer outcomes. **A principles-based outcomes-focused resilience standard** would allow operators to plan and invest accordingly while setting government and public expectations of the service they fund’.⁶¹
- On a similar note, Ofgem added ‘a review of the Guaranteed Standards of Performance (GSoP) to identify amendments that will better acknowledge the impact of extended power cuts on customers’ to their actions in response to the storm⁶²

Evidently, this learning theme relates to aspects across the Integrated Emergency Management Cycle:



59 E3C, 2022. Ibid. E1, p.11

60 Ofgem, 2022. Ibid, p.46

61 E3C, 2022. Ibid. E1, p.11

62 Ofgem, 2022. Ibid, p.48

Transferable lessons

These findings focussed on the specific importance of resilience standards in the energy and utilities sector. However, the theme itself is transferable, with related lessons identified in the wider resilience arena.

For example, recommendations made to government in a report published by the British Red Cross in 2021, titled: 'Ready for the Future: Meeting People's Needs in an Emergency' called for updated Resilience Standards, 'to outline a stronger role for mental health' and to reflect best practice in co-producing communication solutions with the public, 'particularly in areas that are at a higher risk of repeated natural hazards'.⁶³

Support for the need to update Resilience Standards for Local Resilience Forums was also forthcoming in the evidence that informed the Cabinet Office Post-Implementation

Review (PIR) of the Civil Contingencies Act 2004 (CCA).⁶⁴ This represented evidence collected in the National Resilience Strategy Call for Evidence public consultation and the 'Global Britain in a Competitive Age: Integrated Review of Security, Defence, Development and Foreign Policy'.⁶⁵ It was also informed by workshops and engagement events including The Department for Levelling Up Housing and Communities (DLUHC) 'Big Resilience Conversation' with local resilience stakeholders, and a review of lessons and recommendations from previous and ongoing emergencies, including responses to EU exit and the coronavirus pandemic.⁶⁶

This resulted in the 2022 PIR acknowledging a case for the consideration of new standards going forwards,⁶⁷ and making published recommendations to support standards accompanying the CCA in the future:

63 British Red Cross, 2021. Ready for the future: Meeting people's needs in an emergency. P.33. Available from: <https://www.redcross.org.uk/about-us/what-we-do/we-speak-up-for-change/ready-for-the-future-improving-emergency-structures>

64 HM Government, 2022. Policy paper: Civil Contingencies Act 2004: post implementation review report (2022). A review of the Civil Contingencies Act 2004 (CCA_PIR). Available from: <https://www.gov.uk/government/publications/civil-contingencies-act-2004-post-implementation-review-report-2022>

65 HM Government, 2021. Policy paper. Global Britain in a Competitive Age: The Integrated Review of Security, Defence, Development and Foreign Policy. Available from: <https://www.gov.uk/government/publications/global-britain-in-a-competitive-age-the-integrated-review-of-security-defence-development-and-foreign-policy>

66 HM Government, 2022. Ibid. CCA_PIR, p.3.

67 HM Government, 2022. Ibid. CCA_PIR, p.16

Cabinet Office, CCA Post-Implementation Review

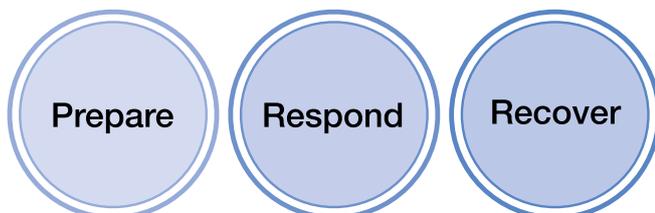
Recommendation	Description
65, p.16	<p>The statutory and non-statutory UK guidance that accompanies the CCA should be updated. The guidance should be refreshed and strengthened to set clear and consistent expectations for English LRFs and their Chairs.</p> <p>This update, created in partnership with responders, would develop an agreed and collective view of responsibilities which reflect the growing coordination role that the local resilience arrangements are fulfilling while placing clearer boundaries on what government could expect from partnerships.</p>
71c, p.18	<p>To place the Resilience Standards on a statutory footing for Category 1 and 2 responders, requiring they have due regard to the standards whilst fulfilling their duties under the Act</p>

Finally, there were indicators in the energy sector reports and beyond that there is an increasing interest in understanding standards, guidance and best practice beyond borders and boundaries. For example, references to need for a review of ‘international approaches’ and to consider ‘enhanced research’ were both made, to better understand both the nature of the problem and innovative solutions for mitigating associated risks.

Clear communications are one of the Joint Principles for working (see figure below), as set out in the JESIP Joint Doctrine to support an interoperable, multi-agency response to emergencies.⁶⁸ It is applicable not just for ‘blue light’ emergency services such as police, fire & rescue services and the ambulance service, but amongst wider multi-agency partners and responding organisations. In particular, the Joint Doctrine makes it clear that ‘Meaningful and effective communication between responders and responder organisations underpins effective joint working. Communication links start from the time of the first call or contact, instigating communication between control rooms as soon as possible to start the process of sharing information’.⁶⁹ Interestingly, however, it is that latter word – information – rather than communication per se, that constituted a key theme resulting from the analysis of reports on Storm Arwen. The equally high frequency, and repeatedly co-occurring word ‘expectation(s)’, made for the joint theme identified.

Learning Theme 4: Information and Expectation

This learning theme related to the following elements of the Integrated Emergency Management Cycle:



68 JESIP, 2022. Joint Doctrine. Available from: <https://www.jesip.org.uk/joint-doctrine/introduction-to-the-joint-doctrine/>

69 JESIP, 2022. Principles for Joint Working. Available from: <https://www.jesip.org.uk/joint-doctrine/introduction-to-the-joint-doctrine/>

Figure 8: Principles for Joint Working. JESIP, 2022



The Interim Report found that the key area for improvement in the wider response support to the electricity disruption during Storm Arwen was in information sharing between DNOs and local resilience partners. This included a better mutual understanding of roles and responsibilities...

There was a disconnect between the information required by local resilience partners and the information provided by the DNOs. This led to challenges for

decision making within the local response, impacting on targeting additional welfare support to those most in need and on timely response escalation. While there was broad agreement on the need and responsibility to share information, the challenges and requirements need to be better understood on all sides.⁷⁰

This resulted in the following transferable lessons:

70 E3C, 2022. Ibid. p.34

Transferrable lessons

Scottish Government – Storm Arwen

Recommendation	Description
R1 (HTML)	The Scottish Government and Resilience Partnerships review processes for sharing briefing and information during circumstances which challenge usual methods of communication

E3C Storm Arwen Report

Ref	Description	Owner	Delivery Date
L1, p.37	DNOs to work with local resilience partners to agree an information sharing protocol for severe electricity disruption	DNOs	30 Sept. 2022
L5, p.37	DNOs to review the information they share with resilience partners and ensure that a strategy exists for communicating uncertainty in a way that supports decision making about escalation of local response coordination.	DNOs	30 Sept. 2022

The issue of unfulfilled and/or uncommunicated ‘expectation’ was also well evidenced in the report content.

‘Ofgem recognises that consumer expectations around restoration times and receiving compensation, differed from their experience during Storm Arwen.’⁷¹ (Ofgem, pg.8)

‘DNOs should make clear to customers what support is available and how they can access it.’⁷² (E3C Report on Storm Arwen (W3) p.29)

It was also echoed in Department for Transport’s review into lessons learned from extreme weather for the UK Highways Agency 2015–2020:

‘In relation to Resilient Networks, observations included the need to manage expectations with partners during ‘peacetime’ as to how Highway Authorities will prioritise their capabilities and capacities during weather emergencies...’⁷³ (DfT Point 376, p.89)

71 Ofgem, 2022. Ibid, p.8

72 E3C, 2022. Ibid. p.29

73 DfT, 2021. Ibid. Point 376, p.89

‘...collating the information needed to develop a CRIP is extremely challenging for affected authorities. When road and telecoms connections to affected communities are disrupted, it is very hard for authorities to quantify impacts either precisely or accurately. For example, accurate, resource-intensive, flood-impact surveys take days and weeks not hours to complete. 224. This emphasises the importance of managing the expectations of all partners as to what is realistically achievable with best effort’.⁷⁴ (DfT, point 223. p.57)

Transferable lessons identified from lived experiences of Storm Arwen also help to articulate and impress the relationship between information and expectation:

‘If they had said from the outset it could take 4, 5 or 6 days people would have made better, safer choices.’ (Affected by a 6-day outage)

‘The website was hit and miss so we were in the dark about what was going on. A couple of times it gave a time but the power didn’t come on and we were just waiting again. It got our hopes up and then they were dashed.’ (Affected by a 2.5-day outage)⁷⁵



Sidelight

Expectations are strong, intangible beliefs about how something should happen or someone behave. They are personal, internal predictions that the human brain makes using existing information (i.e. knowledge and experiences) as building blocks to inform imagined, external outcomes. When ‘events are incompatible with one’s situation specific prediction’ unfulfilled expectation arises.⁷⁶ This can lead to internal personal conflicts, frustrations and negative emotions. In the case of Storm Arwen, we see expectations and frustrations presenting at both the individual customer level around power restoration times. Challenges are also seen at collective multi-agency levels, creating professional conflicts in the delivery of emergency response and recovery. For more insights on how ‘information and expectation’ can interact to create impacts for those affected during a simulated power outage scenario, see the Academic Insight article on p.52

74 DfT, 2021. Ibid. Point 223, p.57

75 Ofgem, 2022. Ibid, p.35

76 Chang, L.J., Sanfey, A.G., 2013. Great expectations: neural computations underlying the use of social norms in decision-making. *Social Cognitive and Affective Neuroscience*, 8(3), pp.277–284. Gollwitzer, M., Thorwart, A., Meissner, K., eds. (2018). *Psychological Responses to Violations of Expectations: Perspectives and Answers from Diverse Fields of Psychology*. Lausanne: Frontiers Media. doi: 10.3389/978-2-88945-445-7

Johnson, J. A., 2018. The Psychology of Expectations: Why unrealistic expectations are premeditated resentments. *Psychology Today*. Available from: <https://www.psychologytoday.com/gb/blog/cui-bono/201802/the-psychology-expectations>

Transferable learning points from practice and recommendations for wider consideration come from the following observations embedded within reports, including:

E3C Storm Arwen Report

Ref.	Description
p.35	'Strategic Coordinating Groups can, based on the information available to them, require the establishment of supporting sub-groups as necessary, which could include a Utilities Advisory Cell to focus specifically on the restoration of essential services.'

DfT Lessons Identified from Extreme Weather

Ref.	Description
Observation 2, p.102	The development of Multi-Agency Information Cell (MAIC) and Virtual Operations Support Team (VOST) capabilities by extreme weather affected local resilience partnerships clearly illustrates good practice in improving information management processes during emergencies.'
Point 126, p.33	In many areas a '...long-term consultation-based approach has been successful in both helping to manage public expectations, but also in developing the appropriate outcomes for communities'.

Further details of mandatory legal requirements, good practice and examples of leading practice in relation to this learning theme can be found in National Resilience Standards for LRFs:

- **Standard 3: Communicating Risks to the Public**
- **Standard 6: Interoperability**
- **Standard 12: Strategic Coordinating Group (SCG): Preparation and Activation**

Learning Theme 5: Collaboration and Integration

The fifth and final dual learning theme referred to challenges and opportunities in collaboration and integration across category 1 and 2 responders, as defined in the CCA,⁷⁷ and between government, responders and wider resilience partners more generally.

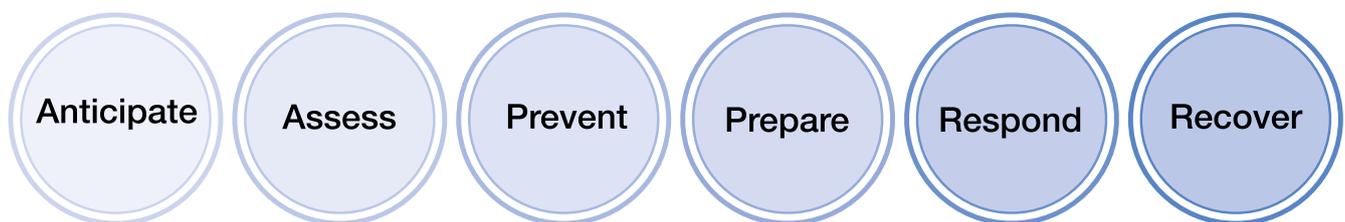
In an increasingly interconnected world, with overlapping systems and shared risks, this suggests that collaboration with other key stakeholders and resilience partners, is no-longer 'nice to have', but an essential component of resilience. Practically, this can be supported in the short term by co-locating and effectively co-ordinating resources during an emergency response.⁷⁸ This type of collaboration is essential for achieving a shared goals on an ad-hoc basis. But the process of collaboration during peace-time may be more likely to achieve long-term, practical integration. This is because the time investment tends to go beyond a goal to generate a shared product (co-production). This has added benefits for relationship building and increased awareness of capabilities, capacities, contacts and consequences ahead of a response.

This was especially pronounced in the research from DfT on lessons identified from extreme weather emergencies over a 5-year period:

'...it is vitally important that Category 2 responders actively engage with their respective Local Resilience Forums' planning processes. This needs to be done, both in order to manage expectations of what is achievable in terms of network resilience (e.g., in developing mutual understandings of networks' self-healing and resilience capabilities) and to ensure the existence of the personal relationships that reduce decision delays during dynamic incidents.'⁷⁹ (DfT, point 378 p.90)

'Multi-agency planning activities for extreme-weather emergencies should be regarded as opportunities to extend the 'make friends before you need them' mantra to consider potential partners from across the statutory, private, voluntary and community sectors. The goal should always be the integration of all capabilities and capacities that may help to shorten emergencies and reduce harmful consequences.'⁸⁰ (DfT Observation 20, p101)

As such, this theme also applies across the Integrated Emergency Management Cycle:



77 Civil Contingencies Act, 2004. Available from: <https://www.legislation.gov.uk/ukpga/2004/36/contents>

78 JESIP, 2022. Principles for Joint Working. Available from: <https://www.jesip.org.uk/joint-doctrine/introduction-to-the-joint-doctrine/>

79 DfT, 2021. Ibid. point 378 p.90

80 DfT, 2021. Ibid. Point 20 p.101

Transferable Lessons

Both collaboration and integration also featured in transferable recommendations and learning points from Storm Arwen specifically:

E3C Storm Arwen Report

Ref.	Description
W2, p.29	DNOs to work with Local Resilience partners to agree clear roles and responsibilities during severe weather events, and incorporate them into DNOs' Emergency Plans

Scottish Government – Storm Arwen Review

Ref.	Description
Recommendation 2, HTML	Fuller integration of the voluntary and community sector into emergency planning and response: Resilience Partnerships fully integrate the Voluntary Sector into their planning and response structures, and offer representation at resilience meetings at all levels



Sidelight

Considering how the different parts of the systems that we depend on and operate in are connected can be helpful when looking to address complex challenges. Doing so can be used to help develop a 'Theory of Change'. This focuses on collaborative, integrated solutions, which can help to achieved desired changes in relation to learning within and across systems. For more 'Systems Thinking' insights and practical information on creating a theory of change, see the article from Government Office for Science on p.60

Further details of mandatory legal requirements, good practice and examples of leading practice in relation to this learning theme can be found in National Resilience Standards for LRFs:

- **Standard 6: Interoperability**
- **Standard 8: Exercising**
- **Standard 13: Local Recovery Management**

Learning Together: Conclusions

The synthesis of the latest public-facing reports brings lessons identified from the response to Storm Arwen into a shared space. The observations, actions and recommendations articulated within them represent vital learning for the energy sector and utility providers. But they also demonstrate significant learning themes and transferable lessons for wider resilience partners.

The key learning themes included: An evolving understanding of risk; Wellbeing and welfare; Standards, guidance and good practice, Information and expectations and Collaboration and Integration. Evidence for these themes and examples of transferable lessons have been provided. In addition, wider supplementary reports and 'sidelights' have also shone a spotlight on areas of transferable learning that extend beyond extreme weather to relevance in other areas of shared risk that expressed on the National Risk Register.

In closing, it is helpful to quote from Observation 28 of the Department for Transport's review of lessons for the UK Highways Agency, which reminds us that 'Building resilience to extreme weather is best understood as a process...' and that there is both shared purpose in expending '...effort and resources in consistently striving to learn from their and from others' experiences of emergencies and by instilling these lessons into practice through a process of planning, training, exercising and validation.⁸¹ (DfT, p.102)

81 DfT, 2021. Ibid. p.102



Academic Insight

Information and Expectations in Power Outages

Academic Insight

This review summarises findings from an academic article titled: ‘Communication blackouts in power outages: Findings from scenario exercises in Germany and France’.

The article was published in Issue 46 of the International Journal of Disaster Risk Reduction, (2020) and authored by Farnaz Mahdavian, Stephen Platt, Marcus Wiens, Miriam Klein, and Frank Schultman.⁸²

Why is this research relevant to the analysis, observations, lessons and recommendations relating to severe weather and Storm Arwen?

In this study the researchers from the Karlsruhe Institute of Technology (Germany), Cambridge Architectural Research Ltd and the Centre for Risk Studies at the University of Cambridge (UK) set out to examine societal resilience to a hypothetical 72-hours power failure in Germany and France.

The aims of the scenario (as set out in the article) were:

- to explore the potential cascading effects of a 3-day blackout and the implications for different types of people,
- to learn how people might behave, react and feel in a blackout
- to gauge societal resilience to a relatively long power outage, and in the process to learn about preparedness and response to a possible crisis of a 3-day blackout in Europe⁸³

The findings in this study provide interesting insights on the learning theme of ‘Information and Expectation’. The scenario simulation highlights the important role that information plays in a) helping to mitigate psychological uncertainty; b) building and maintaining trust between local authorities and the affected; and c) managing expectations amongst impacted communities. The study also provides interesting insights into the emotions of those in simulated roles.

These insights may be helpful when considering the physical and psychological welfare of individuals and communities during extreme weather events and power outages. Whilst results are not based on real-life experiences, the findings could be used to inform local exercise scenarios, person-centred emergency planning and develop training for those engaging with customers in the event of an outage.

Overview:

Mahdavian and colleagues designed a simulated 72-hour blackout scenario, with input from five international experts, and delivered it through four role play workshops (two in Germany and two in France). The following information is taken directly from the academic article describing the study, which was published in the Journal of Disaster Risk Reduction in 2020.

82 Mahdavian, F., Platt, S., Wiens, M., Klein, M. and Schultmann, F., 2020. Communication blackouts in power outages: Findings from scenario exercises in Germany and France. International Journal of Disaster Risk Reduction, 46, p.101628.

83 Mahdavian et al., 2020. Ibid, p.3

Methods:

A group of 54 student participants took part, with each workshop bringing together 10-16 participants who adopted one of four roles: an elderly 80-year-old person in a wheelchair, a parent with two children, a single university student and a 12-year-old child.⁸⁴ This allowed them to “dynamically ‘play’ through an imagined future”,⁸⁵ in which they were encouraged to think for themselves and imagine what they would feel and react in their assigned role.

The 72-hour time-frame was collapsed into four 30-minute periods of play. These represented the first 30 minutes, 8-hours, 24 hours and 3 days into the blackout, during which there was:

‘No traffic lights, no subway or tram, no telephone landline, no payment by bank cards, no ATM cash, no fuel at petrol stations and, in most cases, no tap water or toilet flush’.⁸⁶

In the second time-period, new cascading events including the closure of supermarkets, loss of mobile and internet networks, and the cancellation of trains and flights were added in to the play.

To capture data from the scenario workshops, ‘Mentors’ noted the emotions, perceptions, expectations, imagined actions and wider discussion points expressed by participants in each of the four workshops and for each of the four different roles’.

A content analysis was then used to review the Emotional response; Behaviour; People’s expectations and trust in the authorities, and Volunteering and Community Cooperation.

Findings:

Initial expectations of participants in the black-out scenario were as follows:⁸⁷

- In the first 30-minute period most participants (71%) expected the electricity to come back on any second.
- The remainder (29%) estimated a maximum outage of 2 hours.
- After 8 hours, over 75% participants were still hopeful that the power would be back within an hour.
- By the fourth period (72 hours of blackout) the majority of participants had given up any hope that electricity could come back at all and were prepared for the worst.

Findings also revealed there was a significant escalation of emotional response across all participants over the 72-hour blackout, from calm puzzlement to worry or fear. A table of the most repeated words with emotional content was produced by the researchers (see Figure 9).

Interestingly, these emotions seemingly energised participants to take imagined action in the first 24hrs but were later subject to a slump by the 72-hour end point.

84 Mahdavian et al., 2020. Ibid, p.3

85 Mahdavian et al., 2020. Ibid, p.3

86 Mahdavian et al., 2020. Ibid, p.3

87 Mahdavian et al., 2020. Ibid, p.4

Figure 9: Emotional reaction (most repeated words with emotional content in 4 workshops)⁸⁸

Table 2. Emotional reaction (most repeated words with emotional content in 4 workshops).

	30 Mins	8 Hours	24 Hours	72 Hours
Child	Happy, Calm	Bored , Puzzled, Worried	Afraid, Scared , Worried	Afraid , Scared, Worried
Students	Puzzled	Annoyed , Worried	Scared, Worried, Anxious, Impatient, Angry , Overwhelmed	Afraid, Scared , Angry
Parents	Puzzled, Worried	Annoyed, Worried, Anxious, In control	Scared, Worried, Anxious, Hopeless, In control, Brave	Worried, Stressed, In danger, Strong
Elderly	Calm	Worried, Anxious, Weak, In danger	Afraid, Scared, Worried, Overwhelmed , Stressed, Hopeful	Scared, In danger, Weak , afraid

The emotional pattern recorded by the participants accords with the behavior

88 Mahdavian et al., 2020. Ibid, p.4 (reproduced with permission)

The nature of expectations that participants had on authorities associated throughout the duration of the blackout were also really interesting, and notably highlighted in Table 5 (see Figure 10).

Figure 10: Participants' expectations of the 'authorities' at different time periods⁸⁹

Table 5. Participants' expectations of the 'authorities' at different time periods.

30 Mins	8 Hours	24 Hours	72 Hours
- Information expected	- Information expected from police, Red Cross, government, city hall (Find the way to inform people considering people have no access to internet and TV)	- Information and guidance	- All points from previous time period plus:
- The problem fixed soon	- Water distribution	- Government provide food and water and other initial needs	- Government plans organized evacuation
- Short blackout	- Nursing care for elderly	- Shelter provision for people in need	- Firefighters provide humanitarian support
- Confirm with people that public service is still functioning	- Advice from government about how to behave and what to do if it continued	- Help from other regions or other countries	
- Traffic police manage the traffic	- Provide water	- Evacuation	
		- Government visit old people at home	

In terms of imagined behaviours, an expressed attention to evacuate also increased significantly over the four time periods. The principal drivers here were a lack of information, support and advice. This was coupled with the increasing motivation to have basic needs met, such as access to food and drinking water.

89 Mahdavian et al., 2020. Ibid, p.7 (reproduced with permission)

Are simulated findings valid in real life?

Although these experiences were simulated, findings do chime with the real lived experiences of those impacted by storm Arwen, and captured through Ofgem's 'Final report on the review into the networks' response to Storm Arwen'.⁹⁰

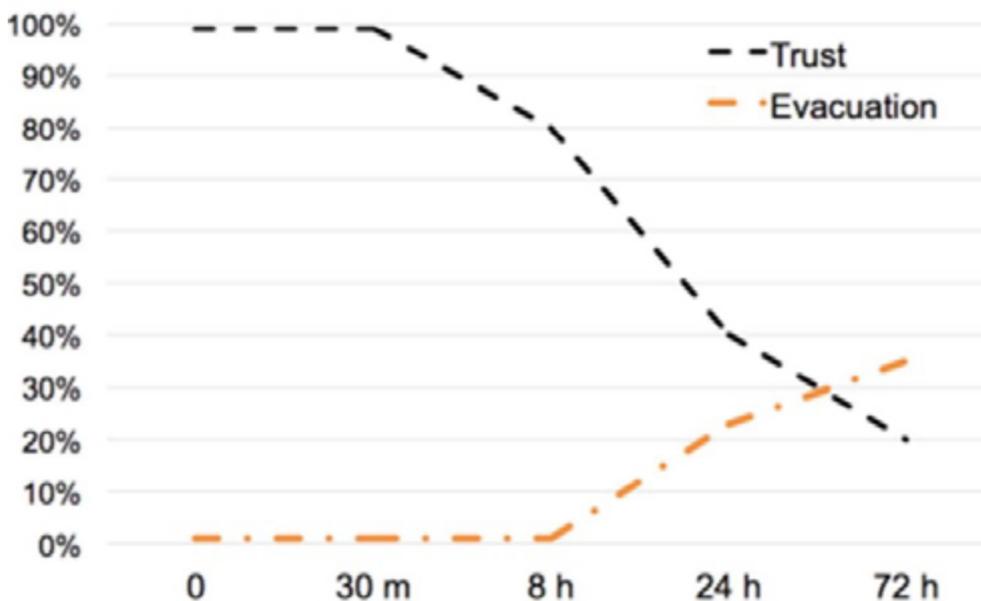
'The website was hit and miss so we were in the dark about what was going on. A couple of times it gave a time but the power didn't come on and we were just waiting again. It got our hopes up and then they were dashed.' (Affected by a 2.5-day outage)

'If they had said from the outset it could take 4, 5 or 6 days people would have made better, safer choices.' (Affected by a 6-day outage)

Finally, expectations and trust in the authorities were also captured. Participants had been told that 'authorities were doing their best to find the cause of the blackout and fix the problem but are unable to say how long it will last', but given no further information thereafter. The data revealed that:⁹¹

- After 24 hours, more than 50% of participants started to react in an angry way ("still no information – that can't be true!") and began to take things more and more into their own hands.
- During time periods 1 and 2, participants broadly trusted the authorities...but with no guidance and information this trust dramatically dropped in the third time period. Figure 5 illustrates the decline in trust compared to the express intention to evacuate'.⁹²

Figure 11: Evolution of trust in authorities and propensity to evacuate. (Reproduced with permission)



⁹⁰ Ofgem, 2022. Ibid p.35

⁹¹ Mahdavian et al., 2020. Ibid,

⁹² Mahdavian et al., 2020. Ibid, p.7

Interesting findings on the intention to volunteer were also captured, highlighting the primacy of those in student roles to undertake this kind of action. Overall, levels of volunteering and cooperation rose in each of the four time periods.

So What?

The articulated expectations of participants may be helpful to DNOs, local authorities and wider resilience professionals when setting expectations before, during and after power outages. It may also be useful in preparing communications on anticipated timescales for power restoration or standing up practical provisions to affected communities in a RWCS.

It also highlights the important role that information flow can have on: mitigating individual levels of psychological discomfort and uncertainty; building/maintaining trust between those affected and in positions of authority and managing physical needs during the recovery.

The research could be used to inform updated planning assumptions, and developing training for call handlers, including surge staff cadres, when preparing to handle large call volumes from distressed customers.

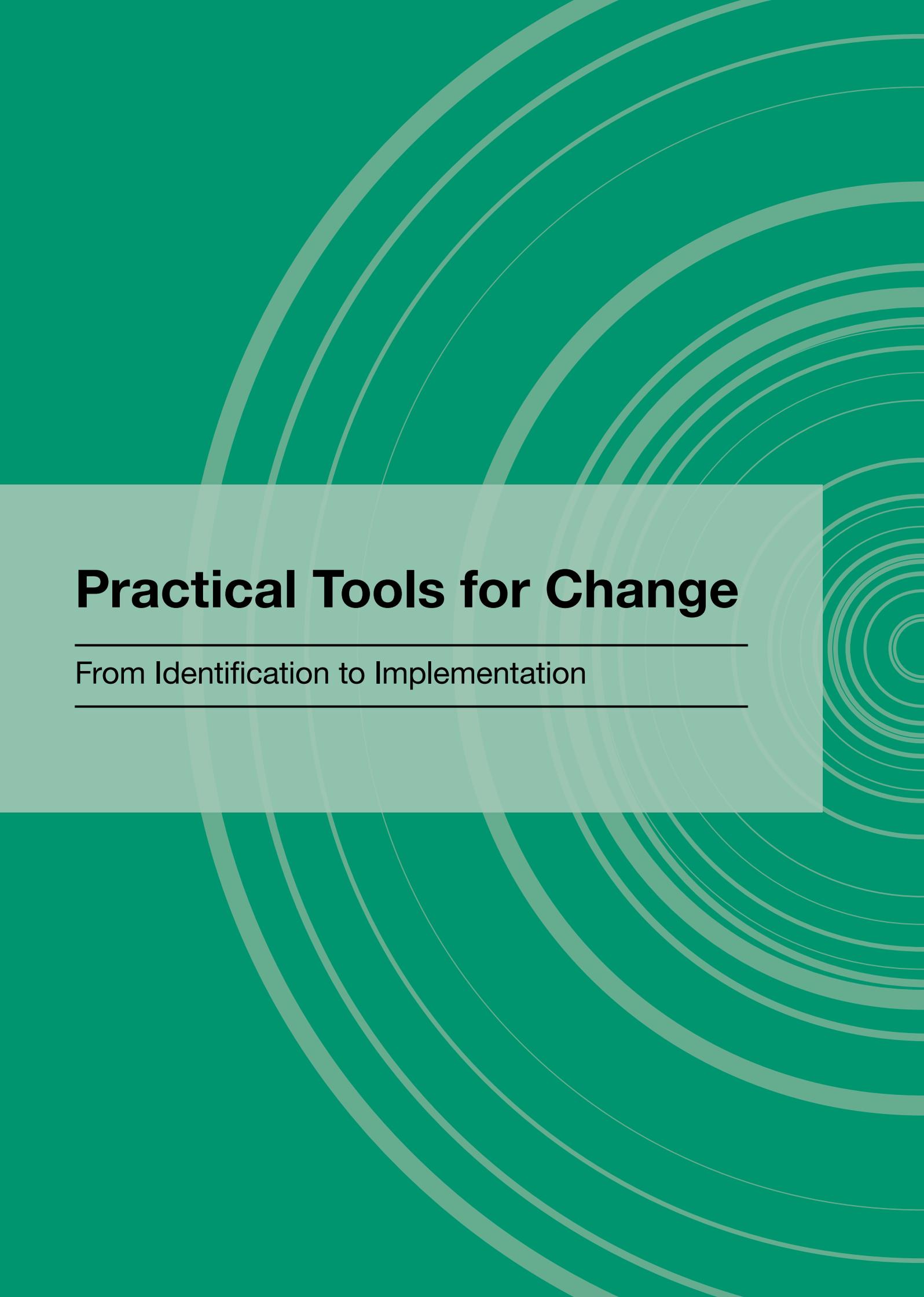
Conclusion

Albeit simulated, the findings add rich insights into the potential impacts of power-outages on individuals in our local communities. From a research perspective, cultural differences and the use of a convenience sample of students mean that generalising results to wider populations is limited. Nonetheless, findings shed light on emotions, imagined behaviours and implicit expectations that may be present in local communities. It also gives cause for reflection on the physical, social and psychological impacts for those affected.

Article Reference:

Mahdavian, F., Platt, S., Wiens, M., Klein, M. and Schultmann, F., 2020. Communication blackouts in power outages: Findings from scenario exercises in Germany and France. *International Journal of Disaster Risk Reduction*, 46, p.101628.



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Practical Tools for Change

From Identification to Implementation

Introduction

Learning from Storm Arwen highlighted the need to think about the systems we work in. These included: communication systems; electricity distribution systems; health systems; data systems; emergency response systems, early warning systems; welfare systems – and plenty more besides.

Considering how these systems operate, connect and interact is an important step when developing implementation strategies and designing for change. To encourage and empower the application of systems thinking in the lessons space, we invited Government Office for Science (GO-Science) to share their some of their knowledge on the topic.

Dr. Rachel Hardy leads the GO-Science systems thinking programme. The main aim of the systems thinking team is to promote and embed systems thinking across the Civil Service. In this article, she tells us about a suite of publicly accessible documents and practical, transferable tools that the team have recently developed and made available online.



Dr. Rachel Hardy

What is Systems Thinking?

A system is a set of elements or parts interconnected in such a way that they produce their own pattern of behaviour over time. Systems thinking is a framework for seeing the interconnections in a system and a discipline for understanding the whole system; the ‘structures’ that underlie complex situations. Systems thinking is a collection of tools and approaches that help support us in thinking systemically about our work. Systems thinking is particularly powerful when applied to complex and interlinked systems. By creating simple models of complex systems, systems thinking can be a useful building block towards understanding and visualising data flows within a system.

Our suite of systems thinking documents for civil servants were developed in response to requests from the Government Chief Scientific Adviser (GCSA), Head of Policy Profession and Civil Service (CS) reform to increase capability in systems thinking.⁹³ They are designed to provide civil servants with a springboard into using systems thinking in their work to address interlinked policy issues, but the theories, tools and frameworks that inform them can be applied by others working with complex systems in other contexts. The full suite of documents available include:

- **An Introduction to Systems Thinking**, which provides a short explainer on systems thinking and a summary of why and when systems thinking approaches are useful.

⁹³ Guidance: Systems thinking for civil servants. Available from: <https://www.gov.uk/government/publications/systems-thinking-for-civil-servants>

- **The Systems Thinking Journey**, which weaves systems thinking through policy making.
- **The Systems Thinking Toolkit**, which takes a step-by-step approach to 11 systems thinking tools.
- **The Systems Thinking Case Study Bank**, which contains 14 real-life examples of how systems thinking has been applied to projects across the Civil Service.

We worked closely with a wide variety of groups and professions throughout their development, including the Royal Academy of Engineering (RAE), Policy Profession, Defra, BEIS and Cabinet Office. This collaborative approach enabled us to deliver a set of products that are accessible for civil servants across government regardless of their grade, department or profession.

What is a complex system?

Complex systems behave in a way that is greater than the sum of their parts – you can't understand the system just by looking at individual elements, it needs to be studied as a whole. Likewise in complex systems there are underlying patterns – feedback loops – which mean that it becomes difficult to relate cause to effect and actions to consequences. Examples of these kinds of systems are the human brain, weather, economies. But a lot of policymaking is also complex and attempts to understand and influence policy need to take this complexity into account. Therefore, systems thinking is increasingly being promoted as a key tool for policymakers to be aware of and use.

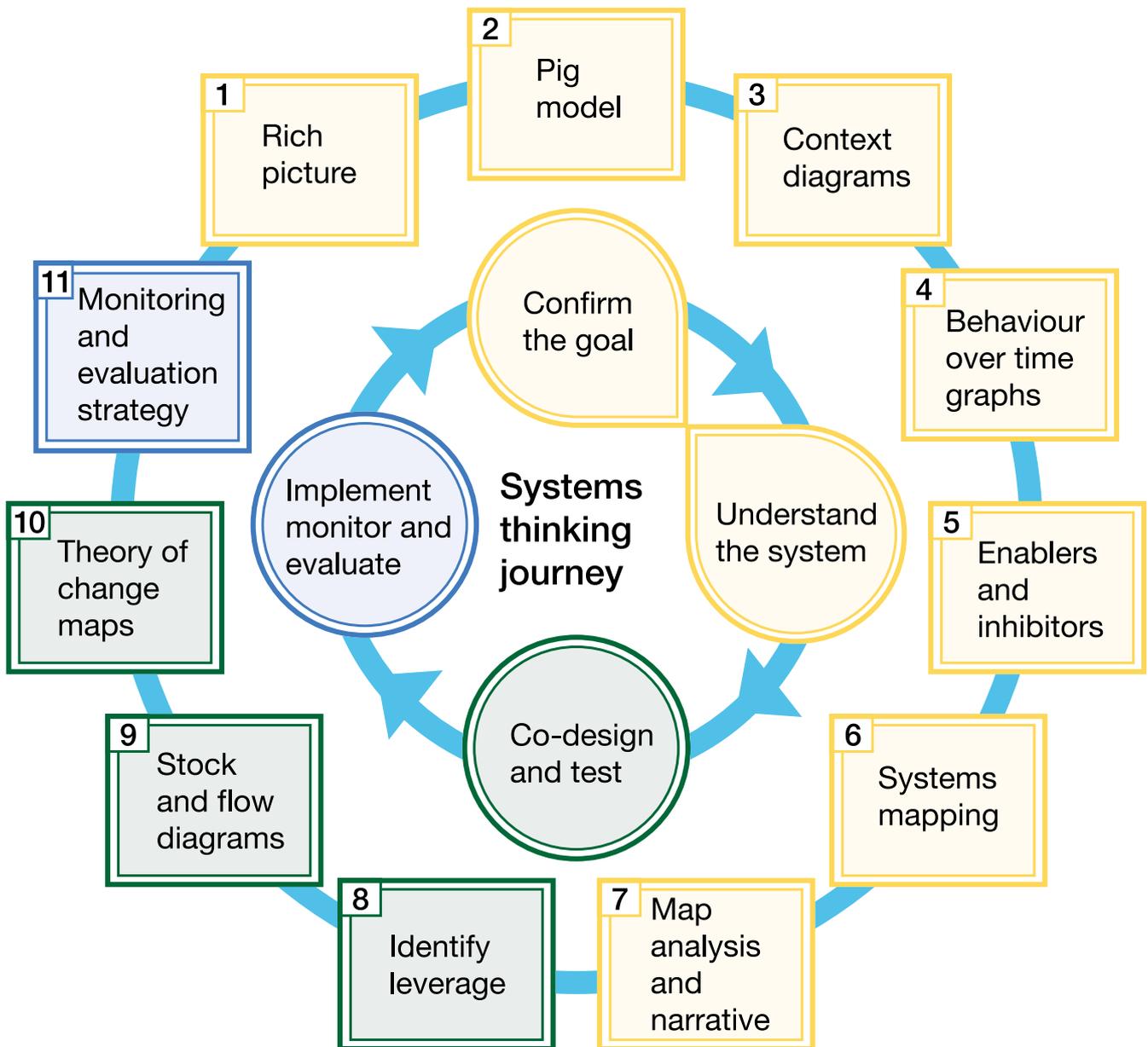


What are systems thinking tools and when do I use them?

There are multiple systems thinking tools and approaches available to help you navigate and work effectively within a

complex and interlinked problem. The systems thinking toolkit includes eleven of these and signposts to many more. These tools were chosen for their accessibility with no need for prior knowledge of systems thinking to use them.

Figure 12: Mapping 11 systems thinking tools to four stages of policy design for complex and interlinked problems

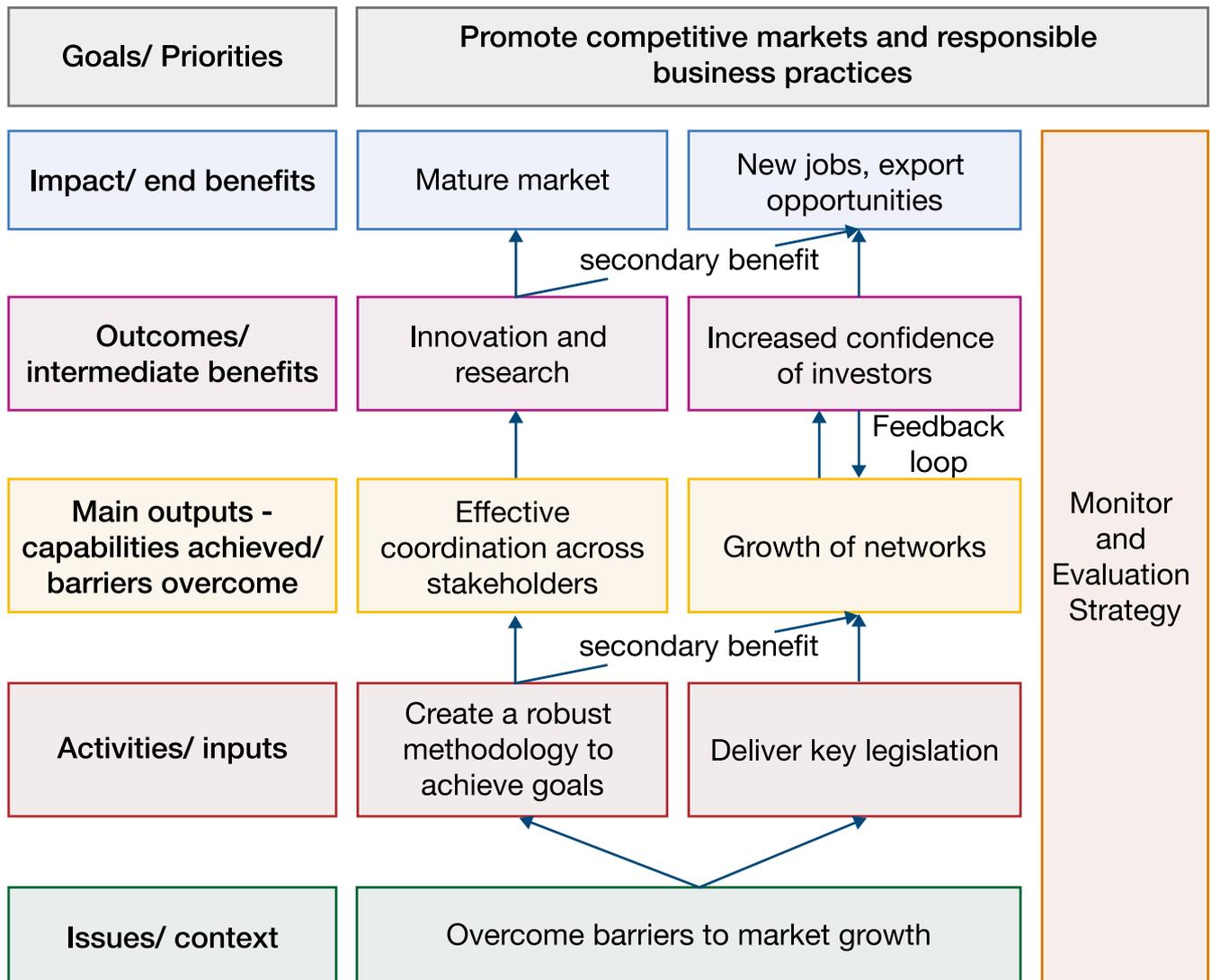


An example systems thinking tool: Theory of change maps

Theory of change maps are an example of a systems thinking tool that will help you design an effective policy or practical action in response to a lesson identified. These

maps plot the key steps that are anticipated between an intervention and its outcome. They identify underlying assumptions for how a proposed solution or goal is linked to a problem via a set of actions, outputs and outcomes.

Figure 13: An example of a theory of change, adapted from a consultation Impact Assessment on Heat Network Zoning policy found here (with thanks to by Emma Longhurst-Gent)



Key definitions

In Figure 13, we show how a theory of change map might be used to address barriers to market growth, but this could also be applied in the lessons context:

- Outputs include factors that act as a catalyst to drive your desired change (e.g. effective coordination across stakeholders).
- Outcomes refer to the short or medium-term effects that you are looking to have on a system (e.g. increased confidence of investors) and are changes that need to occur in order to achieve your long-term goal.
- Impacts refer to the long-term goal or overall objective of your work; in this example, impacts include a mature market and new jobs.

Why create a theory of change map?

Theory of change maps can be a useful communication tool for discussing the steps that link problems within the system to proposed 'solutions' with stakeholders. In an ideal scenario, you would be able to diagnose solutions that are acceptable to everyone within the system. This may not always be possible, but by exploring potential conflicts and contrasting motivations with different stakeholders, you and your team will be better informed about the short and long-term implications of potential interventions.

Theory of change maps can also provide a starting point for preparing – and putting in place – a monitoring, evaluation and learning strategy. They help you identify monitoring and evaluation questions and the data required to answer these. Once drawn up, a theory of change map can provide an ongoing point of reference as the programme is being implemented. Therefore, as a visual 'road map', they provide a useful indication of whether an intervention is on course to achieve its aims.

Conclusion and next steps

Complex systems are by their nature dynamic and continuously changing. It might take time before changes are observed. However, by wrapping a systems thinking approach around existing processes – introducing new tools and approaches to improve what you already do – you will increase the chance of delivering the right solution to the right problem. You will have created a safety net to steward the system effectively and impactfully within this complexity to create intelligent, empathetic and impactful outcomes.

For further information on our initiatives and advice on how to use systems thinking in your work, contact systems@gov.science

The full suite of Systems Thinking resources can be freely accessed at: <https://www.gov.uk/government/publications/systems-thinking-for-civil-servants>

Professional Insights on Implementation

An interview with Chief Superintendent Dawn Morris on city-wide learning from counter-terrorism exercises and malicious attacks

Professional Insights

Chief Superintendent Dawn Morris has spent nearly 30 years in policing. She is currently Head of Counter Terrorism Protective Security Operations at Metropolitan Police Service (MPS), where she has co-written, tested and exercised the London response guidance to Counter Terrorist (CT) attacks. During her time at the MET, Dawn has also taken a leading role in city-wide debriefing and multi-agency strategic coordination. This included leading the multiagency debriefs to identify lessons following the terrorist attacks on Westminster, London Bridge, Finsbury Park and Parsons Green in 2017. She then worked to coordinate and implement the lesson identified, actively embedding learning from the attacks as part of a continual improvement process.

As she prepares to retire from the force in the Autumn, the Digest team were keen to capture Dawn's voice on learning lessons from exercises and emergencies. In this informal interview, she kindly shares her personal experiences and inspiring professional insights, which reflect her passion for change to prevent future loss of life, and the learning legacy she undoubtedly leaves as she prepares to move on from policing.



Hi Dawn, thank you so much for agreeing to share your experiences of leading learning in the MET. But before we dive into that, I'm curious to know what influenced your decision to take a career with the police 30 years ago?

It always was a genuine desire to make a difference. I had actually started my career in an unrelated, profit-making role, which made me realise that wasn't how I wanted to live my life. I wanted to make a difference in London, so I switched careers and went into policing which continues to give me a direct opportunity to do that. And I know many of my colleagues across the emergency services feel the same. It's been a true vocation.

In your current role you've taken a lead on lesson identification and implementation following exercises and emergencies across the capital. Where did your interest in the lessons process start, and were there any significant milestones for you along the way?

I think the first real milestone for me was the experience of the UK riots in 2011. I was working in the borough, in a command role. It was a very, very difficult time for all in policing. I had the opportunity to supply information into the review of the events that feature in the published report: 'Four days in August: The UK riots.'⁹⁴ I was fascinated to see how honest conversations could impact onward learning and act as a turning point for change.

Then in 2013, took over as the lead for MPS 'Prepare', which is focussed on working to mitigate the impact of a terrorist attack as one of the four key strands of the government's counter-terrorism CONTEST strategy.⁹⁵ It was in this role that we undertook a lot of work to progress multi-agency strategic coordination. I helped to review and re-write the response protocols, which we then trained, tested and exercised.

Another significant milestone came in 2016, when the Mayor of London commissioned Lord Toby Harris to undertake 'An Independent Review of London's Preparedness to Respond to a Major Terrorist Incident'.⁹⁶ From there the pace

of our work on preparedness really picked up. It had a particularly profound impact on the frequency of our onward testing and exercising (T&E) and preparedness for the response.

As it happened, our first exercise took place three-days before the Westminster Attack in 2017. Following the exercise on Sunday, we had moved swiftly to address some of the lessons identified during the debrief. The changes were in place to support an improved response when the attack then came on the Wednesday. If ever there was a testimony to the importance of testing, exercising and then embedding change, then that was it.

'If ever there was a testimony to the importance of testing, exercising and then embedding change, then that was it.'

We were then able to debrief the Westminster attack, learn from that and make more changes before the attack on London Bridge less than three months later. We then had a further two attacks in London that year, including the Finsbury Park attack and the Parsons Green bombing.

Although it was an awful time, from a learning perspective, it was encouraging that when the second review into London's preparedness for terrorist attacks was subsequently commissioned in 2021, Lord Toby Harris did pick out the short

94 Bridges, L., 2012. Four days in August: the UK riots. *Race & Class*, 54(1), pp.1-12. Available from: <https://journals.sagepub.com/doi/abs/10.1177/0306396812446564>

95 UK Counter-terrorism strategy (CONTEST). Available from:

<https://www.gov.uk/government/publications/counter-terrorism-strategy-contest>

96 Lord Harris confirmed nearly all of the 127 recommendations from his 2016 review into London's preparedness to respond to a major terrorist incident have already been implemented. Link to 2016 report 'AN INDEPENDENT REVIEW OF LONDON'S PREPAREDNESS TO RESPOND TO A MAJOR TERRORIST INCIDENT': https://www.london.gov.uk/sites/default/files/londons_preparedness_to_respond_to_a_major_terrorist_incident_-_independent_review_oct_2016.pdf

turnaround in our learning and ability to implement changes quickly where needed¹. When that review: London Prepared: A City-wide Endeavour⁹⁷ was published earlier this year in May 2022, it was found that ‘substantial progress has been made by London’s emergency services and key agencies since 2016 as a result of action initiated by the Mayor’.

What do you think were some of the key facilitating factors in achieving such important learning and change so swiftly?

I think, throughout those terrible events, there were some very practical facilitators. The really fast 3-day learning was about the internal changes to information sharing. The people involved in that first exercise were the same people then in charge of the response when the attack happened. It was the combination of personal self-identified learning, organisational learning and then the onward impact on London learning that came together to facilitate that outcome. We also then had immediate feedback from the learning done between two bridge attacks. We were learning on the go.

We also had a very strong debrief approach. It was an honest share, with trusted conversations, made possible in the context of relationships. We put what needed to change out on the table. When change was needed we would write it up and identify the owner for that change. If it was an internal issue, the relevant organisation was given a very short time to implement it. If it was multi-agency, that might need a bit longer, but a commitment was made in the room there and then.

‘We also had a very strong debrief approach. It was an honest share, with trusted conversations, made possible in the context of relationships.’

But having said that, we were also very committed to setting out what went well in the response. The first part of our multi-agency debriefs always focussed on ‘what worked well for you?’ and ‘why?’. This helped to make sure we didn’t change anything that was working well across agencies. We could recognise where the work and the response were strong, and acknowledging that set the contextual scenery for looking at what didn’t go well. Context in the debrief was absolutely essential for drawing out the learning, because each attack was so different.

The other thing we had was an appetite right at the top of the service for making fundamental changes we needed - and we found that changes were invaluable for improvement. And that appetite and approach...that attitude, reverberated across all agencies in the London Resilience Partnership.

Overall, what united us was a commitment to make sure we learn, change and improve – always.

And that was motivated by continually coming back to the ‘why’ - which is to prevent further loss of life. This is serious, we know we need to get the best response we possibly can, and that’s why we do it. There isn’t any other reason.

97 The latest review by Lord Toby Harris ‘LONDON PREPARED: A CITY-WIDE ENDEAVOUR can be accessed here: <https://www.london.gov.uk/mopac-publications-0/london-prepared-city-wide-endeavour>

‘Overall, what united us was a commitment to make sure we learn, change and improve – always.’

And how have things developed since the 2017 attacks?

After that first exercise in March 2017, that’s when the T&E programme really took off.

The structure and planning of our T&E has become a key feature of our organisational learning programme. We now have an established T&E cycle for London. It’s an agreed annual plan with aims and objectives, informed by an intelligent evidence base of where we think the threats lie, and deliberately designed to ensure there is a clear review of our city-wide capabilities. The plan ensures we exercise regularly using a range of different mediums, including immersive in person table-top scenarios and live exercises. Through Covid we amended our plan to incorporate virtual exercising to keep the momentum of learning. More recently we’ve also undertaken some command post exercises which focus on just the decision-making processes, because testing critical decision making across agencies is crucial, and the exercises don’t always have to be larger scale.

Looking ahead, we’re always trying to do better. We want the maximum benefit for those who take part. At the moment we’re thinking how we can capture technical learning and turn it into a training product. This is really important, because the recent uplift in policing has brought lots of brilliant people into the organisation who weren’t there in 2017.

We want to give them an immersive learning package that can help to mitigate the loss of shared, corporate memories that the people who played a role in the response to the 2017 attacks will inevitably carry in the organisation with them as they move on. It’s also really encouraged me to do the best I can in handing over actually, in sharing expertise and making sure progress is well documented and communicated.

You’re clearly committed to city-wide learning, and I understand that since 2017 you have made this an international endeavour. Can you tell us about the role you played in the city-led, Counter Terrorism Preparedness Network (CTPN)?

Yes, CTPN is an international collaboration currently funded by the City of Stockholm. It’s governed by the CTPN International Board, facilitated by London Resilience Group and hosted by the London Fire Commissioner.⁹⁸ Really it’s all about learning across cities, and it’s been a privilege to be part of it since its inception in 2019. I got involved because we acknowledged that many cities had experienced tragic attacks and there needed to be a relationship, an opportunity to discuss learning together as part of a uniquely city-led network. It was spearheaded by Alex Townsend-Drake at London Fire Brigade, who was supported by London Resilience Partnership to set it up. Six cities came together for the launch hosted by the Mayor of London in 2019.

‘Relationship-building during T&E is essential’

98 Counter Terrorism Preparedness Network (CTPN). Available from: <https://www.london.gov.uk/what-we-do/fire-and-resilience/counter-terrorism-preparedness-network-ctpn>

Three years later CTPN now brings together leaders, practitioners and academics from across Europe, North America and Australasia to inform city-level policies and practices that strengthen resilience and help keep our cities and communities safe from terrorism. It's gone from strength to strength, providing a safe space for the informal sharing of lessons and experiences, and facilitating various pieces of research, events and projects.



Finally Dawn, you've already mentioned that you'll be retiring from London MET soon. As you prepare to move on, what transferable learning points and parting words of wisdom would you want to share with others working to learn from emergencies and exercises?

First I think we must maintain momentum on T&E – we can never do too much exercising. But it must always be linked to a commitment to capture lessons and make the necessary changes. You have to have top-down support for change, because it will often span multiple areas including policy, people, roles and training and it needs the buy-in to facilitate it.

A second key point is relationships - invest in relationships across regions and agencies to ensure that when the time comes to respond, you already have the knowledge about each other's roles and responsibilities. This is why relationship-building during T&E is essential. The people doing the exercising should be the same people who will deliver the response on the ground. Remember these relationships are key to effective command but also to onward lesson capture, because they build trust, promote information sharing and lead to improvements in joint understanding and situational awareness.

Finally, get ahead of the curve and capture learning in the exercise planning phase. Always ask questions about any relevant policies beforehand. If there isn't clarity or process in place, sort it out in advance. Remember you're not testing someone's recall, you're testing their ability to respond. If a document would be available in real time, make it available. And have plenty of pre-exercise conversations, it strengthens those relationships and promotes continuous learning practices, even in the earliest stages of planning.

Dawn, that's invaluable advice. Thank you very much for taking the time to share your story, professional insights and expertise with us. We wish you all the best in your onward endeavours.

Learning in the Local Tier

Collaboration and Integration for
Continual Improvement

Learning in the Local Tier

Tracy Davies is Associate Director of Emergency Planning Resilience and Response Hampshire & Isle of Wight Integrated Care Board and plays a leading role in Hampshire and Isle of Wight Local Resilience Forum. She has recently set up an innovative regional network to increase social learning opportunities, share lessons and drive collaborative approaches to continual improvement. In this article she tells us about how this came about.

Learning is integral in the world of emergency planning. In Local Resilience Forums (LRFs), we continually promote learning at an individual, organisational, and collaborative levels through a range of practical mechanisms.

In Hampshire and Isle of Wight (HIOW) these include the use of e-learning platforms and products, professional training, exercising the emergency response and the use of reflective practice. We also carry out actions arising from lessons identified in emergency debrief reports, to improve preparedness and strengthen our resilience in the face of future risks.

But despite the breadth of learning that is available and active, it seems some of the most familiar challenges, for example in multi-agency communication and coordination, are still difficult to overcome. This has been evidenced in reports such as the Pollock Review in 2013, which found that:

“The consistency with which the same or similar issues have been raised by each of the inquiries is a cause for concern. It suggests that lessons identified from the events are not being learned to the extent that there is sufficient change in both policy and practice to prevent their repetition.”⁹⁹

But with busy day jobs in response and all the different learning mechanisms already in place, we began to wonder? What more we could do in collaboration with others, to ‘pursue excellence - in knowledge, skills, training, exercising, learning and improvement’?¹⁰⁰

‘Learning is integral in the world of emergency planning’



99 Pollock K. 2013. Review of Persistent Lessons Identified Relating to Interoperability from Emergencies and Major Incidents since 1986. Emergency Planning College Occasional Paper New Series Nr 6 2013 <https://www.epcresilience.com/application/files/4516/5237/0135/Occ6-Paper-v3.pdf>

100 National Preparedness Commission, 2022. Independent Review of the 2004 Civil Contingencies Act <https://nationalpreparednesscommission.uk/2022/03/independent-review-of-the-2004-civil-contingencies-act/>

The Importance of Social Learning

Research demonstrates that not all learning is as formal as we might think. In fact, it's estimated that 80% of adult learning is informal, and 20% of knowledge transfer happens through relationships and sharing.¹⁰¹ This means that opportunities for social learning, through networking events, informal gatherings, story-sharing and conferencing are an essential part of both the learning cycle. And the onward continual improvement process too. When integrated effectively into local practice, applied social learning can actually reinforce formal training, improve engagement, build relationships before the response, and strengthen partnership working.

Pioneering the Inauguration of the South Region Continual Improvement Network

This year, as part of our commitment to excellence in learning and improvement, HIOW LRF decided to establish a Continual Improvement workstream. The work carries responsibilities for strategically coordinating improvement projects and identifying opportunities to promote a culture of continual learning and innovation. Whilst much of the work in this area builds on lessons identified from local training, exercising and debriefs, we knew early

on that we had to look beyond local boundaries to expand our knowledge base and truly invest in learning. That is why it was decided the workstream would actively pursue partnership working opportunities and look at wider regional, national, and international lessons.

It was agreed that the initial focus would be on regional collaboration. This started by connecting with known colleagues in other local areas who also had a key interest in learning lessons. Then we wanted to go further, so we reached out to coordinate discussions with Local Resilience Forum leads across the south of England who had responsibility for improvement work. We found that there was a significant appetite for connecting and learning lessons across LRFs.

In July 2022 we hosted an inaugural meeting of the South of England Continual Improvement Network' online. More than 20 colleagues from LRFs across the South region joined us, as did attendees from JESIPs Joint Operational Learning (JOL) team and the Emergency Planning College. The network shared current opportunities and challenges in leveraging lessons for continual improvement at the local level. We all agreed that meeting regularly to share learning and explore opportunities to collaborate outside of the more formal structures and processes would be beneficial.

101 Boileau, T. 2018. Informal Learning, in West, R.E., 2018. Foundations of learning and instructional design technology. Available from: https://edtechbooks.org/lidtfoundations/informal_learning?book_nav=true; Sommer, M., Njå, O. and Lussand, K., 2017. Police officers' learning in relation to emergency management: A case study. International journal of disaster risk reduction, 21, pp.70–84.

Looking Ahead

The Continual Improvement Network is now establishing a regular rhythm of connection, with the shared objectives of: promoting a culture of learning and continual improvement across the South; identifying informal lesson sharing opportunities to sit alongside existing arrangements such as JOL and those led by the EPC); and encouraging a wider commitment to promoting continual improvement throughout the LRF agenda.

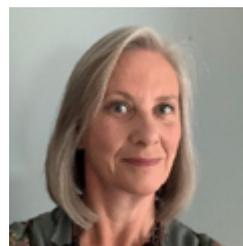


'It is hoped that the social connections and collaborative working will ultimately enhance emergency response arrangements, planning and resilience across organisations.'

We also want to collectively interact with government and outside agencies to influence how the improvements in emergency response and recovery are embedded at LRF and national levels. Ultimately, the network will provide a positive platform for informal learning.

By sharing information such as case studies, lessons and best practice informally across the network, it is hoped that the social connections and collaborative working will ultimately enhance emergency response arrangements, planning and resilience across organisations.

If you would like more information about this network or are interested in developing a similar forum, please contact either Tracy Davies, Continual Improvement Workstream lead, Hampshire & Isle of Wight Local Resilience Forum (tracy.davies4@nhs.net) or Lianna Roast at the Emergency Planning College via enquiries@emergencyplanningcollege.com.



Tracy Davies

Associate Director of Emergency Planning Resilience and Response



Resources

Topical Reports, Resources and Publications

Emergency preparedness

Guidance on part 1 of the Civil Contingencies Act 2004, its associated regulations and non-statutory arrangements. Available from:

<https://www.gov.uk/government/publications/emergency-preparedness>

National Resilience Standards

A set of individual standards for LRFs to consistently identify good and leading practice, and help self-assure their capabilities and overall level of readiness. Available from:

<https://www.gov.uk/government/publications/national-resilience-standards-for-local-resilience-forums-lrfs>

Cold Weather plan for England

This plan helps prevent the major avoidable effects on health during periods of cold weather in England. It can be found at: <https://www.gov.uk/government/collections/cold-weather-plan-for-england>

Research and literature review that informed the Cold weather plan for England can also be found at: <https://www.gov.uk/government/publications/cold-weather-plan-for-england-research-and-literature-review>

JESIP Joint Doctrine Edition 3

The latest edition of Joint Doctrine: Interoperability Framework was published in May 2022. It can be downloaded here: <https://www.jesip.org.uk/news/joint-doctrine-edition-3/>

UNDRR: Principles for Resilient Infrastructure (2022)

‘The Principles for Resilient Infrastructure have been developed by UNDRR to support implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 and the Sustainable Development Goals.

The Principles for Resilient Infrastructure describe a set of principles, key actions, and guidelines to create national scale net resilience gain and improve the continuity of critical services such as energy, transport, water, wastewater, waste, and digital communications, which enable health, education, etc. to function effectively.’

The full report can be accessed at: <https://www.undrr.org/publication/principles-resilient-infrastructure>

Information Management and Shared Situational Awareness. Ideas, Tools and Good Practice in Multi-Agency Crisis and Emergency Management (2014)

This Occasional Paper (12) is part of a series published by the Emergency Planning College. It takes an in-depth look at the nature of the information we share and how it can be maximised to support effective and timely decision-making in emergency and crisis management. It is available freely to practitioners and researchers, via the Knowledge Hub on the EPC website:

<https://www.epcresilience.com/application/files/1816/5236/8665/Occ12-Paper.pdf>

Safer Complex Systems

‘The Safer Complex Systems community identified a lack of case studies, which are a useful tool for education and professional development, on complex systems. To address this gap, Engineering X commissioned the development of 18

unique case studies by awardees from across academia and industry...The Safer Complex Systems Case Study Collection, downloadable below, contains all 18 case studies, along with commentary on the background motivation to and lessons learned from the case studies.'

<https://engineeringx.raeng.org.uk/programmes/safer-complex-systems>

MET Office Information: 10 things you should do now to prepare for winter

This webpage signposts individuals to a few simple steps that can be taken to prepare themselves, their vehicles and their homes or business for winter.

<https://www.metoffice.gov.uk/weather/warnings-and-advice/seasonal-advice/10-things-you-should-do-now-to-prepare-for-winter>

VCSEP: Reports from the Voluntary and Community Sector

'The Voluntary and Community Sector Emergencies Partnership is a partnership of local and national voluntary and community sector organisations, formed in response to learnings from several national crises in 2017'. More about the VCSEP and a collection of reports for the voluntary and community sector can be found here:

About: <https://vcsep.org.uk/about-us>

Reports: <https://vcsep.org.uk/reports-from-the-sector>

Winter Preparedness: <https://vcsep.org.uk/winter-preparedness>

Wider Lessons and Learning

JESIP Joint Organisational Learning

Latest Learning:

Action Note 2022-001: Interoperability at water rescue incidents

'Due to a trend of lessons which identified significant issues with interoperability at water rescue/submerged patient incidents, a JOL (Joint Organisational Learning) Action Note has been issued for urgent attention of responder organisations.' Further information can be found at:

<https://www.jesip.org.uk/news/jol-action-note-2022-001-interoperability-at-water-rescue-incident-terminology-and-survivability/>

Rail Accident Investigation Branch (RAIB)

Summaries of learning

RAIB has produced a series of summaries of the learning that has come out of our investigations into accidents and incidents in six topic areas.

<https://www.gov.uk/government/collections/summaries-of-learning>

Latest Learning:

Report 08/2022: Collision between a tram and a cyclist, near Audenshaw tram stop

https://www.gov.uk/raib-reports/report-08-slash-2022-collision-between-a-tram-and-a-cyclist-near-audenshaw-tram-stop?utm_medium=email&utm_campaign=govuk-notifications-topic&utm_source=64ec591d-049d-41ef-bc11-751bf036593f&utm_content=daily

Air Accident Investigation Branch (AAIB)

AAIB provide assistance and expertise to international air accident investigations and organisations. Their purpose is to improve aviation safety by determining the circumstances and causes of air accidents and serious incidents, and promoting action to prevent reoccurrence: <https://www.aaib.gov.uk/>

[gov.uk/government/organisations/air-accidents-investigation-branch/about](https://www.gov.uk/government/organisations/air-accidents-investigation-branch/about)

Latest Learning:

The AAIB Bulletin is a compilation of AAIB reports and is published on the second Thursday of the month. The latest Air accident monthly bulletin for August 2022 can be found here:

<https://www.gov.uk/government/publications/air-accident-monthly-bulletin-august-2022>

Marine Accident Investigation Branch (MAIB)

The MAIB investigates marine accidents involving UK vessels worldwide and all vessels in UK territorial waters. This is to help prevent further avoidable accidents from occurring, not to establish blame or liability. <https://www.gov.uk/government/organisations/marine-accident-investigation-branch/about>

Latest Learning:

A report on the flooding and sinking of the survey workboat Bella in the approaches to Lynmouth, England was published on 2nd September 2022. Details of what happened, subsequent actions taken and recommendations can be found here:

<https://www.gov.uk/maib-reports/flooding-and-sinking-of-survey-workboat-bella>

Health and Safety Executive (HSE)

HSE provide important updates to keep the right people up to date with failures in equipment, process, procedures and substances used in the workplace:

Safety alerts are for major faults that would result in a serious or fatal injury and where immediate remedial action is required.

Safety notices are usually issued to facilitate a change in procedure or it requires an

action to be undertaken to improve the level of protection or instruction in a potentially dangerous situation. It must be acted upon within a reasonable time, if a time period is not stated. It is not as immediate as a safety alert.

These can be accessed at: <https://www.hse.gov.uk/safetybulletins/index.htm>

The Grenfell Inquiry:

The Inquiry published an update on its work in July 2022. For further details see: <https://www.grenfelltowerinquiry.org.uk/news/july-2022-newsletter>

Manchester Arena Inquiry

In March 2022 the Inquiry reported that it ‘does not currently plan to hear further oral evidence before the publication of the Chairman’s Volume 2 and Volume 3 reports.’

All further updates will be posted on the Inquiry website at: <https://manchesterarenainquiry.org.uk/news/>

Related News and Updates

Changes to Crisis Management and Resilience Planning Arrangements in the Cabinet Office

The Minister for Resilience and Chancellor of the Duchy of Lancaster, Kit Malthouse MP, announced organisational changes to the Civil Contingencies Secretariat during his visit to the Met Office on the 15th August:

<http://www.gov.uk/government/news/minister-announces-new-measures-to-bolster-uks-resilience>

Government launches country’s first ever investigation branch focused on road safety

The Road Safety Investigation Branch (RSIB) will make independent safety

recommendations and shape future road safety policy.

<https://www.gov.uk/government/news/government-launches-countrys-first-ever-investigation-branch-focused-on-road-safety>

The Building Safety Act is granted Royal Assent

The government released information relating to the Building Safety Act, which was granted Royal Assent on 28 April 2022.

This Act makes ground-breaking reforms to give residents and homeowners more rights, powers, and protections – so homes across the country are safer. It creates three new bodies to provide effective oversight of the new regime: the Building Safety Regulator, the National Regulator of Construction Products and the New Homes Ombudsman.

<https://www.gov.uk/guidance/the-building-safety-act>

Building Safety Act names HSE as the new Building Safety Regulator in England.

BSR will have 3 main functions:

- overseeing the safety and standards of all buildings
- helping and encouraging the built environment industry and building control professionals to improve their competence
- leading implementation of the new regulatory framework for high-rise buildings

For more information and an introduction to the new Building Safety Regulator visit: <https://www.hse.gov.uk/building-safety/regulator.htm>

