

Appendix C

Adaptive Pathways

BURO HAPPOLD



ADAPTIVE PATHWAYS

Cross cutting



2020-2080

Mainstream climate resilience into City Corporation governance and decision-making

Period of Implementation/Update

Integrate throughout planning, regulation, decision-making and governance, updating with UK Committee on Climate Change Risk Assessment cycles

2020-2080

Review and expand data collection and monitoring across all properties to support decision-making

Period of Implementation/Update

Integrate with asset management regimes for City Corporation owned property, and engage business and resident forums for other properties

2020-2080

Strengthen community and business networks to build adaptive capacity

Period of Implementation/Update

Support community initiatives, small business and resident networks. Utilise and build upon existing networks and partnerships. Rolling five year programme and annual delivery plan.

2020-2080

Public communications and awareness raising campaigns

Period of Implementation/Update

Integrate with existing communication platforms and networks. Develop new platforms as necessary. Support and coordinate with others.

2020-2080

Emergency planning

Period of Implementation/Update

Review, refine and develop existing plans. Strengthen position and relationships with key partners.

2020-2080

Embed principles of inclusion and equity throughout all climate action strategies

Period of Implementation/Update

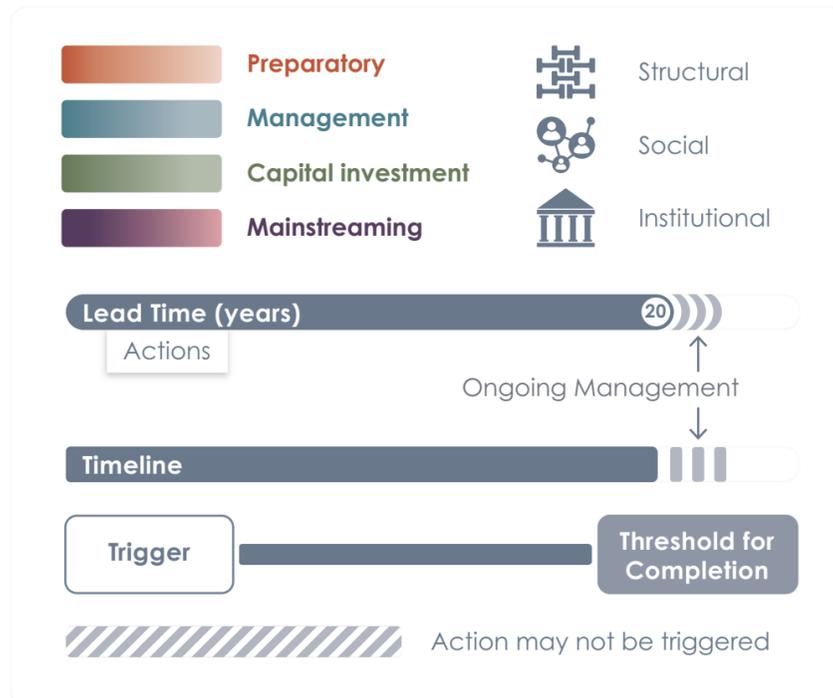
Mainstream under internal protocol

2020-2080

Develop financial package and programme to manage resilience actions

Period of Implementation/Update

Develop a robust and diverse financing portfolio. Continuous management, impact assessment and refinement.



ADAPTIVE PATHWAYS

Cross cutting



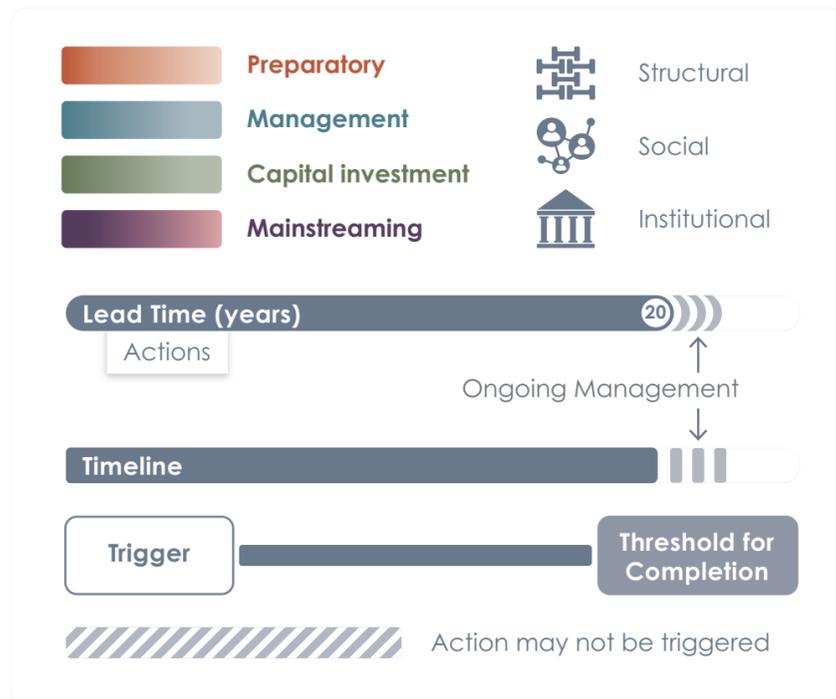
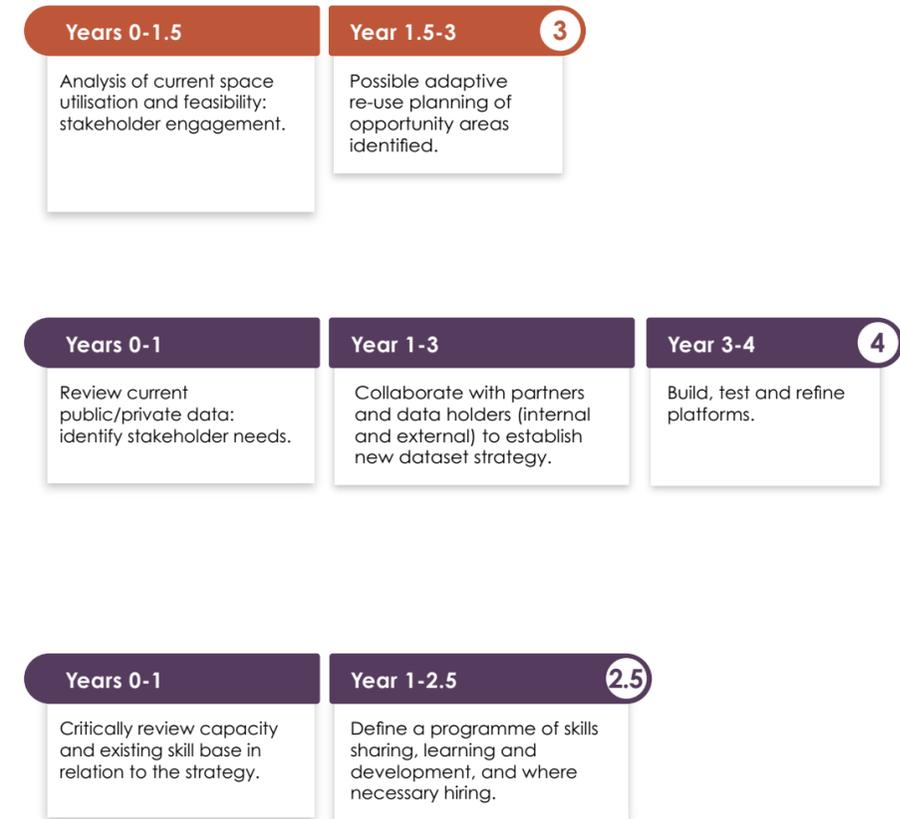
2020-2023 A
 Review of above and below ground space utilisation in the Square Mile

2020-2024 B
 Expand use and availability of non-sensitive data for decision support/plan implementation.

2020-2023 C
 Strengthen City Corporation skills and capabilities

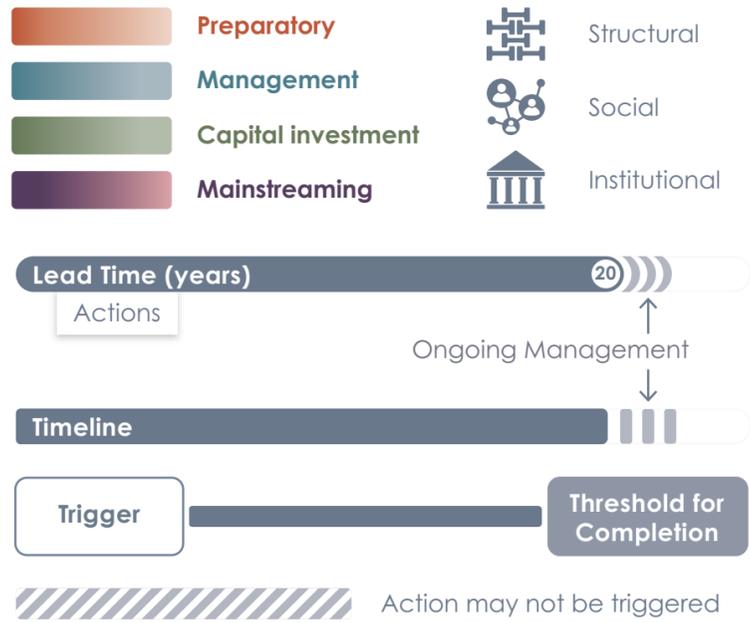
Preparatory Measures

Lead Time

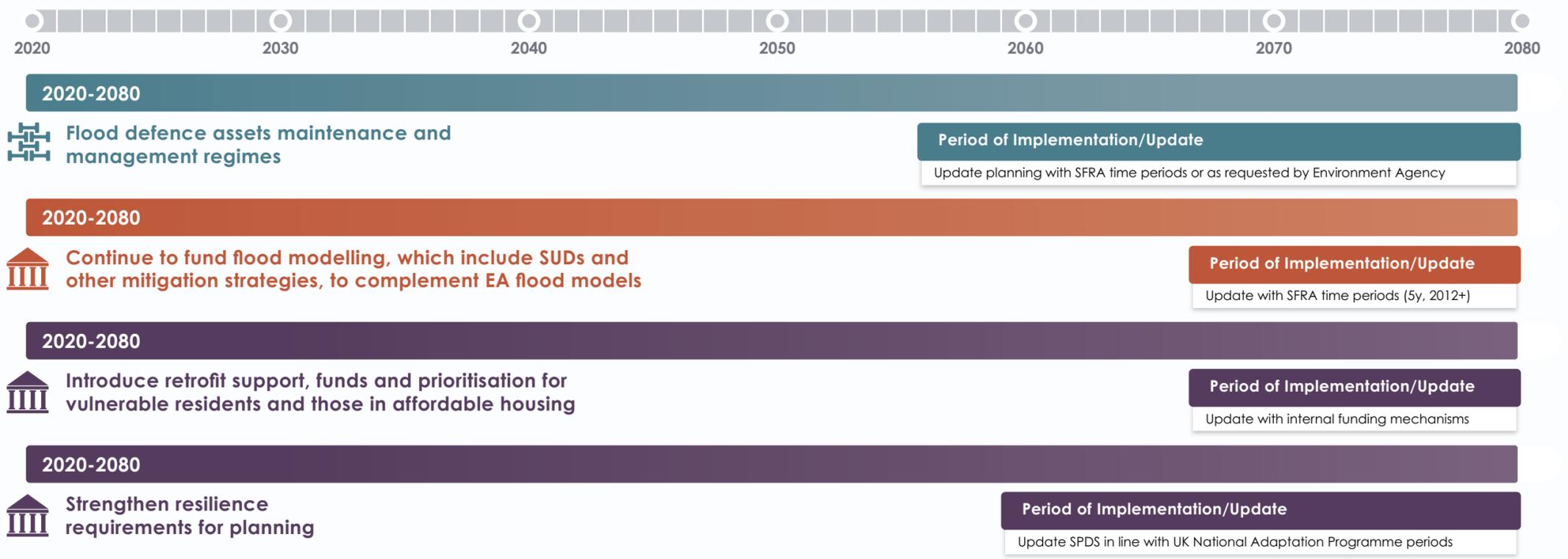


ADAPTIVE PATHWAYS

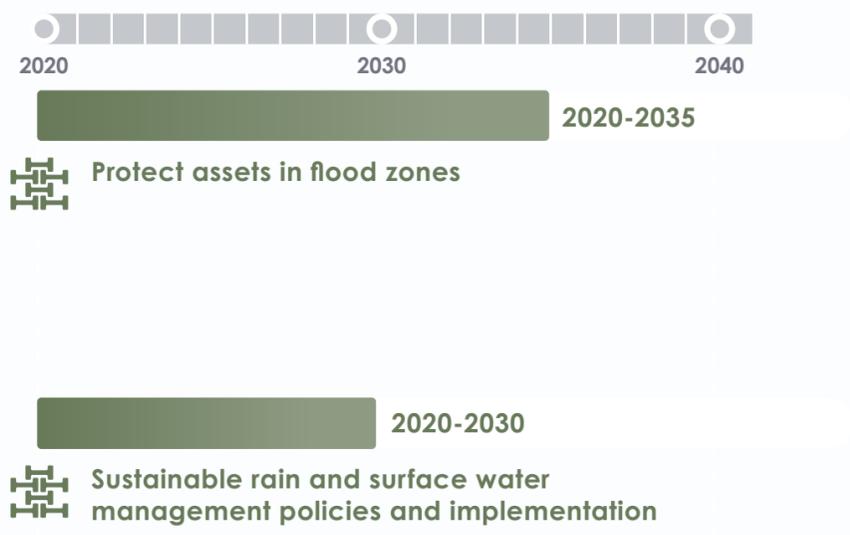
Flooding



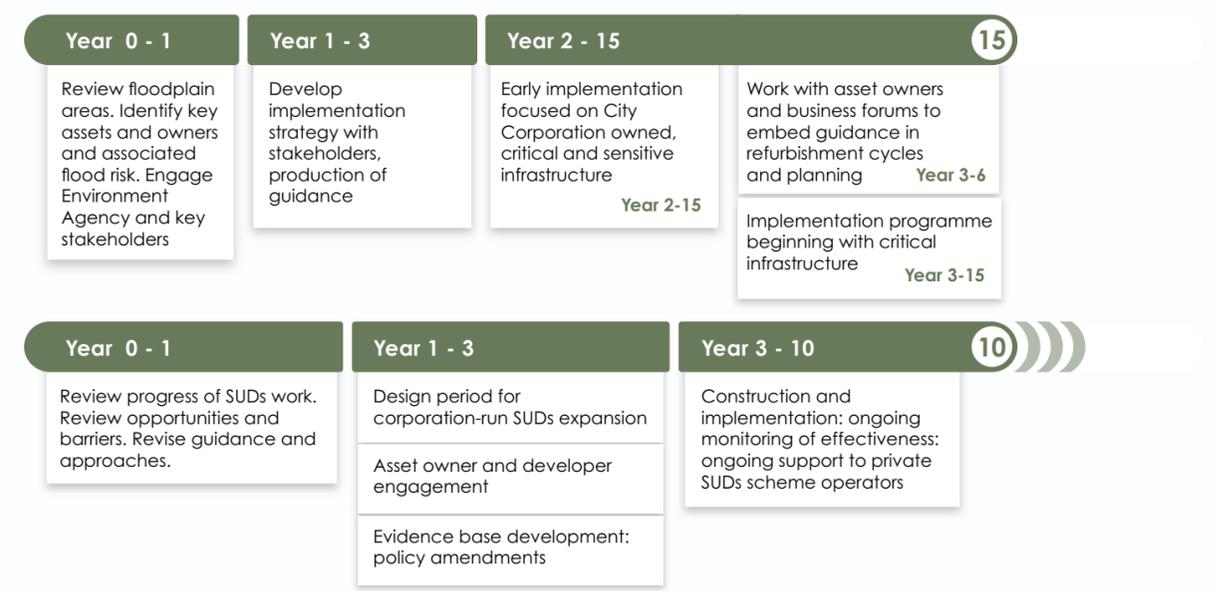
Ongoing Measures



Preparatory Measures



Lead Time





ADAPTIVE PATHWAYS

Flooding



Building retrofit programme

Flood risk already in place

2020-2040

Year 0 - 1.5	Years 1.5-3	Years 3 - 20 (20)	Threshold	RCP 8.5 threshold date	RCP 2.6 threshold date
<p>Launch retrofit declaration with asset owners</p> <p>Production of retrofit guidance (technical and financial)</p>	<p>Utilise business network to disseminate guidance, embed in maintenance programmes and identify early opportunities</p>	<p>Owners roll out retro-fits, with City Corporation implementing early action on owned assets</p>	<p>Those buildings at 1% AEP flood risk from all sources – Environment Agency Flood Zone 3.</p>	Start Now	Start Now

Diversify energy sources and partner with regional organisations and utility providers to increase back-up power for critical services.

UKPN indicates flood-related risks to energy supplies are already significant and probable

2020-2040

Year 0 - 1.5	Years 1.5-3	Years 3 - 20 (20)	Threshold	RCP 8.5 threshold date	RCP 2.6 threshold date
<p>Engage relevant infrastructure providers: critical assessment of energy network vulnerabilities</p>	<p>Plan replacement and upgrade regime or engage with utilities to develop programme</p>	<p>Support installation of back-up and short term changes e.g. renewables and generators Year 3-8</p> <p>Begin implementation period: support 3rd party and utility upgrades with resident and property liaison and communication etc Year 3-20</p>	<p>2020 – UK Power Networks indicate that flooding is already possible or probable for the London area, causing 'significant' or 'extreme' impact on their supplies.</p>	Start Now	Start Now

Sacrificial land and/or natural flood risk management areas

2055-2070

Threshold	RCP 8.5 threshold date	RCP 2.6 threshold date	Year 1-2	Years 2-4	Years 4 - 15 (15)
<p>2070, in line with the Thames Estuary 2100 Plan</p>	2070	2070	<p>Review floodplain areas and highlight potential sacrificial areas and zoning, in collaboration with key stakeholders.</p>	<p>Establish evidence base and revise planning requirements. Develop implementation programme. Create and disseminate.</p>	<p>Implementation period for insurance</p> <p>Implementation period for sacrificial areas and physical redevelopments</p> <p>Development of contingency plans.</p>

Preparatory (Structural)

Management (Social)

Capital investment (Institutional)

Mainstreaming (Institutional)

Lead Time (years) (20)

Actions

Ongoing Management

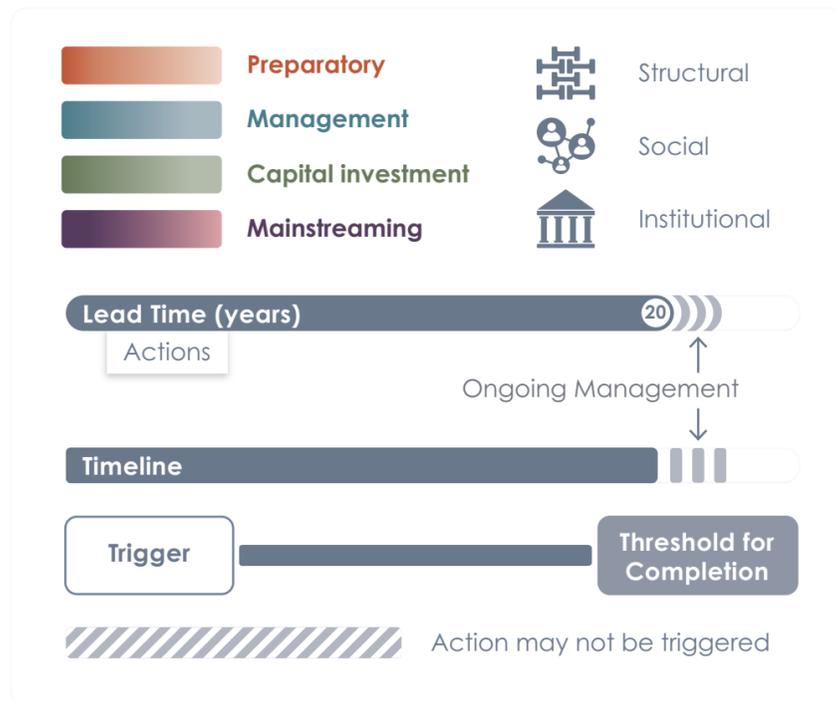
Timeline

Trigger → **Threshold for Completion**

Action may not be triggered

ADAPTIVE PATHWAYS

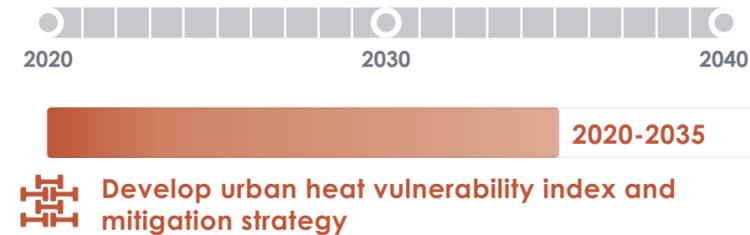
Overheating



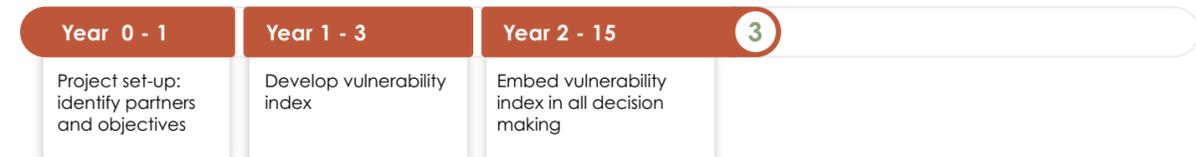
Ongoing Measures



Preparatory Measures



Lead Time



ADAPTIVE PATHWAYS

Overheating



26°C Tmax weekly overheating criteria surpassed

Building retrofit programme

2020-2040

Year 0 - 1.5	Years 1.5-3	Years 3 - 20	Threshold	RCP 8.5 threshold date	RCP 2.6 threshold date
Launch retrofit declaration with asset owners Production of retrofit guidance (technical and financial)	Utilise business network to disseminate guidance, embed in maintenance programmes and identify early opportunities	Owners roll out retro-fits, with City Corporation implementing early action on owned assets	Implemented in time for 26°C Tmax weekly, where 26°C is the CIBSE maximum recommended temperature in buildings.	Start Now	Start Now

Diversify energy sources and partner with regional organisations and utility providers to increase back-up power for critical services.

2060-2080

40°C peak daily temperatures - power station shut downs

Year 0 - 1.5	Years 1.5-3	Years 3 - 20	Threshold	RCP 8.5 threshold date	RCP 2.6 threshold date
Engage relevant infrastructure providers: critical assessment of energy network vulnerabilities	Plan replacement and upgrade regime or engage with utilities to develop programme	Support installation of back-up and short term changes e.g. renewables and generators <i>Year 3-8</i> Begin implementation period: support 3rd party and utility upgrades with resident and property liaison and communication etc <i>Year 3-20</i>	By 2080, the UKPN predicts that 'moderate' impacts of overheating on power network are predicted to become 'possible'.	2080	Unlikely to reach condition under UKCP18

Cool Streets Programme

2025-2051

Year 0 - 1	Years 1-2	Years 2-3	Years 3 - 25	Threshold	RCP 8.5 threshold date	RCP 2.6 threshold date
Quantify existing and future thermal stress of public realm. Map existing 'cool spot' assets.	Establish acceptable risk thresholds and strategies to address this Engage businesses	Formalise strategies and incorporate within guidance	Implementation Maintenance and monitoring (time for natural interventions to grow and develop) Map new asset network: advertise and communicate as new cool spots opened.	Implemented in time for 32°C Tmax weekly, where 32°C can result in strong heat stress outdoors under the UTCI system.	2051	Unlikely to reach condition under UKCP18

Preparatory (Structural)

Management (Social)

Capital investment (Institutional)

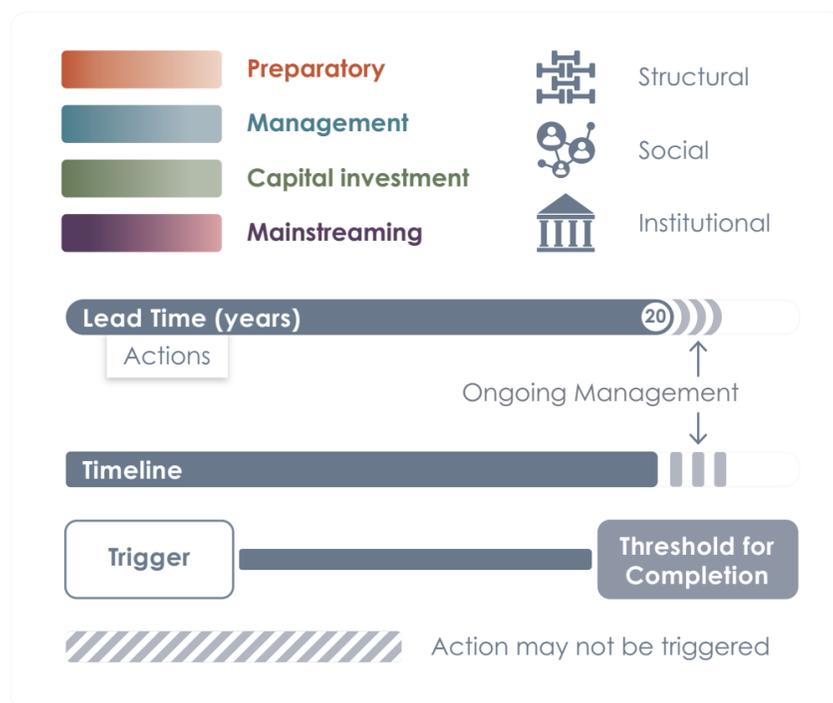
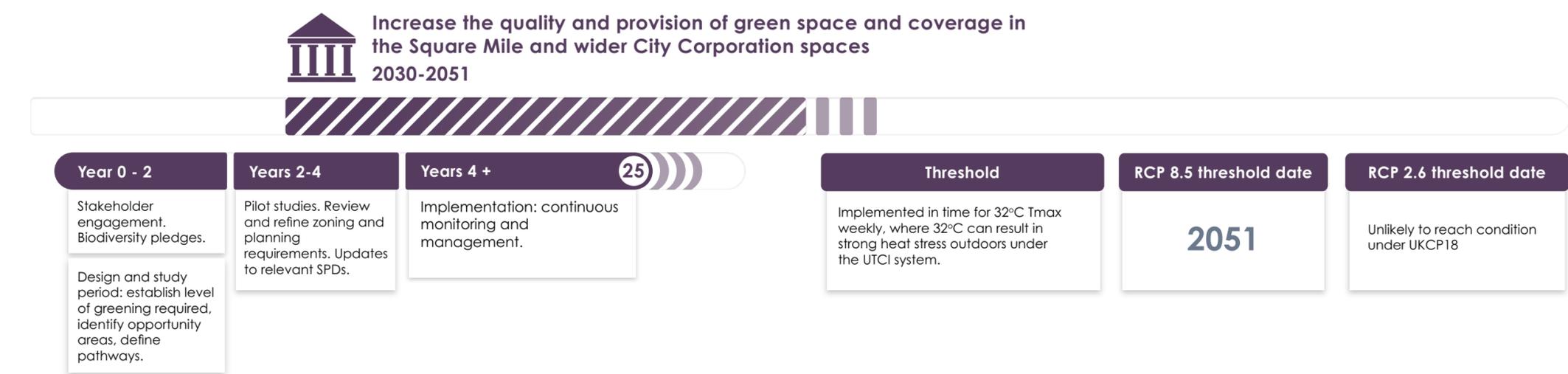
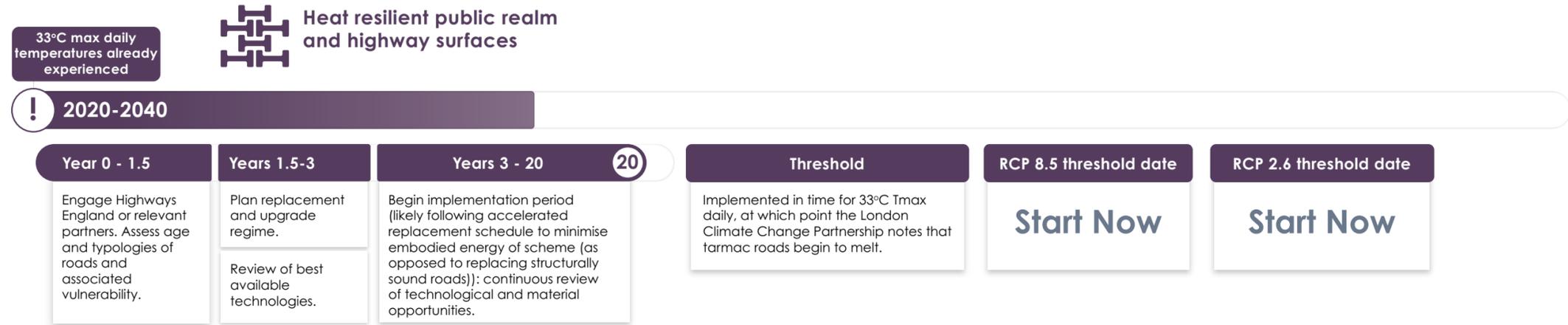
Mainstreaming





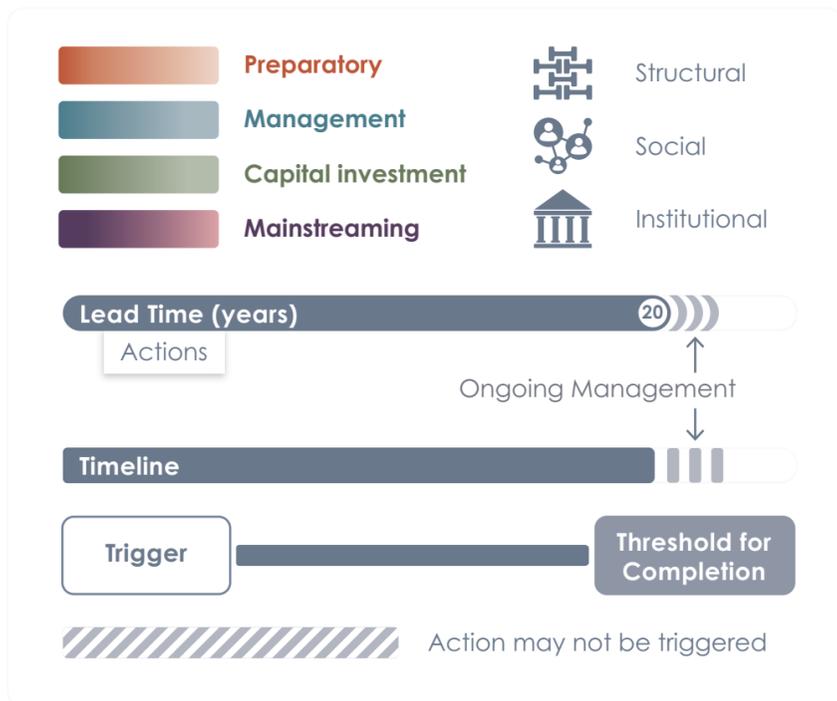
ADAPTIVE PATHWAYS

Overheating



ADAPTIVE PATHWAYS

Water stress



Ongoing Measures



2020-2080

Introduce retrofit support, funds and prioritisation for vulnerable residents and those in affordable housing

Period of Implementation/Update
Update with internal funding mechanisms

2020-2080

Strengthen resilience requirements for planning

Period of Implementation/Update
Update SPDs in line with UK National Adaptation Programme periods



2020-2030

Sustainable rain and surface water management policies and implementation

2020-2023

Strengthen water quality monitoring networks

2020-2023 ^A

Develop City Corporation and Square Mile water footprint management strategy

Preparatory Measures

Lead Time

Year 0 - 1	Year 1 - 3	Year 3 - 10 10
Review progress of SUDs work. Review opportunities and barriers. Revise guidance and approaches.	Design period for corporation-run SUDs expansion Asset owner and developer engagement	Construction and implementation: ongoing monitoring of effectiveness: ongoing support to private SUDs scheme operators
	Evidence base development: policy amendments	

Year 0-1	Year 1-2	Year 2-3 3
Review systems and best practice, refine approach.	Training and pilot studies	Full roll-out

Year 0 - 2	Year 2 - 3	Year 3 - 5 5
Develop footprint and prepare management strategy with Thames Water and other stakeholders.	Stakeholder engagement and strategy test	Develop final strategy and prepare relevant guidance, programming and communications for implementation
		+ potential for 10 year Infrastructure interventions as a result



ADAPTIVE PATHWAYS

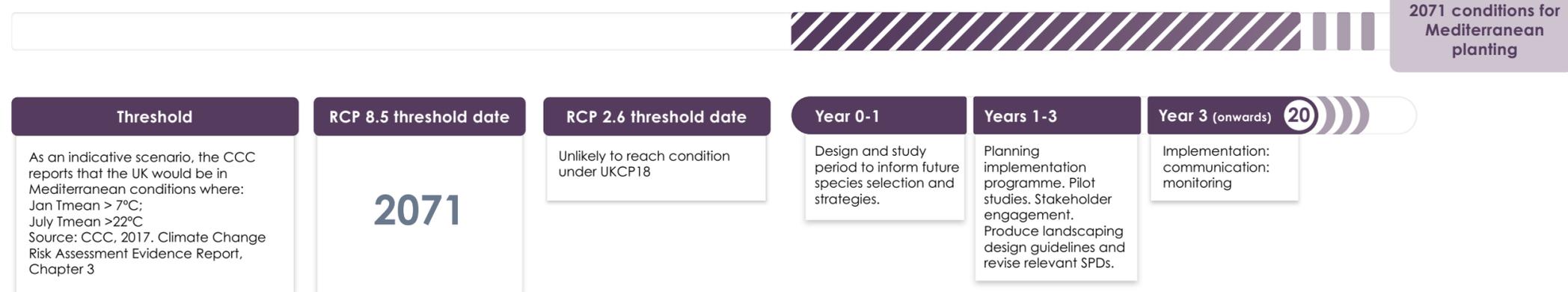
Water stress



Building retrofit programme



Introduce climate-resistant and adaptive landscaping 2051-2071



	Preparatory		Structural
	Management		Social
	Capital investment		Institutional
	Mainstreaming		



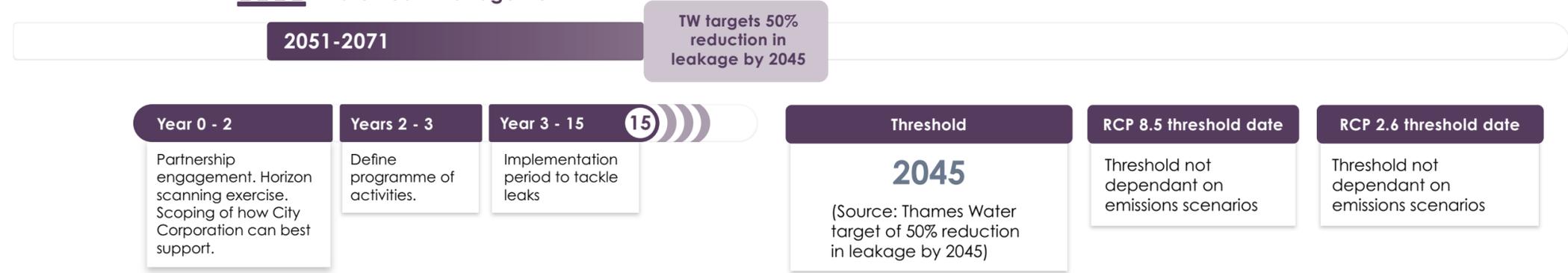


ADAPTIVE PATHWAYS

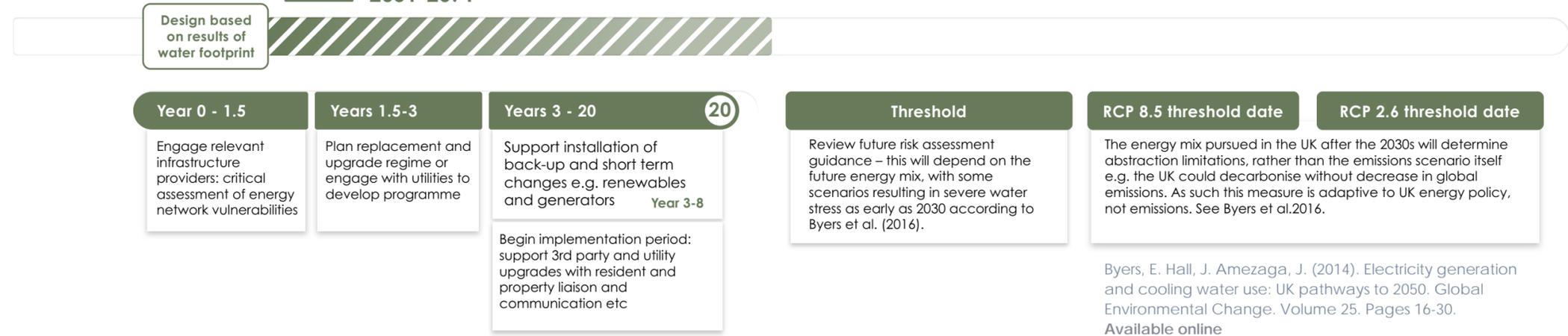
Water stress



Work with partners to accelerate actions to address water leak management



Diversify energy sources and partner with regional organisations and utility providers to increase back-up power for critical services.



Byers, E. Hall, J. Amezaga, J. (2014). Electricity generation and cooling water use: UK pathways to 2050. Global Environmental Change. Volume 25. Pages 16-30. [Available online](#)

- Preparatory
 - Management
 - Capital investment
 - Mainstreaming
- Structural
 - Social
 - Institutional

Lead Time (years) (20)



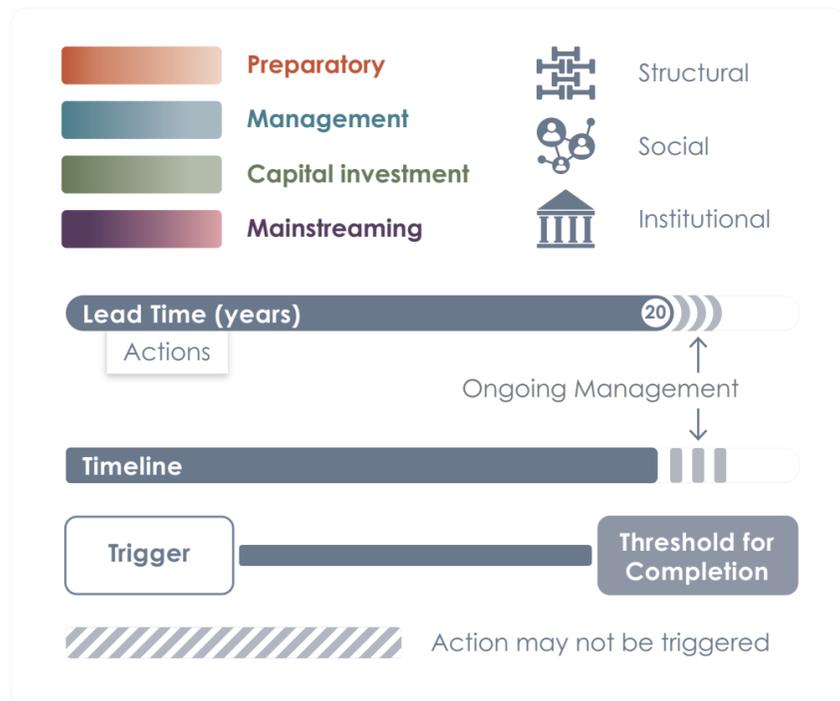
Timeline



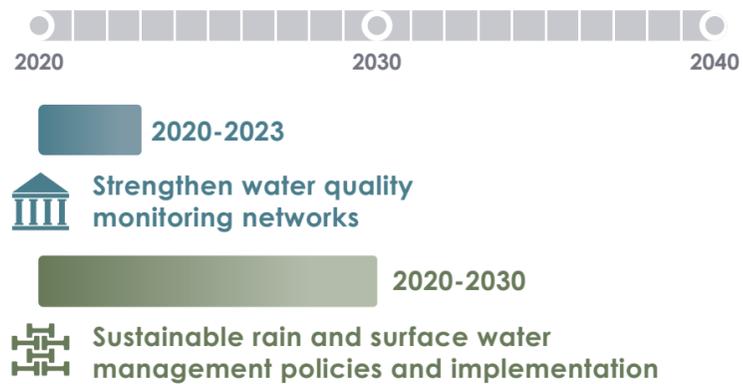
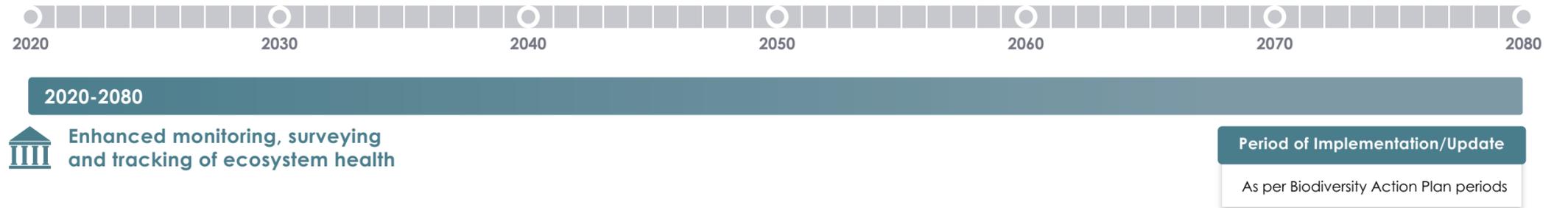
Action may not be triggered

ADAPTIVE PATHWAYS

Natural Capital

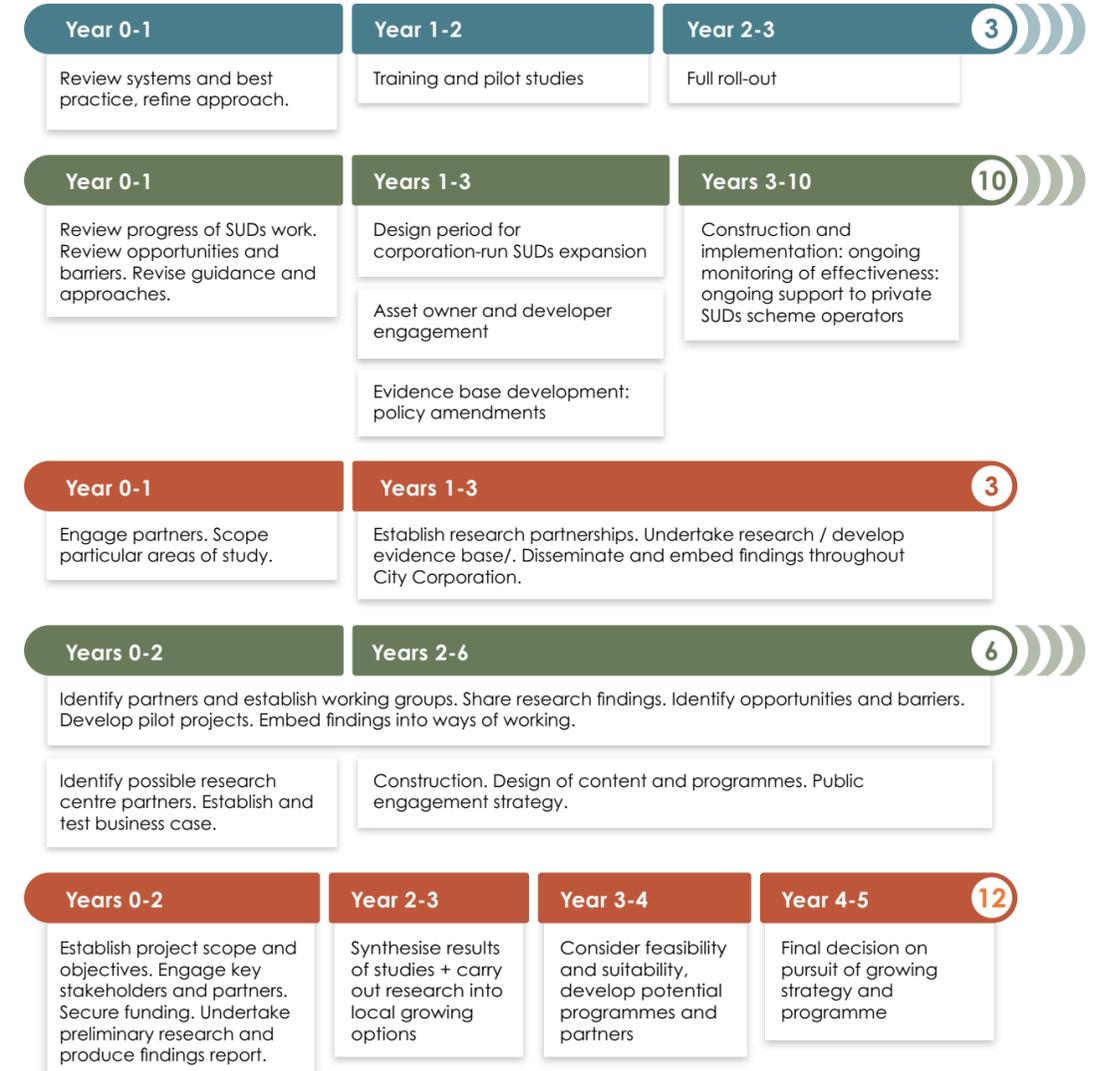


Ongoing Measures



Preparatory Measures

Lead Time





ADAPTIVE PATHWAYS

Natural Capital



Increase the quality and provision of green space and coverage in the Square Mile and wider City Corporation spaces

2023-2053

2043 Defra 25y plan target deadline

Years 0-2	Years 2-4	Years 4 (onwards) 20
Stakeholder engagement. Biodiversity pledges.	Pilot studies. Review and refine zoning and planning requirements. Updates to relevant SPDs.	Implementation: continuous monitoring and management.
Design and study period: establish level of greening required, identify opportunity areas, define pathways.		

Threshold	RCP 8.5 threshold date	RCP 2.6 threshold date
2043 <i>Update as per targets: currently 10% tree canopy increase by 2050 [GLA], and Defra 25y Environment Plan targets by 2043 (e.g. restore 75% of protected sites to favourable condition and improve overall status of declining species group)</i>	Biodiversity targets remain regardless of emissions scenario	Biodiversity targets remain regardless of emissions scenario

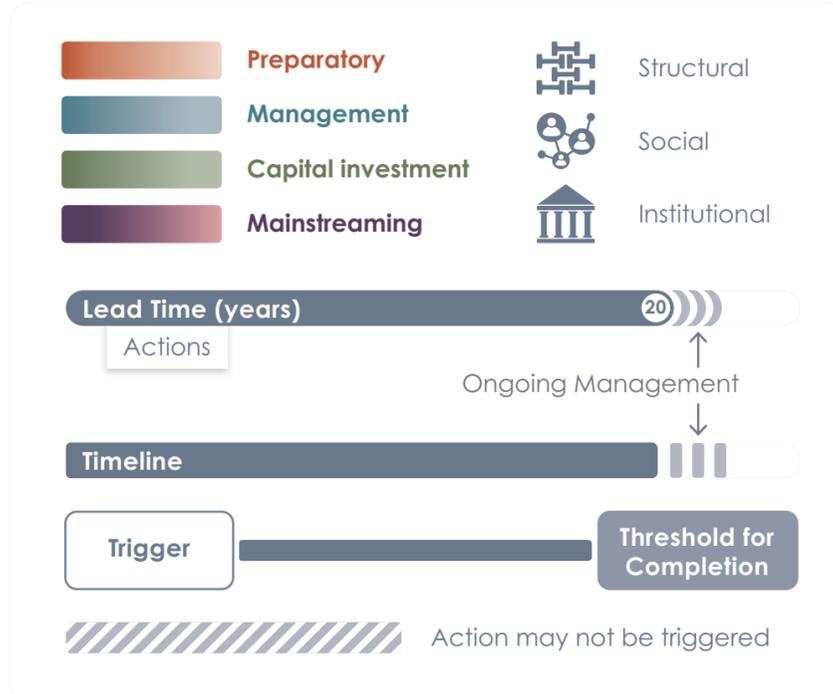
Introduce climate-resistant and adaptive landscaping 2051-2071

2071 conditions for Mediterranean planting

Threshold	RCP 8.5 threshold date	RCP 2.6 threshold date	Year 0-1	Years 1-3	Year 3 (onwards) 20
As an indicative scenario, the CCC reports that the UK would be in Mediterranean conditions where: Jan Tmean > 7°C; July Tmean > 22°C Source: CCC, 2017. Climate Change Risk Assessment Evidence Report, Chapter 3	2071	N/A Condition not reached within C2100 on 50 th percentile projection	Design and study period to inform future species selection and strategies.	Planning implementation programme. Pilot studies. Stakeholder engagement. Produce landscaping design guidelines and revise relevant SPDs.	Implementation: communication: monitoring

Cool Streets Programme 2025-2051

32°C peak weekly temperature and 36°C peak daily temperatures



Ongoing Measures



2020-2080

Action to tackle food poverty

Period of Implementation/Update
As per Corporation funding cycles

2020-2080

Ports and markets operational resilience planning

Period of Implementation/Update
Update guidance and aims in line with CCC UK risk assessment advice



2020-2023

Model food supply networks through the Square Mile to inform future planning

2020-2024

Emergency support and contingency planning package for food networks and businesses

2020-2032

Explore and facilitate opportunities to promote regional food production

2020-2024

Food 'waste' collection and redistribution system

2020-2026

Open a City Corporation Ecological Research and Education programme

2020-2022

Establish research partnerships to inform future action planning and management of natural capital

Preparatory Measures

Lead Time

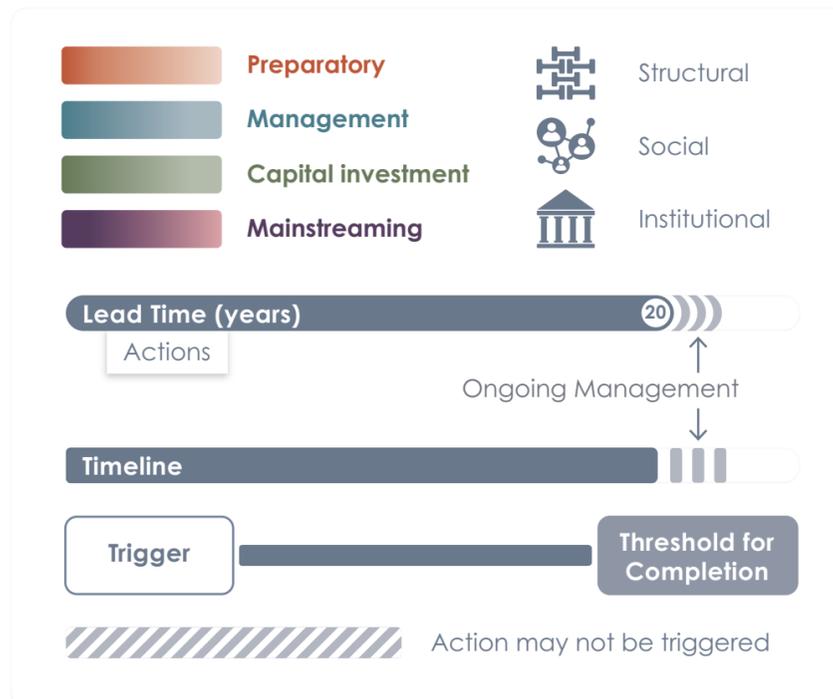
Year 0 - 1	Year 1 - 2	Year 2 - 3 3		
Set up study goals. Identify collaborators. Stakeholder engagement strategy.	Stakeholder-based research Desktop analysis and modelling	Develop conclusions and recommendations		
Year 0 - 1	Year 1 - 3		Year 3 - 4 4	
Establish project scope and objectives: engage key stakeholders and partners: secure funding	Analysis and strategy development Stakeholder engagement: understanding past and future risks: understanding needs and challenges faced		Disseminate findings: recommend next steps for implementation: secure funding	
Year 0 - 2	Year 2 - 3	Year 3 - 4	Year 4 - 5	Year 5 - 12 4-12
Establish project scope and objectives. Engage key stakeholders and partners. Secure funding. Undertake preliminary research and produce findings report.	Synthesise results of studies + carry out research into local growing options	Consider feasibility and suitability, develop potential programmes and partners	Final decision on pursuit of growing strategy and programme	Implementation period if appropriate Public communication campaign and support to programme and participants if growing spaces established
Year 0 - 1	Year 1 - 2	Year 2 - 4 4		
Engage business network: establish key partnerships	Strategy development: pilot project testing	Implementation: public communication: business network pledges and training		
Year 0 - 2		Year 2 - 6 6		
Identify partners and establish working groups. Share research findings. Identify opportunities and barriers. Develop pilot projects. Embed findings into ways of working.		Construction. Design of content and programmes. Public engagement strategy.		
Year 0 - 2 2				
Establish key partnerships: scope and commence research: Policy and strategy integration				

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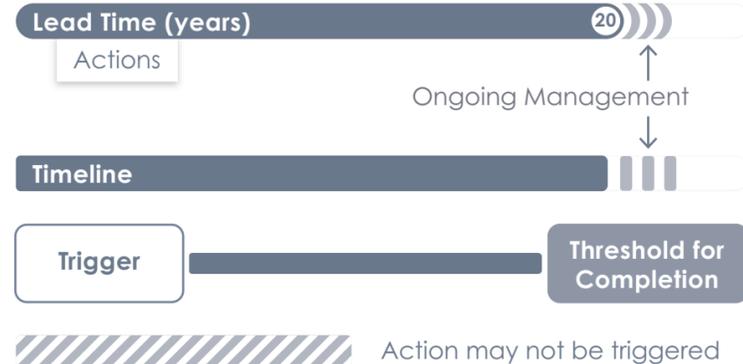
ADAPTIVE PATHWAYS

Food

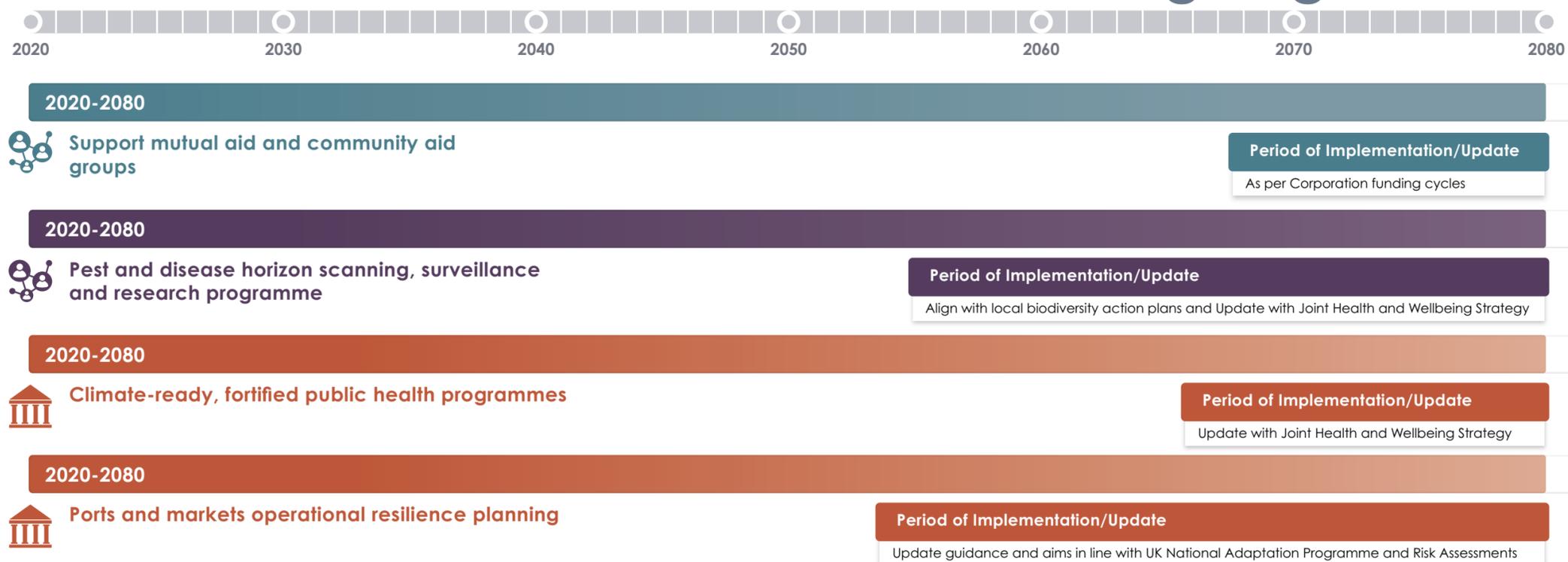


ADAPTIVE PATHWAYS

Pests and diseases



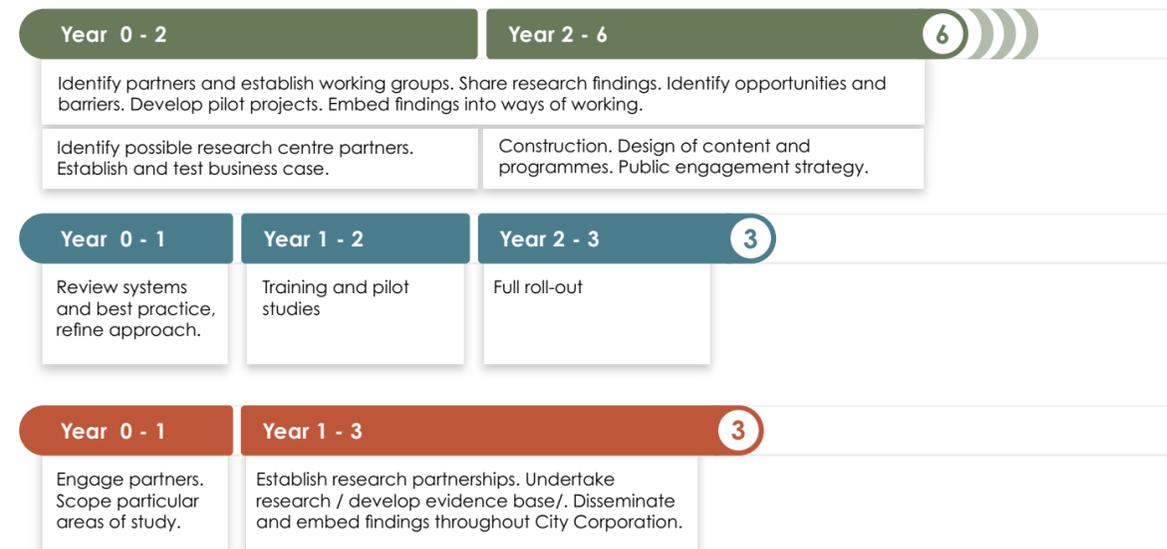
Ongoing Measures



Preparatory Measures



Lead Time





ADAPTIVE PATHWAYS

Pests and diseases



Introduce climate-resistant and adaptive landscaping
2051-2071

