MINORITY REPORT

D1.2 – : Characterisation of Stakeholder Behaviour & Identification of KPIs to Model Behaviour

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DELIVERABLE 1.2

Characterisation of Stakeholder Behaviour & Identification of KPIs to Model Behaviour

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Executive Summary

Introduction

This deliverable involves the **Characterisation of Stakeholder Behaviours and Identification of KPIs (Key Performance Indicators) to Model Behaviours.** It has been developed through Task 1.3 where the main activities were two-fold: firstly, to explore behaviour in the context of a disruptive event and identify a set of associated KPIs; and secondly to a suite of design personas and scenarios for each pilot site to provide a realistic and contextually appropriate narrative account of key user experiences / perspectives (persona) in relation to disruptive events that occur in specific built environment settings (scenarios).

While this deliverable as set out in the Grant Agreement primarily focussed on the indicators, it became apparent that the persona development and individual personas should be well-integrated with the indicators. As a result, this deliverable provides a comprehensive framework where the first layer contains a set of 'behaviour-built environment-systems' indicators, while the second layer takes these further and through a modular persona matrix, develops detailed, context relevant personas. Overall, this approach greatly supports the people-centred focus of Minority Report and provides a sound basis for the development of relevant place-based urban resilience tools as the project progresses.

Methodology

This deliverable has been developed through a literature and key statistics review to ensure that human characteristics inform the research; a review of the stakeholder mapping to understand the types of organisations, networks, and settings in each case study site; onsite community engagement workshops to help embed the research in place; and finally, an online consortium-based workshop to refine and sense-check the preliminary findings.

Key contents and findings

Section 1 outlines the overall scope and objectives of the deliverable, including the relationship to other work packages, tasks and deliverables.

Section 2 provides an overview of the methodological approach underpinning the person-centred and place-based approach applied to both the development of the KPIs and the personas and scenarios.

Section 3 goes into further detail on the common framework that has been developed in this deliverable to structure both the KPIs and the personas; and to provide an integrated approach to the multiple aspects of human characteristics, community, place, and disruptive events that shape human behaviour in an emergency. This framework is broken down into 4 main categories, starting with the person, moving onto place and settings, then Scenario Key Elements, and finishing with Future-oriented goals and timescale. Section 3 also outlines some key overall population statistics to contextualise the characteristics, functions, and related groups included in the framework.

Section 4 builds on the framework introduced in Section 4 and provides an in-depth description of the characterisation of human-built environment interactions and concludes by presenting an indicator matrix based on the framework that includes key indicator data where available, at the EU level.

Section 5 describes the overall objectives of the personas and scenarios, as well as their development; the modular approach adopted for the personas; all framed by the preceding work outlined in Section 3. In addition, the key findings from the community engagement activities (round 1) are presented –

for Ringsend and Patra. Finally, Section 5 concludes with the introduction of the master matrix table, and the overall presentation of the sets of personas, 10 each, for Ringsend and Patra.

Conclusion and next steps

Section 6 provides a conclusion, focusing on a number of follow-on activities to be undertaken, as part of the second and third round of engagement, with links to a number of WPs, in particular WP2, and WP4. These follow -on activities include:

1. **Refining the personas**: As part of the second-round engagement activities the personas will be presented to community members to refine and further contextualize the persona and scenarios.
2. **Working with specific groups**: The second-round of engagement will involve discussions with key representative groups in each pilot site, such as people with disabilities, older persons, and children. A questionnaire is being developed for circulation to these groups to ascertain their perspective on climate related disruptive events and the impact these events have on their members. This process will also be used to refine personas relevant to the specific groups (i.e. engagement with visual impairment groups to refine persona who is blind).
3. **Engaging with end-users**: As described in Section 5, the personas have a range of potential uses, including those relevant to the end-users of the future Minority Report tools. For example, where the personas can act as a design tool to identify key issues, challenges and measures to improve resilience; or for investigating the characteristics and needs of specific users. In this context, as part of the end-user workshops in round three, the role of the Minority Report personas for planners, engineers, architects, and others, will be discussed to determine how they might be further integrated or used as part of the Minority Report tools and processes.

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List of Acronyms and Abbreviations

Term	Description
ADHD	Attention Deficit Hyperactivity Disorder
APS	Adaptable Personas and Scenarios
ASD	Autism Spectrum Disorder
BUCkET model	Belonging, Understanding, Control, self-Enhancing, and Trusting)
FS	Frailty Scale
GEEP	Generic Emergency Evacuation Plan
KPI	Key Performance Indicators
PEEP	Personal Emergency Evacuation Plan
UX	User Experience

1 Introduction

1.1 Scope and objectives of the deliverable

This deliverable provides detailed information on the outcome of the following two parallel, and complementary, activities:

- the development of **key performance indicators** that characterise the behaviour of citizens in response to certain climatic and natural disaster events, providing Minority Report partners with a deeper understanding of the primary drivers behind citizen behaviours and interactions with their built environment under stress; and,
- the creation of **a suite of 'personas and scenarios' for each pilot site (Dublin, Patra, and Wellington),** providing a realistic and contextually appropriate narrative account of key user experiences/perspectives (persona) in relation to everyday (i.e., normal), and then acute situations (an event) that occur in specific built environment settings (scenarios). The personas and scenarios are included as Appendix A.

Through the three pilot sites, Minority Report is adopting a site-specific approach. To support this, the deliverable takes a strong place-based approach to ensure that the indicators, and more importantly, personas and associated scenarios, are grounded in each site.

1.2 Structure of the deliverable

While this deliverable as set out in the Grant Agreement primarily focussed on the indicators, it became apparent that the persona development and individual personas should be well-integrated with the indicators. As a result, this deliverable provides a comprehensive framework where the first layer contains a set of 'behaviour-built environment-systems' indicators, while the second layer takes these further and through a modular persona matrix, develops detailed, context relevant personas. Overall, this approach greatly supports the people-centred focus of Minority Report and provides a sound basis for the development of relevant place-based urban resilience tools as the project progresses. Deliverable 1.2 is comprised of the following sections:

- Section 2 provides an overview of the methodological approach underpinning person-centred and place-based approach applied to both the development of the Key Performance Indicators KPI and the personas and scenarios.
- Section 3 goes into further detail on the common framework structuring the KPIs and personas.
- Section 4 provides an in-depth description of the characterisation of human-built environment interactions and concludes by presenting the indicator matrix.
- Section 5 describes the overall objectives of the personas and scenarios, as well as their development; the modular approach, framed by the preceding work outlined in Section 3 is then presented. Following on this, the key findings from the community engagement activities (round 1) are presented – for Ringsend and Patra. Finally, Section 5 concludes with the introduction of the master matrix table, and the overall presentation of the sets of personas, 10 each, for Ringsend and Patra (with the full matrices for Ringsend and Patra, and sets of personas included in the Appendices (Section 8) .
- Section 6 provides a conclusion, focusing on a number of follow-on activities to be undertaken, as part of the second and third round of engagement.

1.3 Relation to Other Tasks and Deliverables

Work Package 1

This deliverable draws on the base set of stakeholder categories developed in T1.1, to underpin the community engagement across each of the pilot sites (T1.2); in particular, T1.1 and T1.2 provide the foundation for engagement activities intended to: i) gather information on the level of awareness, concerns and needs of stakeholders; ii) to collect data and insights on existing systems and structures, and iii) to validate the projects results. T1.3 draws on the outputs from these tasks for both the development of the KPI and the suite of personas.

Work Package 2

As outlined in the Co-creation and Stakeholder Engagement in Minority Report: Concept Note developed by PI, both the co-creation workshops and end-user engagement activities will feed into T2.1 Multi-hazard Physical Vulnerability and T2.2 Multi-hazard Social Vulnerability, led by University College London (UCL). These tasks and their associated models will help build a human-centred natural hazard modelling framework (T2.4) that considers social consequences on a personal level and social vulnerabilities. TCD will ensure alignment across D1.2 and D2.2, as well as identify follow-up activities as part of the iterative refinement and validation of the personas and scenarios as the project progresses.

Work Package 3

Task 3.1 Technology Requirements Alignment Workshops – (M7-M9) – this task outlines participation in a user experience (UX) led workshop to comprehensively define the primary functionalities that are required for the digital tools in the project, while also defining the technology problem statement that the project will address. These workshops will build on the stakeholder requirements arising from T1.3, while also engaging the technical partners to appropriately and collaboratively define the problem statement that the tool will seek to address, identify technical challenges, define an initial conceptual design for the platform's architecture.

Work Package 4

Outputs of D1.2 are key contributor to the Stakeholder behaviour and Mobility module to be developed within WP4, with particular inputs feeding into the Mobility and Behavioural prediction module. This deliverable will also feed into the stakeholder engagement dashboards, and elements of future engagement rounds will be framed to ensure alignment with the work related in this WP.

2 Methodology

2.1 Introduction

The development of the Minority Report key performance indicators and personas-and-scenarios is underpinned by a people-centred and place-based approach that has included: a literature and key statistics review to ensure that human characteristics inform the research; a review of the stakeholder mapping to understand the types of organisations, networks, and settings in each case study site; onsite community engagement workshops to help embed the research in place; and, finally an online consortium-based workshop to refine and sense-check the preliminary findings. These activities are described in Section 2.2 below.

2.2 Key activities

- **Literature review and key statistics analysis:** The people-centred focus of this task demands a thorough exploration of diverse human characteristics and capabilities, including groups with specific physical, sensory, cognitive, neurodiversity, and age-related characteristics and capabilities. A review of key documents such as CEN-CENELEC Guide 6:2014 [2], or frameworks such as the International Classification of Functioning, Disability and Health (ICF) [3], were used to underpin this aspect of this report. This was supplemented with a wider review of literature related to human behaviours and emergencies to support the selection of indicators and the persona development.
- **Onsite workshops with mapping and daily clock exercises:** Onsite community engagement workshops were conducted in the pilot sites to discuss climate-related issues in the locality and to help understand the key place-based issues and challenges faced by local people each locality. These workshops included mapping exercises and daily clocks (see Section 5.4) to interrogate local people's definition of neighbourhood boundaries and their sense of place (mapping), along with where and how they spend time through the 24 hours of a typical day (daily clock).
- **Review of stakeholder mapping results:** The stakeholder mapping conducted in Task 1.1 identifies a range of key organisations, networks, and settings within each pilot site. These were reviewed to ensure that the range of settings (e.g. housing, schools) were represented in the indicators and personas and scenarios.
- **Online workshop – KPIs, Persona and Scenario Matrix:** The approach described above, and some of the key initial findings were presented to the consortium throughout the first phase of the project. However, a more complete set of findings were described as part of an online workshop that used a Miro board to present, discuss, and gather feedback from all consortium member attendees.

Appendix 8.1 provides additional information related to the methodological approaches (protocols) related to the Mapping the Neighbourhood and Daily Clock Exercise. Key findings from the stakeholder engagement activities are presented in Section 5. The outputs from all activities, including the online workshop have in integrated into the various outputs described in this deliverable.

2.3 Building towards the next engagement round

In the next round of engagement, the personas and scenarios will be refined in collaboration with pilot site partners and local community members. In addition, a questionnaire will be circulated to key representative groups (e.g. groups representing older, persons with disabilities, etc) to ascertain the

level of climate change awareness and preparedness among these organisations, and their perception of the impact of climate-related disruptive events on their members. As part of the second round of engagement, TCD will validate the findings from the questionnaire with representative groups and refine the personas via a co-creation workshop with these groups to ensure the personas are reflective of the lived experience and representative of the needs of key vulnerable groups.

3 People-centred and Place-based approach

3.1 Introduction

The methodology described above sets out a people-centred and place-based approach to the creation of the indicators and personas-and-scenarios. The people-centred component draws on a diverse range of human characteristics and capabilities that includes physical, sensory, cognitive, neurodiversity, and age-related characteristics (see 3.3 below). These are followed by a set of statistics that represent some of the key characteristics, groups, and socio-economic factors outlined in 3.3. Finally, the place-based approach is outlined in Section 3.4, providing the physical context and the community and private settings where people live their lives, and where disruptive events are experienced on the ground.

3.2 A common framework for the indicators and personas

An overall framework was developed to structure both the indicators and personas, and to provide an integrated approach to investigating the multiple aspects of human characteristics, community, place, and disruptive event type that shape human behaviour in an emergency. This framework is broken down into 4 main categories, starting with the person, moving onto place and settings, then Scenario Key Elements, and finishing with Future-oriented goals and timescale. These are outlined below:

1) **Person**: Core Attributes (Age, Gender, Sexual Orientation, Race/Ethnicity), Human Characteristics: (Physical functions, Sensory Functions, Cognitive, Immunological, Neurological, Age-related, and general health Status), Family & Carer Status (Marital Status, Parental Status, Family Relationships, Care-giving responsibilities), Social and Economic Status (Education, Employment Status), Housing Situation (Housing Status, Household/Family type/size**,** Dwelling type), Social and Place Connection (Social Connection and Place Attachment), Knowledge, Awareness, & Experience
2) **Place Key Elements:** Overall Location**,** Setting-related Issues, Location and proximity to hazard, (and overall topography); Local Urban Form, Site Conditions
3) **Scenario Key Elements**: Event Type, Severity, Time, Impact – Setting (Level of Impact)
4) **Future-oriented goals and timescale:** Short-timescale goals**,** Medium-timescale goals**,** Longer-timescale goals

The indicators primary draw on the 1st category, with some references to the 2nd category through indicators related to the built environment. The personas and scenarios drawn on all 4 categories are the foundation for the modular approach to persona and scenario development described in detail in Section 5.

3.3 Diverse human characteristics and capabilities

3.3.1 Overall characteristics & functions

The multiple human characteristics that result in human diversity include sensory, physical, and cognitive functions, neurodiversity, age, the presence of a permanent or temporary condition or impairment, among others. This means that planning and design for safety and resilience of the built environment must fully consider human diversity so that a) buildings, urban spaces, and infrastructure can be accessed, understood and used by the widest possible range of people during a natural or climate related disaster, and b) that built environment protects vulnerable groups during such events.

It is beyond the scope of this project to account for human diversity in detail; therefore, a specific set of vulnerable groups will be considered in relation to selected range of **characteristics and functions** as set out in Table 1 below and further described in section 3.3.2.

Table 1: Physical, sensory, cognitive, neurodiversity, & age-related characteristics

Overall characteristics & functions	Key Function/ condition / issue	Specific group
1. Physical	**Body movement**	**Wheelchair users**
2. Sensory	**Eyesight-related**	**People with visual impairments**
	Hearing-related	**People with hearing impairments**
3. Cognitive	**Specific mental functions**	**People living with dementia**
4. Neurodiversity	**Autism as a developmental disability or difference**	**Autistic people**
5. A-Age-related	**Age-related issues** (e.g. mobility impairment)	**Older people (> 65)**
	Early to middle childhood issues (e.g. vulnerability to danger)	**Children 2 to 12 years old**
B- General health status	**Frailty**	**Older people (> 65)**
	Pregnancy	**Women of childbearing age**

3.3.2 Description of selected key characteristics and functions and related groups

Physical characteristics mainly involve how a person moves around and interacts physically with spaces and objects. For Minority Report, we will focus on the following key function and specific group:

- Key function **– Body movement** through the lower parts of the body impacts on how a person walks, climb stairs, or moves around. The upper parts of the body affect a person's balance, coordination, sensation, reach, and movement of head, hands, and body.
  Specific group **– Wheelchair users**

Sensory systems and functions –primarily relate to the vision, hearing, touch, taste, and smell. For Minority Report, we will focus on the following key functions and specific groups:

- Key function **– Eyesight-related functions** impact on how a person navigates in the built environment, use facilities, operate switches and controls, or receives information.
  Specific group – **People with visual impairments**
- Key function **– Hearing-related functions** affect interpersonal communication, the receipt of auditory information, and sensitivity to sounds and background noise.
  Specific group – **People with hearing impairments**

Cognitive functions typically relate to understanding, integrating, and processing of information. For this project we will focus on the following key function and specific group:

- Key function **– Specific mental functions s**uch as perception, attention, memory, learning, reasoning, decision-making; affective (emotional) functions can be affected by adverse environmental conditions, such as high levels of environmental stimuli (e.g. flashing lights, crowds of persons), can overwhelm or confuse persons, and reduce cognitive function.
  Specific group **– People with living with dementia**

Neurodiversity is closely related to cognitive functions as outlined above. Neurodiversity is the term associated with people who fit outside the majority neurological profile and includes a range of

developmental disabilities or differences including autism, and attention deficit hyperactivity disorder (ADHD), dyslexia, dyspraxia, among others. Neurological and sensory processing differences may also develop over time through brain diseases, such as different forms of dementia or Parkinson's. Minority Report will focus on the following key neurodiversity and specific group:

- Key neurodiversity **– Autism as a developmental disability or difference**
  Specific group **– Autistic people**

Age-related characteristics and overall health status affect all functions outlined above in different ways throughout the life course.

Firstly, in terms of age, an infant may have underdeveloped sensory, physical, or cognitive functions, while some children and adolescents may be more sensitive to environmental stimuli. At the other end of the age spectrum, older people's sensory and physical functions may decline.

Secondly, various health conditions affect functioning across all age groups, particularly older people who may experience age-related illness or co-morbidity. An example is 'frailty', which is defined "*as a clinically recognizable state of increased vulnerability resulting from aging-associated decline in reserve and function across multiple physiologic systems such that the ability to cope with everyday or acute stressors is comprised*." [4]. Fehlmann et al. [5] describe the Clinical Frailty Scale as: 1-Very Fit, 2-Well, 3-Managing Well, 4-Vulnerable, 5-Mildly Frail, 6-Moderately Frail, 7-Severely Frail, 8-Very Severely Frail, 9-Terminally Ill. For this project we are applying a simplified version of the frailty scale which includes: L1-None or minimum (FS 1-3); L2-Mild to Moderate (4-6); L3-severe (7-9).

Finally, pregnancy, while a completely natural part of life, affects a person's physiology, environmental tolerance, mobility, and overall physical functioning and is, therefore, an important consideration, particularly in the context of climate resilience [6].

Minority Report we will focus on the following key age-related and health issues and specific groups:

- Key-age-related issue 1**– Ageing**
  Specific group **– Older people (> 65)**
- Key age-related issue 2 **– Early to middle childhood**
  Specific group **– Children 2 to 12 years old**
- Key health-related issue 1 **– Frailty**
  Specific group **– Older people (> 65)**
- Key health-related issue 2 **– Pregnancy**
  Specific group **– Women of childbearing age**

3.4 Overall Statistics

The key characteristics, functions, and related groups described above are contextualised within the overall population in the EU, Ireland, Greece, and New Zealand, as set out below in Table 2.

Table 2: Overall Statistics – EU, Ireland, Greece, and New Zealand

	Place			
	Ireland	**Greece**	**New Zealand**	**EU**
Core Attributes 4.7 (204)				
Age	Median Age 39.4 (2024) [1]	Median Age 46.9 (2024) [1]	Median Age 39 – females 37.4 – males [2]	Median Age 44.7 (2024) [1]
Gender	97.7 men to 100 women (2022) 49.4% male, 50.6% female [3]	51.5% female, 48.9% male [4]	99 males per 100 females (2024) [5]	51% female, 49% male [6]
Race / Ethnicity	All: 5,084,879 White Irish: 76.6% (3,893,056) White Irish Traveller: 0.65% (32,949) Roma: 0.32% (16,059) Any other White background: 9.87% (502,081) Black or Black Irish – African: 1.33% (67,546) Black or Black Irish – any other Black background: 0.17% (8,699) Asian or Asian Irish – Chinese: 0.53% (26,828) Asian or Asian Irish – Indian/Pakistani/Bangladeshi: 1.86% (94,434) Asian or Asian Irish – any other Asian background: 0.88% (44,944) Arab: 0.4% (20,115) Other including mixed background: 1.28% (64,992) Not stated: 6.16% (313,176) [7]	** Greece doesn't collect official data on ethnicity 92.7% Greek, 7.3% 'other country' [19]	European: 67.8% (3,383,742) Māori: 17.8% (887,493) Asian: 17.3% (861,576) Pacific peoples: 8.9% (442,632) MELAA: 1.9% (92,760) [8]	Not Applicable
Human Functions and Characteristics				
Physical Functions	349,155 (just under 7% of population) people experience difficulty with basic physical activities Difficulty with pain, breathing or any other chronic illness/condition: 440,090 people (9% of total population) [9] EC data: Walking: 13.4% report moderate or severe difficulties Self-care: 4.3% report moderate or severe difficulties [15]	Walking: 15.9% experience moderate or severe difficulties Self-care: 8% report moderate or severe difficulties [15]	Walking: disability rate 7% (271,000) Flexibility/dexterity: disability rate 6% (239,000) Pain: disability rate 3% (136,000) [16]	Walking: 18.5% experience moderate or severe difficulties Self-care: 6.7% experience moderate or severe difficulties [15]

	Place			
	Ireland	**Greece**	**New Zealand**	**EU**
Sensory Functions	Blindness or vision impairment: 296,601 (6% of population) Deafness or hearing impairment: 233,540 people (5% of population) [9] EC data: Seeing: 8% report moderate or severe difficulty Hearing: 8% report moderate or severe difficulty Communicating: 2.9% report moderate or severe difficulties [15]	Estimation that there are 25,000 blind individuals in Greece (no direct statistics) [11]; but generally there is no official data Deafness or hearing impairment: no official data [12] EC data: Seeing: 13.6% report moderate or severe difficulty Hearing: 11.1% report moderate or severe difficulty Communicating: 4.7% experience moderate or severe difficulties [15]	Seeing: disability rate 4% [16]	Seeing: 20.3% experience moderate or severe difficulties Hearing: 11.8% experience moderate or severe difficulties Communicating: 4.7% experience moderate or severe difficulties [15]
Cognitive	Intellectual disability: 109,288 people (2% of population) Difficulty with learning, remembering or concentrating: 259,050 (5% of population) [9] EC data: Remembering or concentrating: 7.3% experience moderate or severe difficulties [15]	Age and gender standardised prevalence of Mild Cognitive Impairment (MCI) is 13.1% in those 65+ [13] HIV/AIDS: 16,000 individuals [14] EC data: Remembering or concentrating: 11.7% experience moderate or severe difficulties [15]	Remembering, concentrating, and learning: disability rate 4% [16]	Remembering or concentrating: 14.8% experience moderate or severe difficulties [15]
Immunological	Rheumatoid arthritis: 40,000 people [10] **no data on other diseases			
Neurological	Mental health issue: 269,789 (5% of the population) [9]		Mental health: disability rate 3% (135,000) [16]	
Health Status	Frailty: 15% in people 65yrs+ [46]			Frailty: 12% of people 65yrs+ (prevalence rate of in pooled data)
	Obesity: 21% of overall adult population [47]	Obesity: 12% of overall adult population [47]	Obesity: 33.8% of overall adult population [47]	Obesity: 14.8% of adult population [48]
Family and Carer Status				

	Place			
	Ireland	**Greece**	**New Zealand**	**EU**
Marital Status	Single: 43% Married: 46% Separated or divorced: 6% Widowed: 5% [17]	Single: 40.3% (4,224,101) Married: 45.67% (4,786,889) Registered Partnership: 0.38% (39,984) Separated: 1.08% (112,977) Divorced: 4.62% (484,237) Widowed: 7.96% (834,299) [19]	Civil Union (Not Separated): 0.061% Divorced or dissolved: 7.96% Married (not separated): 44.78% Never married and never in a civil union: 39.45% Separated: 2.77% Widowed or surviving civil union partner: 4.96% [26]	4 marriages per 1000 persons (2023) [23]
Parental Status		Women give birth to an average of 2.15 children (2011) [20]		
Family Relationships	1,279,951 families Average of 1.34 children per family [18]	*Household size* 1 person: 32.3% 2 persons: 28.4% 3 persons: 18.2% 4 persons: 14.9% 5+ persons: 6.1% [19] 72.4% of households with children were made up of a couple with children (2023), just 4.3% of households were single parent [24]	Couples with children: 42% of families Couples without children: 41.5% of families One parent with children: 16.5% [27]	23.8% of households had dependent children (2023) 63.6% of households with children were made up of a couple with children (2023) [24]
Care-giving responsibilities	25,000 adults were unpaid carers, living with their parents [18] Ireland had the lowest share of people without care responsibilities in the EU in 2018 (55.2%) 39.2% of Irish people have childcare responsibilities [22]	On average, women spend 17.3 hours per week on unpaid care, men 8.4 hours per week "In households with children under the age of 12, 59% of women take on daily caregiving responsibilities, in contrast to only 23% of men" [21] Greece was among the highest share with responsibilities to care for 'incapacitated relatives' (8%) [22]	14% of the population or 432,000 people are unpaid carers 2/3 of carers are female [28]	34% of those in the EU aged 18-64 had care responsibilities (2018) [22]
SES				

	Place			
	Ireland	**Greece**	**New Zealand**	**EU**
Education	56% of 25-64 year olds had a third level qualification (2024) 13% post leaving certificate 27% secondary education only 3% primary only or no formal education [25] 95% of 20-24 year olds had at least a higher secondary education 4% of individuals 18-24 are 'early school leavers' [31]	94% of 20-24 year olds had at least a higher secondary education 4% of individuals 18-24 are 'early school leavers' [31]	31.7% of 25-64 year olds hold a bachelors or equivalent tertiary degree [32]	84% of 20-24 year olds had at least a higher secondary education 10% of individuals 18-24 are 'early school leavers' [31]
Employment Status	Employment rate for 15-64 year olds is 74.7% (2025) Unemployment rate for persons aged 15-74 is 4.8% (2025) [29]	Employment rate was 64.5% Unemployment rate was 8.1% [30]	66.6% employed (2025) 5.3% unemployed (2025) [33]	Employment (15-64): 71% Unemployment (15 and over): 5.9% [30]
Housing Situation				
Housing Status	There are 2,112,121 habitable permanent dwellings, 1.85 million are occupied and 163,433 are vacant [34] 4.7% of people spend 40%+ of their disposable income on housing [37]	28.5% of people spend 40%+ of their disposable income on housing [37]	2,041,236 private dwellings 15,342 non-private dwellings 1,793,613 occupied private dwellings 66% household ownership rate 34% of households do not own their home 1.5 million people live in rental accommodation 45.9% of the non-owner-occupied households spent 30%+ of their disposable income on housing [40]	69.2% own the dwelling they live in, 30.8% live in rented accommodation 8.8% of people spent 40%+ of disposable income on housing [37]
Household/Family type/size	1.8 million households – 69% families, 23% one-person households, 8% non-family households Average household size Is 2.74 [35]	4,298,999 households (2024) Average household size is 2.37 persons [36]	95.2% of people 65+ lived in private dwellings [40] Couple with children household: 26.4% (451,098) Couple-only household: 25.3% (432,963) One-person household: 22.8% (389,352) Couple-only and other person(s): 2.7% Couple with child(ren) and other person(s): 2.8% One parent with child(ren): 2.1%	202 million households in the EU -- 75 million are single adult households, 49.1 million are couples without children, 30.5 million are other types of households without children, 30.3 million are couples with children [38] Average of 2.3 persons per household [39]

	Place			
	Ireland	**Greece**	**New Zealand**	**EU**
			Multi-family household (with or without other people): 3.9% Other multi-person household: 5.6% Average household size is 2.7 1.3 million families [41]	
Dwelling type	Detached House: 41.2% Semi-detached House: 25.4% Terraced House: 20.3% Flat or apartment in a purpose-build block: 10.4% Flat or apartment in a converted house or commercial building: 2.7% Bed-sit: 0.1% [34]		Total private dwellings: 2,097,100 Owner occupied: 1,353,500 Rented: 671,700 Provided free: 71,900 [42]	House: 51.7% Flat: 47.7% Other accommodation: 0.6% [39]
Social and Place Connection				
Social Connection as measured by loneliness	All of the time: 0.7% Most of the time: 2.4% Some of the time: 11.4% [43] 20% of respondents reported feeling lonely most or all of the time in the four weeks prior to survey [44]	17-18% of percent of respondents reported feeling lonely most or all of the time in the four weeks prior to survey [44]	Felt lonely in the last four weeks None of the time: 56.1% A little of the time: 25.9% Some of the time: 13.9% Most/all of the time: 4% [45]	In 2022, 35% of EU respondents felt lonely at least some of the time; 13% were lonely most of the time in the four weeks prior to survey [44]

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3.5 Place-based approach

Sections 3.3. and 3.4 focused on the people-centred elements of this deliverable. This section briefly outlines the physical context, and the community and private settings where disruptive events are experienced on the ground. Through the three pilot sites, Minority Report is adopting a site-specific approach. To support this, this task takes a strong place-based approach to ensure that the indicators, and more importantly, personas and associated scenarios, are grounded in each site. The importance of taking a place-based approach is emphasised by Cherry *et al* [7] in their discussion of energy systems transitions, who argue that it is "*essential to gather specific, place-based insights to ensure that the significance of meaningful and affective relationships embedded within place are understood and, where possible, taken into account.*"

As outlined in sub-section 3.2 earlier, this deliverable presents a range of place-based key elements as part of category 2) Place- Key Elements, including: Overall location, Setting-related issues, Location and proximity to hazard, Overall topography, Local urban form; and Onsite conditions. This place-based approach then provides the context for 3) Scenario Key Elements; and 4) Future-oriented goals and timescale.

The community-based pilot site activities also had a strong place-based focus including mapping of the local neighbourhood, and the use of daily clocks to explore a typical day over 24 hours in terms of how people spent and their time and where they were (i.e. place).

4 Characterization of the Human-Built Environment Interaction

4.1 Introduction

This section focusses on Behavioural Characterization in terms of the human-built environment interaction and develops key performance indicators that will characterize the behaviour of citizens in response to certain climatic and natural disaster events. This will provide the project team with an understanding of some of the main drivers behind citizen behaviour and interactions with their built environment under stress.

Focussing on "citizen behaviours and interactions with their built environment" this deliverable highlights the need for a "joint man–environment investigation" in terms of planning for emergencies, as emphasized by Bernardini et al. (2016). Zhu et al. (2020) reiterate this through their study of "human-building interactions" as a critical as aspect of "human safety and the outcomes of building emergencies".

4.2 Human Behaviour and Disruptive Events

According to Christensen et al (2007), there are three overlying factors that affect all emergency evacuations, namely: 1) the behaviour(s) of the individual; 2) the planned systems active in the event; and 3) the built environment in which the event occurs.

4.2.1 Individual Behaviour

The first factor, **Individual Behaviour** is exhibited by an individual presented with the conditions of the emergency evacuation. How the individual responds is influenced by many things including previous experience, perception of the hazard, and social attachments (Mawson, 2005).

4.2.2 Planned Systems

Planned Systems, the second factor, are mechanisms that direct individual behaviour to mitigate conditions in the environment. Predetermined, designated evacuation routes, alert and communication methods, evacuation equipment, and trained assistance for individuals with disabilities are examples of planned systems. In addition, informal planned systems may occur as a result of perceived needs and individual altruism, such as the impromptu organisation of assistance to transport an individual who uses a wheelchair or other mobility aid down a set of stairs.

4.2.3 The Built Environment

Finally, the third factor, the **Built Environment**, is the environment wherein the individual's behaviour (first factor) occurs, and the planned systems operate (second factor). The physical characteristics of the built environment may or may not support the preferred behaviours of the individual and/or the planned systems in place in an emergency situation.

4.2.4 The relationship between these three factors

The relationship between behaviour, planned systems, and the built environment determines the individual's response to each form of emergency evacuation. However, behaviour is also influenced by a range of factors including a person's capabilities. Michie et al (2011)[1] set out a behaviour model which involves the three conditions – capacity, motivation, and opportunity – to further interrogate individual response. Specifically,

> "Capability is defined as the individual's psychological and physical capacity to engage in the activity concerned. It includes having the necessary knowledge and skills. Motivation is defined as all those brain processes that energize and direct behaviour, not just goals and conscious decision-making. It includes habitual processes, emotional responding, as well as analytical decision-making. Opportunity is defined as all the factors that lie outside the individual that make the behaviour possible or prompt it." (p.42)

Section 3 has described the diversity of human characteristics and capabilities that need to be considered in the planning for safety and resilience in response to climate related events. Furthermore, the inclusion of vulnerable groups as part of planning for resilience will help to stress test any interventions or measures put in place. From this perspective, it is important to include a full range of human characteristics and capabilities, in terms of sensory, physical, and cognitive functions, neurodiversity, age, and the presence of a permanent or temporary condition or impairment, among others.

Based on the above, this task outlines a set of indicator categories including:

- A base set of **behavioural aspects** including human capabilities & characteristics reflecting age, gender, physical functions, age-related issues, and more. This will also include household types, and care-giving responsibilities, as both of these impacts on behaviour during an emergency. General population characteristics are also discussed to help provide a general overview.
- **Built environment** will largely focus on built environment performance related ratings that signify how well a well a building might respond to disruptive events, and more importantly that may support and enable appropriate human behaviour in an emergency.
- **Systems** looks at some key methods or structures that support a safe and resilient reactions and responses to emergencies.

4.2.5 Setting Types

As mentioned in the methodology section, the stakeholder mapping conducted across the three pilot sites (D1.1) used to identify a range of key organisations, networks, and settings within each pilot site. These were reviewed to ensure that the range of settings (e.g. housing, schools) were represented in the indicators and personas and scenario. These settings include: 1) Residential (R); 2) Long-term residential care (L); 3) Healthcare (H); 4) Childcare (C); 5) Education (E); 6) Community facilities & other (Cm); 7) Work / Employment (e.g. offices, factory) (W); 8) Commercial / Retail (C); 9) Restaurant/pub (R/P); 10 Sports & Recreation (primarily indoor) (S); 11) Transport and mobility infrastructure (e.g. bus station) (T); and, 12) Outdoor space (O)s. In the indicator matrix set out in Section 4.4, these settings are cross-referenced with the indicators to identify specific settings where a certain indicator may have additional relevance.

[1] Michie, S., M.M. van Stralen, and R. West, *The behaviour change wheel: A new method for characterising and designing behaviour change interventions.* Implementation Science, 2011. **6**(1): p. 42.

4.2.6 Emergency stage: pre-travel and travel phases.

Finally, where possible, these factors are examined in the context of the emergency stage, including **pre-travel and travel phases**. Wang et al. [8] highlight how the pre-travel phase '*embraces all the cues and information from the physical and social environment related to the hazard that eventually lead to the decision regarding the required action, e.g., evacuation, shelter-in-place, no action. Subsequent to this decision, the travel phase then refers to the actual physical evacuation of the occupants from an area*.' (p1).

4.2.7 Overall framework

Figure 1 below lays out this overall framework, showing how the behavioural aspects, the built environment, and systems are related. It also shows how pre-travel and travel phases are considered where possible, while also illustrating the indicator categories that have been included.

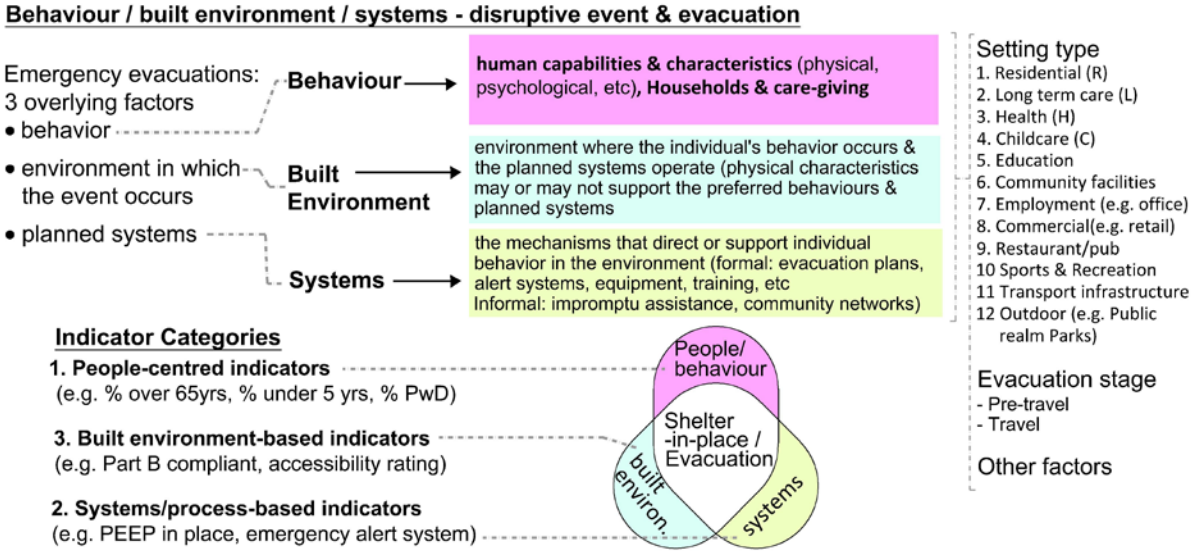


Figure 1: Behaviour-built environment-systems indicator framework

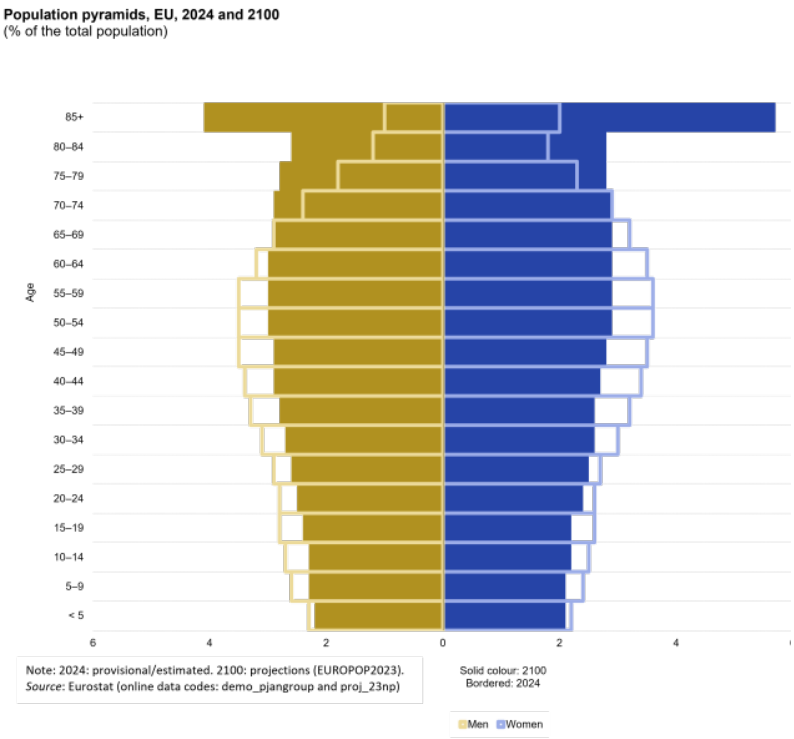
The sections below explore a number of key areas associated with the behavioural, built environment systems-based aspects associated with the framework. In each case, a set of indicator categories are outlined, and where possible data is provided for the indicators at an EU level. In some cases, this data is based on Eurostat sources, while in others, they are estimates based on the literature examined in each section.

4.3 Behavioural aspects, built environment & systems

4.3.1 Behavioural aspects

4.3.1.1 Human capabilities & characteristics

Age: Across multiple studies [9-12], age is a key factor for evacuation behaviours. This includes how old age, or very young age impacts physical (including walking speed), sensory, or cognitive



capabilities. Toledo *et al.* [12] notes that presence of older people or children can increase the probability of evacuation. Research by Durage *et al. [11] highlight implications for those under the age of 30, as this age group have been shown to be more likely to make unsafe evacuation decisions.* With this in mind, it is important to identify that children aged between 0 and 14 years make up 14.6% of the EU's population (<4yrs=2.3%; 5-9 yrs =2.7%; 10 14yrs=2.8%), while people considered to be of working age (15 to 64 years) accounted for 63.8% of the population, with older people (aged 65 years and over) **representing 21.6% .**

Figure 2: Population pyramids, EU, 2024 and 2100 (% of the total population)

It is estimated that those aged 65 years and over will account for 32.5% of the EU's population by 2100 [13]. See Figure 2 below for a population pyramid show age groups by gender showing provisional 2024 data and projections for 2100.

Key Indicators

Age	**<4yrs=2.3%; 5-9 yrs =2.7%; 10-14yrs=2.8%; 15 to 64 = 63.8%; >65 = 21.6%**

Gender: Gender is another major evacuation factor. For instance, Whitehead *et al.* [14], when looking at US based hurricanes, state that *'Women are almost twice as likely to evacuate when given a mandatory order',* while others highlight how females tend to have a higher risk perception which affects their evacuation decision making [10]. See Figure 2 above for a 2024 and projected 2100 split between women in men across key age groups in the EU.

Key Indicators

Gender	**Female=51%female; male=49%**

Physical, Sensory, and Cognitive Impairments: Physical, sensory, and cognitive impairments may affect how a person can perceive, plan for, react to, and recover from a disruptive event or an evacuation. While people with disabilities are disproportionately affected by emergency events [15], it is acknowledged that they are often under-represented in evacuation research [16].

One study that did explore this subject, looked at the performance levels of vulnerable healthcare facility residents during fire evacuations [15]. This was based on five groups including older adults, and people with impaired mobility, vision, hearing, and cognition. Results were compared against a

reference group of people without a disability. The evacuation performance and mean response / movement times of the reference group and the five vulnerable groups are set out in Table 3.

Table 3 Response and movement times in decreasing order of speed

Group	Mobility (metres /second)	Mean response times (seconds)	Mean movement time (seconds)	Total
Reference group	0.6 to 0.8 m/s (walking) 2.3 to 2.5 m/s (running)	17.5	88.9	106.4
Impaired hearing	0.648 m/s	42.1	151.9	194
Impaired vision	0.325 m/s	38.8	162.4	201.2
Impaired cognition	0.441 m/s	75.6	138.3	213.9
Impaired mobility	0.309 m/s	22.9	198.6	221.5
Older people	0.195 m/s	67.1	196.2	263.3

Figure 3 below from Choi *et al.* [15] illustrates these evacuation performances in a format that provides a clear visual indication of the significant differences between the mean response / movement times for each group.

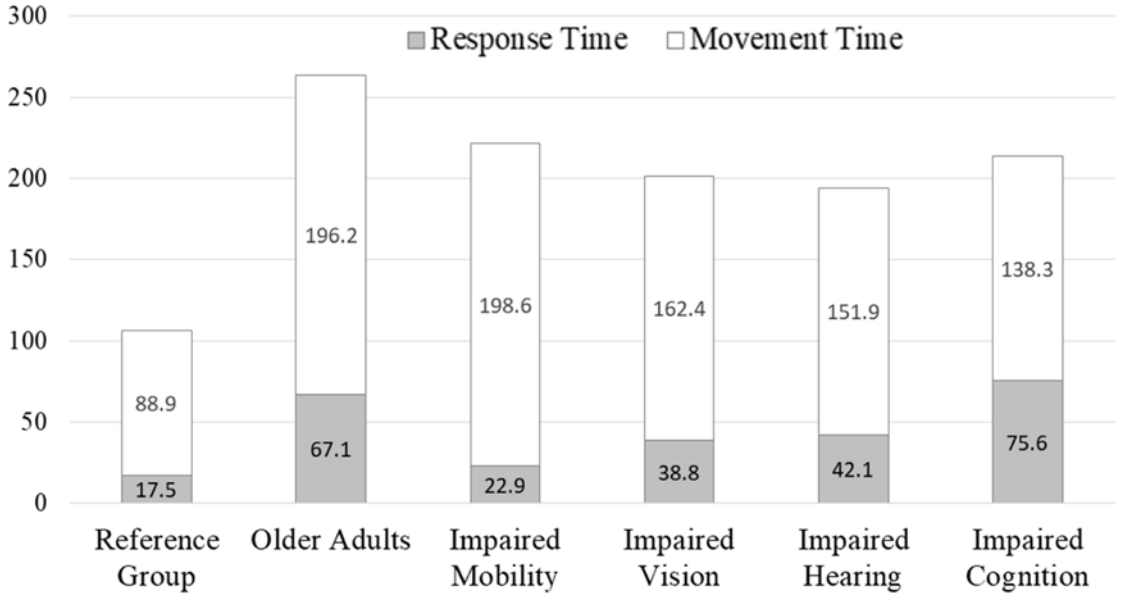


Figure 3: Evacuation performance and mean response / movement times of the reference group and the five vulnerable groups (units = metres per second or m/s)

Considering that in 2022, 37.0% people aged 16 years or over in the EU reported difficulties in one or more basic activities [17], this is a major factor in terms of emergency response capabilities and behaviour.

	Seeing		Hearing		Walking		Remembering or concentrating		Communicating		Self care	
	None	Moderate or severe	None	Moderate or severe	None	Moderate or severe	None	Moderate or severe	None	Moderate or severe	None	Moderate or severe
EU (')	79.7	20.3	88.2	11.8	81.5	18.5	85.2	14.8	95.3	4.7	93.3	6.7
Belgium	89.2	10.8	91.6	8.4	83.9	16.1	88.4	11.6	96.4	3.6	94.8	5.2
Bulgaria	81.5	18.5	90.9	9.1	79.3	20.7	92.1	7.9	96.5	3.5	93.1	6.9
Czechia	73.8	26.2	88.5	11.5	81.9	18.1	88.1	11.9	96.5	3.5	93.4	6.6
Denmark	71.8	28.2	76.9	23.1	74.7	25.3	73.3	26.7	93.9	6.1	93.5	6.5
Germany	:	:	:	:	:	:	:	:	:	:	:	:
Estonia	86.0	14.0	90.1	9.9	76.0	24.0	75.1	24.9	95.6	4.4	92.4	7.6
Ireland	92.0	8.0	93.9	6.1	86.6	13.4	92.7	7.3	97.1	2.9	95.7	4.3
Greece	86.4	13.6	88.9	11.1	84.1	15.9	88.3	11.7	95.3	4.7	92.0	8.0
Spain	75.1	24.9	85.8	14.2	79.2	20.8	80.4	19.6	96.1	3.9	93.1	6.9
France	84.3	15.7	87.5	12.5	84.6	15.4	86.8	13.2	96.5	3.5	95.0	5.0
Croatia	78.0	22.0	92.1	7.9	79.4	20.6	79.4	20.6	97.2	2.8	94.0	6.0
Italy	82.1	17.9	90.8	9.2	84.5	15.5	90.4	9.6	95.1	4.9	92.7	7.3
Cyprus	89.0	11.0	95.4	4.6	84.2	15.8	94.3	5.7	97.7	2.3	94.3	5.7
Latvia	79.5	20.5	92.8	7.2	77.2	22.8	84.3	15.7	94.6	5.4	91.0	9.0
Lithuania	80.9	19.1	92.3	7.7	76.5	23.5	84.4	15.6	94.2	5.8	91.4	8.6
Luxembourg	69.9	30.1	88.5	11.5	82.3	17.7	81.7	18.3	98.3	1.7	97.0	3.0
Hungary	75.0	25.0	91.5	8.5	82.2	17.8	92.0	8.0	96.7	3.3	95.0	5.0
Malta	91.2	8.8	94.0	6.0	87.5	12.5	93.5	6.5	98.1	1.9	96.8	3.2
Netherlands	80.5	19.5	82.0	18.0	81.1	18.9	74.0	26.0	89.7	10.3	92.2	7.8
Austria	87.5	12.5	88.8	11.2	83.0	17.0	87.3	12.7	94.3	5.7	95.2	4.8
Poland	76.4	23.6	89.9	10.1	82.4	17.6	87.2	12.8	95.5	4.5	92.9	7.1
Portugal	79.5	20.5	87.6	12.4	90.8	9.2	81.6	18.4	98.2	1.8	93.7	6.3
Romania	70.5	29.5	88.9	11.1	74.8	25.2	84.3	15.7	93.5	6.5	91.1	8.9
Slovenia	73.7	26.3	86.1	13.9	76.1	23.9	83.1	16.9	95.7	4.3	95.8	4.2
Slovakia	76.9	23.1	88.8	11.2	79.5	20.5	88.4	11.6	94.1	5.9	91.9	8.1
Finland	74.3	25.7	84.2	15.8	74.7	25.3	66.4	33.6	96.3	3.7	93.4	6.6
Sweden	80.6	19.4	85.8	14.2	81.5	18.5	74.8	25.2	93.7	6.3	94.7	5.3
Norway	80.2	19.8	78.7	21.3	84.7	15.3	66.5	33.5	93.2	6.8	97.6	2.4
Switzerland	86.2	13.8	91.0	9.0	84.2	15.8	83.8	16.2	96.6	3.4	97.5	2.5
Montenegro	88.2	11.8	93.9	6.1	87.9	12.1	94.3	5.7	97.9	2.1	96.1	3.9
Serbia	87.6	12.4	92.2	7.8	86.1	13.9	93.0	7.0	96.4	3.6	94.5	5.5
Türkiye	79.9	20.1	90.5	9.5	80.4	19.6	84.5	15.5	97.3	2.7	96.2	3.8

Figure 4: Share of people aged 16 years or over reporting difficulties in basic activities, 2022 [Eurostat]

Key Indicators People >16 yrs with moderate or severe difficulties in the EU

≥1 basic activities	**37%**
Seeing	**20.3%**
Walking	**18.5%**
Remembering or concentrating	**14.8**
Hearing	**11.8**

Neurological characteristics: People with autism spectrum disorder (ASD) can experience many difficulties in emergency situations due to communication, behaviour, adaptive functioning, and sensory issues [18]. For example, in a study by Wolf-Fordham *et al*. [19] one parent of a child with ASD gives the following account:

> *"There was a[n]… ice storm…the power [was] out for 5 days…[and] we did not have any heat. It was difficult to take our daughter to live elsewhere… .She had a difficult time being in the hotel room because… she is used to a strict routine, [we had to] live in 'tight' quarters—all of us were in [one] room, [she wasn't] able to sleep in her own room… in her own bed which is a [hospital] bed … .Because she was taken out of her home she did not eat [] or sleep well and…had issues going to the bathroom."*

This US based research by Wolf-Fordham *et al*. [19] found that families of children with developmental disabilities were typically ill-prepared for potential negative impacts to their children from emergencies or disasters. This research suggests that parents of children with disabilities would benefit from targeted training to increase knowledge and skills to develop an effective family emergency plan (For sample of planning for autism in a natural disaster see https://www.autismspeaks.org/natural-disaster-resources).

While statistics for the prevalence of autism spectrum disorder (ASD) are not readily available, population studies research estimates a pooled prevalence of 1.4% for autism for children between 5–18-years old living in Europe.

Key Indicators

Prevalence of ASD in the EU	**1.4% of the 5–18-year-olds**

4.3.1.2 Age-related/ health status

Various health conditions affect functioning across all age groups, particularly older people, who may experience age-related illness or co-morbidity. This section includes frailty, which primary affects older people, pregnancy, and obesity as some key examples of age and health related that are relevant to emergency situations. Frailty, which is defined "as a clinically recognizable state of increased vulnerability resulting from aging-associated decline in reserve and function across multiple physiologic systems such that the ability to cope with every day or acute stressors is comprised" (Xue, 2011).

Walking speed is considered an important marker for frailty, indeed as Castell *et al.* [20] states, '*Walking speed in itself is considered a simple indicator of health status and of survival in older persons.*' According to these authors "Persons age 75 and older with walking speed <0.8 m/s are at particularly high risk of frailty"

Based on UK research, 6.5% of people aged 60 to 69 experience frailty, increasing to 65% for those aged ≥90 [21]. While at a European level, O'Caoimh *et al.* [22] point to a prevalence rate of 12% in pooled data. Given the vulnerability of people living with frailty, this is an important consideration in terms of planning for and responding to disruptive events.

Key Indicators

Prevalence of Frailty in the EU	**12% of population**
Prevalence among 60 to 69 year olds	**6.5%**
Prevalence among those ≥90 years	**65%**

In 2022, 14.8% of EU population aged 18 or above were obese (with a body mass index (BMI) equal to or greater than 30) and another 36.5% were pre-obese (with a BMI between 25 and 30) [23].

Key Indicators

Percentage of people who are obese in EU	**14.8%**

Pregnancy, while a completely natural part of life, affects a persons' physiology, environmental tolerance, mobility, and overall physical functioning and is therefore an important consideration, particularly in the context of climate resilience [6]. While the percentage of women who are pregnant at any one time will vary greatly, Lezzoni *et al.* [24] found that 3.5% of women reported being currently pregnant for their 2013 research.

Key Indicators

Percentage of women who are pregnant	**3.5%**

4.3.1.3 Households & care-giving

Lim *et al.* [9] explain how evacuation decision making is influenced by a combination of household and capacity-related factors including gender, educational level, number of years living in the house, house ownership, number of house floor levels, type of house material, the presence of children pets, and

more. As mentioned above, Toledo *et al.* [12] note that presence of older people or children can increase the probability of evacuation. According to Eurostat [25], in the EU 11.7% of households have 1 child, 8.9% have 2, and 3% have 3 or more. In Ireland, this rises to 12.4%, 12.2%, and 6.4%; while Greece is 11.8%, 10%, and 3.9%. Figure 5 below shows these figures for 29 European countries.

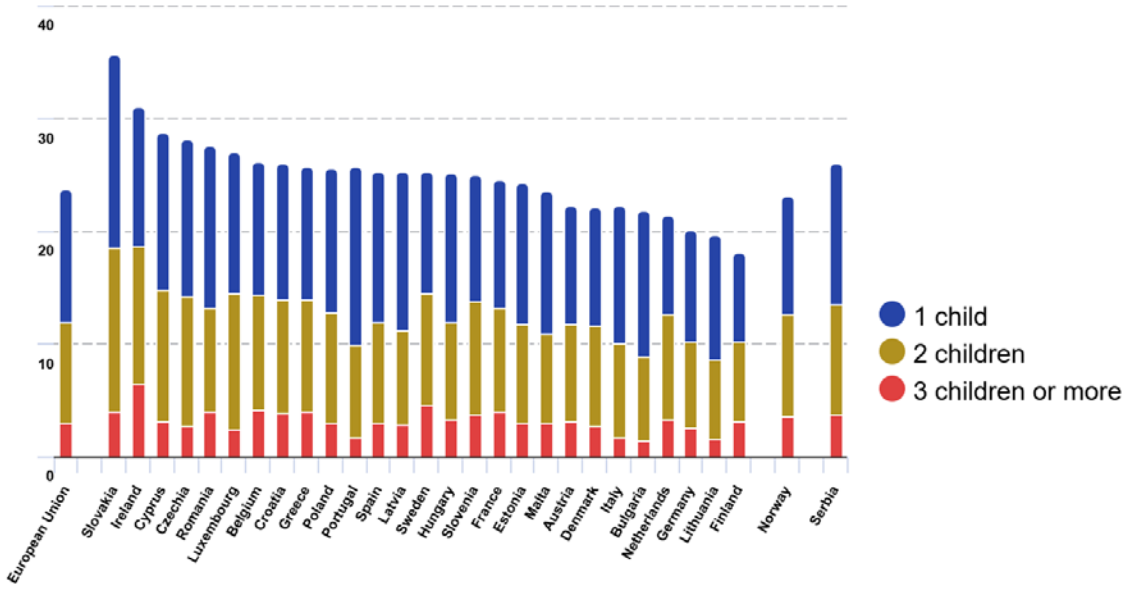


Figure 5: Households with children by number of children, 2024 (% of total households)[Eurostat]

Key Indicators

Percentage of total households in the EU with 1 child	**11.7%**
Percentage of total households in the EU with 2 children	**8.9%**
Percentage of total households in the EU with 3 children or more	**3%**

In some situations the households who own pets are less likely to evacuate, or less likely to go a motel/hotel or shelter, especially if pets are not allowed [14]. They point to a study of pet rescues during the 1997 floods in California, where adults with children were more likely to return to rescue their pets, when they were unable to evacuate the pets in the first place, often in violation of evacuation orders. In this context, and according to the European petfood organisation, FEDIAF, 50% of European households own a pet, with 25% owning at least one dog, and 27% owning at least one cat [26]

Key Indicators

Percentage of European households with a pet	**50%**
Percentage of European households with at least one dog	**25%**
Percentage of European households with at least one cat	**27%**

4.3.1.4 General population and walking speed

Walking speeds are an important part of any evacuation plan, and these vary greatly across a population. Walking speed is impacted by range of factors, but this document will focus on age, gender, and influence of location.

Walking speed based on age: Bosina and Weidmann [1] outline how walking speed is considered to increase until the age of approximately 20 years old, and then decreases. They produced the distribution illustrated in Figure 6 by comparing values obtained from the literature (red line in Figure 6) to their own research (black line). These walking speeds go from just above 0.4m/s at about a year

old, to a high of between 1.4m/s to 1.6m/s at around 18 to 20 years, and then drops off from here to a low of around 0.1m/s at 100 yrs old.

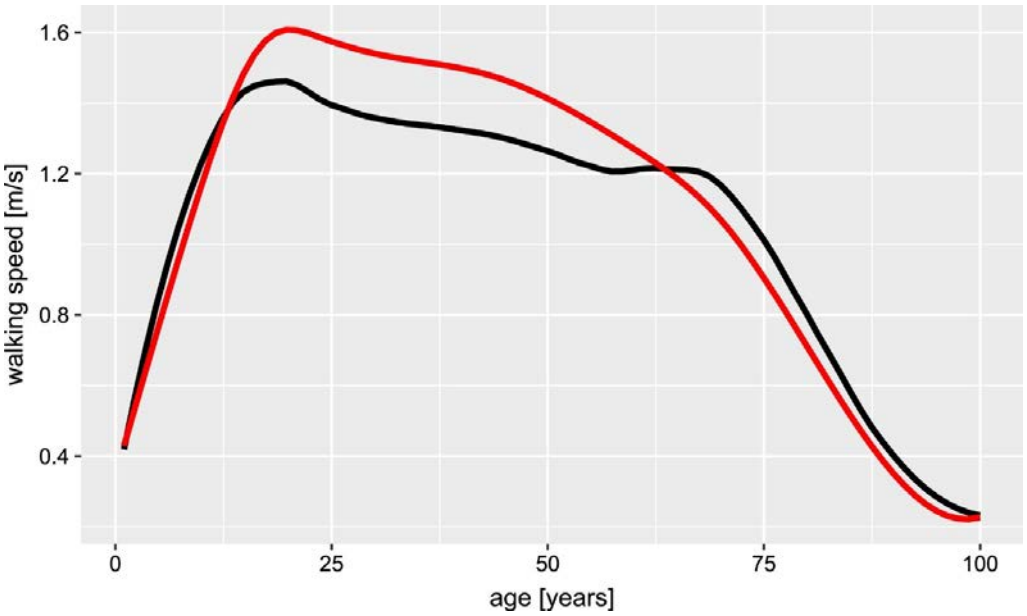


Figure 6: Influence of age on the walking speed (black line represents new data, red line represents previous studies) [1]

Ahmedov *et al*. [27] support these findings, stating that walking speeds can gradually decrease from 1.31 m/s in a 20-year-old to 1.06 m/s older people. Focussing on prepubertal period, they show that the walking speed of this group exceeds those of other age groups with an average of 1.39 m/s.

Walking speed based on gender: Bosina and Weidmann [1] state that on average a women's walking speed is 92% of the men's walking speed, which aligns with the 90% found in other research (Weidmann).

Walking speed based on location and facility type:

Bosina and Weidmann [1] also set out average walking speeds found in various locations and facilities as Figure 7 illustrates.. They acknowledge that these results may be limited by the small sample size, but it is still useful to show the impact of how different settings, notably the reduced walking speed on stairs at 0.76 m/s compared to a sidewalk at 1.2 m/s. The 1.24m/s walking speed at a bottleneck, or a location where the pedestrian path narrows, aligns with other research in this area, showing pedestrian traffic slowing to 1.3m/s at bottlenecks [28].

Average walking speed on different facilities.

Facility	Average speed
Bottleneck	1.24
Laboratory	1.36
Mall	1.55
Other	1.16
Pedestrian crossing	1.43
Pedestrian zone	1.20
Ramp	1.46
Sidewalk	1.32
Stairs	0.76
Walkway	1.34

Figure 7: Influence of setting type on walking speeds

Key Indicators

Walking speed of 1 yr old	**0.4 m/s**
Walking speed of 18 to 20 yr old	**1.4m/s to 1.6m/s**
Walking speed of >77 yr old	**<1.0 m/s**

4.3.2 Built environment

For this deliverable the main focus is on compliance with relevant regulations and standards, and alignment with good practice guidelines related to safety, emergency evacuation, or resilience. In the first place, this includes compliance with local fire (e.g. Fire Safety Part B), structural, accessibility (e.g. Accessibility Part M), and other relevant regulations.

At a European level, *EN 17210: Accessibility and usability of the built environment - Functional requirements* brings together accessibility with fire safety for all, and emphasises the need for *safe evacuation routes during an emergency first to a 'place of relative safety' e.g. within another horizontally located safe fire compartment of the building, and further on to a 'place of safety', which is remote from the building.* It also acknowledges that these *evacuation routes may, in principle, be partly applicable also to other emergencies such as explosion, floods, earthquake etc*.

In addition, compliance with international standards such as ISO/TR 22845:2020 Resilience of buildings and civil engineering works or achieving a certain rating through BREAAM (i.e. resilience) or LEED can be used to demonstrate resilience. Data for these proposed indicators is not available at an EU-level or per country but could be ascertained at a local level through onsite or local authority-based sources.

Key Indicators

% of buildings in the area that comply with recent fire regulations (e.g. Part B)	Data not available at EU level
% of buildings in the area that comply with EN 17210: Accessibility and usability of the built environment - Functional requirements	Data not available at EU level
% of buildings in the area that comply with ISO/TR 22845:2020 Resilience of buildings and civil engineering works	Data not available at EU level
% of buildings in the area that achieve a certain BREEAM or LEED rating in relation to resilience	Data not available at EU level

4.3.3 Systems

The final aspect relates to systems and plans that facilitate an emergency response, particularly for more vulnerable groups.

Personal Emergency Evacuation Plan (PEEP): People who use mobility aids such as crutches, walking sticks, walking frames or wheeled frames may need extra assistance during evacuation. They may need extra time and extra space to evacuate. A **PEEP** can be used to agree and document appropriate evacuation procedures for such people.

Generic Emergency Evacuation Plan (GEEP) While a PEEP helps to document the requirements of a known employee or visitor, most organisations need to plan for the evacuation needs of unknown visitors. In many buildings, it is impractical or sometimes impossible to check the evacuation requirements of every building user in advance of their arrival. Many existing buildings have limitations on how people with disabilities can evacuate the building. For example, the alarm system may not be usable by people with hearing loss. A **GEEP** can be a helpful tool to put a general plan in place for people with different types of disabilities. The PEEP template can be used as the basis for a GEEP. [29]

Key Indicators

% of buildings/settings with Generalised emergency evacuation plans (GEEPS) in place	Data not available at EU level
% of buildings settings with Personal emergency evacuation plans (PEEPS) in place	Data not available at EU level

4.4 Indicators Matrix

4.4.1 Introduction to Matrix

Building on the indicators identified in 4.3 above, Table 4 below organised into the main categories of Human capabilities & characteristics, Built environment, and Systems or process-based indicators. In some Within each category, there are relevant sub-categories (e.g. Age, Gender), and for each of these subcategories, data is provided directly within this sub-category where available (e.g. walking speeds). In other cases, average EU data is provided (e.g. visual difficulties), finally, where no data is available this is marked as NA (i.e. Not Available). For this project this data may be available at a demonstration site level, bit this is beyond the scope of this deliverable.

Setting types are also included, and where the setting type has a significant implication for the indicator, this is highlighted in orange, and the abbreviated name of the setting is inserted. The 12 setting types and abbreviations are as follows: 1) Residential (R); 2) Long-term residential care (L); 3) Healthcare (H); 4) Childcare (C); 5) Education (E); 6) Community facilities & other (Cm); 7)Work / Employment (e.g. offices, factory) (W); 8) Commercial / Retail; (C) 9) Restaurant/pub (R); 10 Sports & Recreation (primary indoor) (S); 11) Transport and mobility infrastructure (T) (e.g. bus station); and, 12 Outdoor (O) .

Where relevant, the evacuation phase is also referred to and the relevant phase (PT= Pre-Travel phase; T= Travel Phase) is marked with a tick (✓). Finally, a column called 'Notes' is included for future reference to record other relevant factors.

Table 4: Indicator categories, sub-categories, and relevant data

Indicator Main Category	**Sub-Category & Evacuation phase**	**Key Indicators** & implications for evacuations (below each key indicator)	**EU**	**Setting type**	**Evac Phase**		Notes
					PT	T	
Human capabilities & characteristics Including implications for Evacuation times Pre-Travel & Travel	**Age**						
	<4 yrs Infant/toddlers	Key Indicator: **% of population less than 4 years old**	2.3%	R & C			
	Pre-travel phase	N/A					
	Travel phase	Indicator: Walking speed <less than 0.6m/s				✓	
	5-9 yrs	Key Indicator: **% of population between 5 and 9 years old**	2.7%	E			
	Pre-travel phase	N/A					
	Travel phase	Indicator: Walking speed <less than 0.8m/s				✓	
	10-14 yrs	Key Indicator: **% of population between 10 and 14 years old**	2.8%	E			
	Pre-travel phase	N/A					
	Travel phase	Indicator: Walking speed 1.39 m/s				✓	
	15-65 yrs	Key Indicator: **% of population between 15 and 65 years old**	63.8%	all			

Indicator Main Category	Sub-Category & Evacuation phase	Key Indicators & implications for evacuations (below each key indicator)	EU	Setting type	Evac Phase		Notes
					PT	T	
	Pre-travel phase	N/A					
	Travel phase	Indicator: Walking speed >1.4m/s to 1.2m/s				✓	
	Older Adults 65 – 80+ years	Key Indicator: **% of population over 65 years of age**	21.6%	R, L, H			
	Pre-travel phase	Indicator: Response time - 67.1 seconds (see Choi *et a*l.)					
	Travel phase	Indicator: Walking speed - <1m/s or at lower end 0.195 m/s (Choi *et al.*)				✓	
	Gender						
	Female	**Key Indicator: % of population who identify as female**	51%	all			
	Pre-travel phase	Indicator: Response time - 17.5 seconds (see Choi et al)					
	Travel phase	Indicator: 0.6 to 0.8 m/s (walking) / 2.3 to 2.5 m/s (running) (Choi *et a*l.)				✓	
	Male	**Key Indicator: % of population who identify as male**	49%	all			
	Pre-travel phase	Indicator: Response time - 17.5 seconds (see Choi et al) – same as above (see Choi *et al.*)					
	Travel phase	Indicator: 0.6 to 0.8 m/s (walking) / 2.3 to 2.5 m/s (running) (Choi et al)				✓	
	Physical function						
	Mobility impairment	Key Indicator: **% of population who have difficulties walking (e.g. use rollator or similar)**	18.5%	R, L, H			
	Pre-travel phase	Indicator: Response time - 22.9 seconds (see Choi *et al.*)					
	Travel phase	Indicator: 0.309 m/s (Choi et al)				✓	
	Sensory function						
	Eyesight	Key Indicator: **% of population who have difficulties seeing**	20.3%				
	Pre-travel phase	Indicator: Response time - 38.8 seconds (see Choi et al)					
	Travel phase	Indicator: 0.325 m/s (Choi *et al.*)				✓	
	Hearing	Key Indicator: **% of population who have difficulties hearing**	11.8%				
	Pre-travel phase	Indicator: Response time - 42.1 seconds (Choi et al)					
	Travel phase	Indicator: 0.648 m/s (*Choi et al.*)				✓	

Indicator Main Category	Sub-Category & Evacuation phase	**Key Indicators** & implications for evacuations (below each key indicator)	EU	Setting type	Evac Phase		Notes
					PT	T	
	Cognitive function						
	Dementia (CI)	Key Indicator: **% of population with a cognitive impairment (e.g. difficulties remembering or concentrating)**	14.8%	R, L, H			
	Pre-travel phase	Indicator: Response time - 75.6 seconds (Choi et al)					
	Travel phase	Indicator: 0.441 m/s (Choi *et al.*)				✓	
	Neurological						
	Autism	Key Indicator: **% of population on the autism spectrum between 5 – 18yrs old**	1.4%	R, E			
	Pre-travel phase	Indicator: % of households with a person on the autism spectrum who have an emergency plan in place	NA		✓	✓	
	Travel phase	N/A					
	Age-related/ health status						
	Heath Condition	Key Indicator: **% of population who are obese**	14.8	R, H			
	Pre-travel phase	N/A					
	Travel phase	N/A					
	Frailty	Key Indicator: **% of population who are moderate to severely frail** (Prevalence among 60- to 69-year-olds = 6.5% and among ≥90 years = 65%)	12%	R, L, H			
	Pre-travel phase	N/A					
	Travel phase	Indicator: < 0.8 m/s (see Choi *et al.*)					
	Pregnancy	Key Indicator: **% of population who are pregnant**	3.5%	R, H			
	Pre-travel phase	N/A					
	Travel phase	N/A					
Households & care-giving-	**Households**	Note: relates to care-giving in the community or at home, not in a formal setting)					
	With one child	Key Indicator: % of households with one child	11.7%	R			
	With 2 children	Key Indicator: % of households with 2 children	8.9%	**R**			
	With 3 or more children	Key Indicator: % of households with 3 or more children	3%	R			

Indicator Main Category	Sub-Category & Evacuation phase	Key Indicators & implications for evacuations (below each key indicator)	EU	Setting type	Evac Phase		Notes
					PT	T	
	With pets	Key Indicator: % of households who have pets (25% with at least one dog, and 27% with at least one cat)	50%	R			
General Population	Overall General Population – walking speeds in various facilities						
		Key Indicator: **average walking speed in various facilities** (metre per second)	M/S				
		Bottleneck	1.24			✓	
		Laboratory	1.36			✓	
		Mall	1.55			✓	
		Pedestrian crossing	1.43			✓	
		Pedestrian zone	1.20			✓	
		Ramp	1.46			✓	
		Sidewalk	1.32			✓	
		Stairs	0.76			✓	
		Walkway	1.34			✓	
Built environment	**Regulations & standards**						
	Compliance with current local/ national fire regulations or standards	Key Indicator: % of buildings in the area that comply with the most recent fire regulations (e.g. Part B)	NA		✓	✓	
	Compliance with accessibility regulations or standards	Key Indicator: % of buildings in the area that comply with the most recent accessibility regulations (e.g. Part M)	NA		✓	✓	
	Compliance with EU standards	Key Indicator: % of buildings in the area that comply with EN 17210: Accessibility and usability of the built environment - Functional requirements	NA		✓	✓	

Indicator Main Category	**Sub-Category & Evacuation phase**	**Key Indicators** & implications for evacuations (below each key indicator)	**EU**	**Setting type**	**Evac Phase**		Notes
					PT	T	
	Compliance with ISO standards	Key Indicator: % of buildings in the area that comply with *ISO/TR 22845:2020 Resilience of buildings and civil engineering works*	NA		✓	✓	
	Achieve BREEAM rating	Key Indicator: % of buildings in the area that achieve x BREEAM rating	NA		✓	✓	
	Achieve LEED rating	Key Indicator: % of buildings in the area that achieve x LEED rating	NA		✓	✓	
Systems/ process based	**Standards**						
	Evacuation plans	Key Indicator: % of buildings/ settings with Generalised emergency evacuation plans (GEEPS) in place	NA	R, L, C,H, E	✓	✓	
		Key Indicator: % of buildings/ settings with Personal emergency evacuation plans (PEEPS) in place	NA	R, L, C,H, E	✓	✓	

Setting type: 1) Residential (**R**); 2) Long-term residential care (**L**); 3) Healthcare (**H**); 4) Childcare (**C**); 5) Education (**E**); 6) Community facilities & other (**Cm**); 7)Work / Employment (e.g. offices, factory) (**W**); 8) Commercial / Retail; (**C**) 9) Restaurant/pub (**R**); 10 Sports & Recreation (primary indoor) (**S**); 11) Transport and mobility infrastructure (**T**) (e.g. bus station); and, 12 Outdoor (**O**) (e.g. public realm, parks)

Evacuation Phase: **PT**= Pre-Travel phase; **T**= Travel Phase

NA = Not Available

5 Personas and Scenarios

5.1 Background

This Section describes the development of Adaptable Personas and Scenarios (APS). Building on Section 4, this Section provides a breakdown on the overall objectives framing the development of the personas and scenarios (Section 5.2). Next, Section 5.3 will introduce the adaptable modular approach to the personas and scenarios. Section 5.4 will present an overview of information and data gathered across each demonstration site, based on the methodological approach outlined in Section 2 as part of the first round of community engagement workshops completed in Dublin, Patra, and Wellington between M12-M18. Next, Section 5.5 will present the persona-scenario master matrix, and finally, section 5.6 will provide information on the complete set of personas and scenarios for Dublin and Patra.

5.2 Objectives of Personas and Scenarios

The APSs are a set of modular personas which have been developed within the Minority Report project via a bottom-up approach; specifically, they have been created to provide a realistic and contextually appropriate narrative account of key user experiences/perspectives (personas) in relation to disruptive climate events (emergencies) that occur in specific built environment settings (scenarios). As part of the person-centric and place-based approach being applied by Minority Report, the personas will represent a cross section of the community in each demonstration site, and will therefore include persons with disabilities, people who are neurodivergent, adults with specific health conditions, older people, and children, amount others. The design personas and scenarios are being developed with the following six objectives:

- Inform and underpin people-centric nature of Minority Report;
- Provide place-based personas that anchor the project in place;
- Act as a design tool to identify key issues, challenges and measures to improve resilience;
- Investigate the characteristics and needs of specific users;
- Provide citizen baseline data or archetype data; and, finally
- Build awareness building, as well as an educational tool.

Each of these objectives is discussed in greater detail below.

Objective 1: Inform and underpin people-centric and site specific nature of Minority Report

This project has a strong people-centric and site-specific focus, and it is therefore important to ground this research in the lived-experience and daily reality of the local people who live, work in, or visit the demonstration site area. In this regard, personas have been shown to support empathy [30], help capture the lived experience [31], and strengthen understanding and engagement among designers and the wider community [32, 33]. Moreover, it is argued that personas provide a good common ground or 'boundary object' in projects that require interdisciplinary interaction between technological and social science partners [34].

Objective 2: Place-based personas and scenarios

Through the three demonstration sites, Minority Report is adopting a site-specific approach. To support this, the personas being developed will have a strong place-based focus to ensure that the personas and associated scenarios are grounded in each site. In discussing energy systems transitions,

Cherry *et al.* [7] argue that it is "*essential to gather specific, place-based insights to ensure that the significance of meaningful and affective relationships embedded within place are understood and, where possible, taken into account."* As part of this exploration, they advocate for place-based personas and for anchoring these personas in place to "*minimise the disconnect between abstract and personal responses to energy systems change.*"

Pairing place-based personas with scenarios that accurately illustrate the site-specific conditions and describe likely situations that might be faced, is important aspect of this project. Pace et al. [35] describe design scenarios as "narrowly focused on specific design contexts (challenges, problems, and new possibilities) and within the scenarios, personas have been extensively used to develop vivid and engaging stories of users interacting within new real-life situations". They state that to "*be meaningful in scenario building, personas need to appropriately integrate users' future needs, expectations and behaviours that shape and in turn are shaped by contexts that are yet to be realised".* A simplified approach to personas and scenarios will be used in this project, where the person-centre, social, physical, and place-based context of the persona will be used to apply a specific disruptive climate event to illustrate the potential interactions, behaviours, and impacts resulting from the event.

Objective 3: Design tool to identify key issues, challenges and measures to improve resilience

Personas are often used to keep the characteristics and needs of potential users at the forefront of the design process [36]. In this regard Cooper [32] emphasises that personas should be goal oriented, reinforced by Calde *et al.* [37] who state that "User models, or personas, are fictional, detailed archetypical characters that represent distinct groupings of behaviours, goals and motivations observed and identified during the research phase." (p4).

Goals and motivations will depend on the context, but for Minority Report, it may be worth looking at Fiske's [38] BUCkET model (Belonging, Understanding, Control, self-Enhancing, and Trusting) which outline a set of 'core social motivations-needs'. Brick *et al.* [39] take the **BUCkET** model and integrate climate change research; some of their key findings are presented in Table 5.

Table 5. BUCket Model – Description of Core Social Motivations and Needs

BUCkET - Core Social Motivations-Needs	Description
Belonging	The desire to build and sustain positive social relationships and adherence to social norms are crucial.
Understanding	Feeling that you understand (rather than actual knowledge) is important, so "providing individuals with satisfying opportunities such as aligning their beliefs with what others think" may have benefits for climate action.
Control:	Effectively controlling your environment and feeling competent are key behavioural drivers, therefore "Boosting individual and collective efficacy: can thus increase motivation for mitigation and protective action against climate change impacts".
self-Enhancing	We are motivated to see ourselves as consistent and worthy, therefore aligning self-identity and self-enhancement with pro-environmental behaviour may be advantageous for the climate.
Trusting	We are motivated to trust and believe others are benevolent, so it is important to frame and align climate actions with trust, co-benefits (e.g. economic) and benevolence (a moral and caring community).

While all of these motivations may not be relevant for Minority Report, it is nevertheless worth keeping them in mind when framing the motivations and goals for the personas.

Siddall et al [40] demonstrate how a goal-oriented approach can be used as a design tool to highlight barriers and identify opportunities to improve design or suggest recommendations for the built environment and public realm in Dublin City. In a similar manner, the personas and scenarios developed in this project can be used to identify the barriers and holistic solutions to be co-selected and co-created with the participation of citizens, by means of the Minority Report people-centric technology platform, including the Advanced Renovation Road-mapping Decision Support (DSS) Module.

Objective 4: Investigating characteristics and needs of specific users

Building on the above, personas and scenarios can be used to investigate the characteristics and needs of specific groups such as disabled persons, older people, or children. A modular or flexible persona approach will facilitate the inclusion of certain impairments, health conditions, or age-related issues (both young and old).

Objective 5: Citizen baseline data or archetype data

Considering that the personas and scenarios will be accurate representations of stakeholders in each of the demonstration sites, there is the potential to use these as a form of site-specific and people-centred archetype data that can be used in the Predictive Behaviour Module. It is intended that this behaviour module will take user profile templates from the physics model and distribute them to stakeholders during the co-design workshops to improve the granularity of behavioural models. The personas and scenarios will supplement this approach.

Objective 6: Communication and Awareness

Personas have been employed as a useful communication tool, as Pace et al. [35] argue "*personas serve the purpose of better engaging with scenarios by focussing more directly on the individual which is a crucial aspect for communication*." (p2). They suggest that through personas, stakeholders can develop a deeper awareness of the implications of their choices. In the context of this project, and the need to improve resilience, personas may be particularly useful when they "*contribute to developing conscious anticipation and proactive decision-making, enabling stakeholders to navigate future uncertainties with greater confidence*."

5.3 Modular Approach to Personas and Scenarios

A suite of personas and scenarios have been developed using the APS approach. A set of 10 'base' design personas/demo site have been established, onto which the modules (in varying combinations) are applied to establish the pilot-site specific personas. The personas are lived-experience based – drawing on the information gathered during the first round of engagement activities, detailed in 5.4, for each pilot site – and will largely focus on the interactions with the physical and built environment, including the key places and spaces, buildings, infrastructure, and systems within the pilot site neighbourhood(s). Finally, where relevant, the APS will also involve relevant organisations, community groups, and people (i.e. family, friends, neighbours, people working locally, passersby, and others) who reside in the locality. During refinement of the personas, the modular approach will allow project

partners to 'move between' the modules, selecting different elements to create additional personas to 'stress-test' specific scenarios.

Building on the issues discussed in 5.2, this section presents the overarching persona template matrix, comprising the relevant sections (modules), with a short description of each. As part of the development of the overall matrix, TCD delivered a workshop in October 2025, the aim of which was to review and refine each of the modules (and associated elements). Suggestions and refinements have been incorporated into the final version of each module.

MODULE A: Person (representative of local population)

The personas aim to represent a cross section of society consisting of a range of typical people who would live, work, or visit the area as defined in each of the pilot sites. Table 6 provides details of all the elements comprising **MODULE A – Person**, and includes a range of core issues, such as age, gender, and human functions and health status, among others.

Table 6. MODULE A – Person: Key Elements

Core Attributes	**Age**	**Infancy**[2] 0-2 years **Pre-school** 3-6 years	
		Middle Childhood 7-12years	
		Adolescence 13-20 years	
		Early Adulthood[3] 21-40 years **Middle Adulthood** 41-65 years	
		Older Adults[4] 65 – 80+ years	young-old
			middle-old
			old-old
	Gender	Man	
		Woman	
		Non-Binary	
	Sexual Orientation (not currently being used)	Straight or Heterosexual	
		Homosexual (Gay or Lesbian)	
		Bisexual	
	Race / Ethnicity	Place-based	

[2] We are going to bring together 0-2 and 3-6 as an overall life-stage.
[3] We are going to bring together 20-40 and 40-65 as an overall life-stage.
[4] This age category can be further broken down (qualitatively) into young old, middle-old, and old-old for the purposes of persona development.

Human Characteristics	**Physical functions**	Without Impairment	
		Mild / Moderate Impairment	
		Severe Impairment	
	Sensory Functions	Eyesight	
		Hearing	
	Cognitive	Dementia	
	Immunological (not currently used)		
	Neurological	Autism	
	Age-related, and general health Status	Health Condition	None
			Acute
			Chronic
		Frailty	L1 (FS1-3)
			L2 (FS 4-6)
			L3 (FS 7-9)
		Pregnancy	Early Term
			Mid-Term
			Late-Term
	Implications for the persona (i.e. due to one or combination of above)	Specific detail outlined at persona-template level (high-level recorded in Master Matrix – Appendix A).	
Family & Carer Status	**Marital Status**	Single	
		Married	
		Divorced	
		Widowed	
		Not Applicable	
	Parental Status	No. of children (and their ages)	
	Family Relationships		
	Care-giving responsibilities		
SES	**Education**	Third Level	
		Secondary Level	
		Primary Level	
	Employment Status	Full-Time	
		Part-Time	
		Unemployed	
		Semi-Retired	
		Fully Retired	
		Student	
		Volunteering	
		Not Applicable	

Housing Situation	**Housing Status**	Private/owner	
		Renter	Public Housing
			Housing Association
			Private Rent Sector
			Cooperative
		Homeless	In shelter
			In streets
			Other (i.e. squatting)
		Other (See Settings)	Hotel
			Hostel
			AirBnB
		N/A	
	Household/Family type/size	Nuclear family	
		Single parent or guardian with children	
		Shared Living (e.g. shared rental)	
		Single person (living alone)	
		Multi-generational (e.g. 3 generations living together)	
	Dwelling type	Detached	Single
			Two Storey
			3 or more storeys
		Semi-Detached	Single
			Two Storey
			3 or more storeys
		Terrace	Single
			Two Storey
			3 or more storeys
		Apartment / Duplex	Total no. of floors
			floor lived on)
			Lift (Y/N)
		Other (See Settings)	Hotel
			Hostel
			AirBnB
Social and Place Connection	**Social Connection**	Strength of Relationship within community	High
			Medium
			Low
		Membership of relevant organisations (social, cultural, political, etc)	
	Place Attachment	Level of Attachment to general locality	High
			Medium
			Low
		Level of attachment to specific location or building (e.g. home, farm, shop)	High
			Medium
			Low
		Level of Fear of leaving due to security/ safety/need to protect	High
			Medium
			Low

Knowledge, Awareness, & Experience	**Knowledge**	Level of Local knowledge of terrain, natural conditions (e.g., traditional, ecological knowledge)	High
			Medium
			Low
		Level of Knowledge of safety or evacuation plans or procedures	High
			Medium
			Low
	Awareness	Level of Awareness of key hazards and appropriate response	High
			Medium
			Low
	Experience	Actual Experience	Yes
			No

MODULE B: Place and location

The location and context for these personas will primarily be the general neighbourhoods within the approximate boundaries as identified by community members in the pilot sites. This section of the overall matrix also contains specific settings (such as residential, educational, and others) in which to base the experiences of the persona. Finally, key setting related resilience issues are included to illustrate potential hazard vulnerabilities in each setting. **Table 7** provides details of all the elements comprising **MODULE B – Place.**

Table 7. MODULE B– Place Key Elements

Overall Location	**Country**		
	City or Town		
	District or General Area		
	Name of Neighbourhood		
	Specific Location in Neighbourhood		
Setting	**Residential**	Standard	
		Supported (high- & low-level support)	
	Long-term residential care	Older Persons	
		People with Disabilities	
		Children	
	Healthcare	Hospital	
		Primary Care Settings	
		GPs	
	Childcare	Creche (Pre-School)	
	Educational Setting	Primary	
		Secondary	
		Third	
	Community Facilities & other		

	Work / Employment (e.g. offices, factory)				
	Commercial / Retail				
	Sports & Recreation (primary indoor)				
	Transport and mobility infrastructure (e.g. bus station)				
	Outdoor spaces – public realm (public squares, streets, parks, etc)				
	Open landscape (beaches, coastal areas, forests, etc)				
Key Setting Related Resilience Issues	**Spatial Scale**	**Hazard Type**	**Hazard Vulnerability (Examples)**		
	Location and proximity to hazard, and overall topography) (geographic location & topography)	Wind	Elevated site, exposed to wind		
		Flood	Adjacent to river or shoreline, low-lying		
		Heat / cold	ground, poor ground conditions or drainage		
		Fire	Solar exposure, lack of shade		
		Other (e.g. Costal Erosion)			
	Local Urban Form (spatial structure such as street network/width, street typography, or building heights/mass)	Wind	Wind tunnelling		
		Flood	Low-lying ground, poor drainage		
		Heat / cold	Heat Island effect		
		Fire	Density & proximity to other buildings		
		Other (e.g. Costal Erosion)			
	Site Conditions (within the site curtilage including open areas, parking, etc.)	Wind	Site orientation, degree of onsite shelter/wind breaks		
		Flood	Low-lying ground, poor ground conditions or drainage		
		Heat / cold	Solar exposure, lack of shade		
		Fire	Onsite fire hazards		
		Other (e.g. Costal Erosion)			

	Building Form (including heigh and mass) and layout (including overall configuration, circulation, and room layouts)	Wind	Building height, shape, orientation & exposure		
		Flood	Vulnerability of ground floor units		
		Heat / cold	Solar orientation & exposure, degree of glazing		
		Fire	Poor building design and egress		
		Other (e.g. Costal Erosion)			
	Structure and Materials (incl. age and condition of building)	Wind	Inadequate wind resistant structure & cladding		
		Flood	Inadequate flood resistant structure & cladding		
		Heat / cold	Poor thermal insulation & windows, poor thermal mass		
		Fire	Inadequate fire-resistant structures & materials in s		
		Other (e.g. Costal Erosion)			
	Environmental Conditions and Associated Services (e.g. ventilation, heating, cooling)	Wind	Unprotected services (e.g power)		
		Flood	See above		
		Heat / cold	Inadequate natural/mechanical ventilation, heating or cooling systems		
		Fire	Lack of fire safety systems (alarms, sprinklers etc)		
		Other (e.g. Costal Erosion)			

MODULE C: Scenarios

Building on Module A and B, each persona is then coupled with a scenario within their specific setting related to the key hazards of wind, flood, heat, fire. The scenario is in the past tense and describes a disruptive climate event and some major outcomes for the persona. **Table 8** provides details of all the elements comprising **MODULE C– Scenario**.

Table 8. MODULE C– Scenario Key Elements

Event	**Event Type**	Wind	
		Flood	
		Heat / Cold	
		Fire	
		Other	
	Severity	High	
		Medium	
		Low	
	Time	Time of Day (Day/Night)	Daytime (6:00AM-6:00PM)
			Nighttime (6:01PM-5:59AM)
		Date (DD/MM/YY)	
		Duration	Hours
			Days
			Weeks
Impact - Setting	**Level of Impact**	High	
		Medium	
		Low	
Impact - Person	**Level of Impact**	High	
		Medium	
		Low	

MODULE D: Future-oriented goals and timescale

Module D sets out future-oriented goals, ascribed to each persona detailing a few motivations and concerns. In relation to this aspect of the APS, main persona motivations will centre on concerns regarding how the disruptive weather events will affect them, their family, friends, neighbours and wider community in the short, medium, and long-term. In line with the BUCkET model discussed earlier [38, 39], motivating factors may also include a desire to strengthen local social relationships, exert some level of control, improve their lives, and contribute to the improvement of the neighbourhood over time.

Building on the above and based on the scenario that has been outlined for each persona, the project has created built environment related and **future-oriented goals for the setting to help satisfy the needs and preferences of the persona** (including safety, health, wellbeing) over three different event timescales. Short timescale referring to the hours or days during or immediately after the event, medium timescale referring to the days or weeks after, and long timescale is more about the long-term thinking over years. An outline of these goals and timescales is detailed in **Table 9.**

Table 9. MODULE D– Goals – Key Timescales

Goals and Timescales	**Short-timescale goals**	That the setting helps the persona to cope and respond to the disruptive climate event in a way that protects their immediate safety, health, and wellbeing, while also protecting their loved ones or friends (if relevant).
	Medium-timescale goals	That the setting helps the persona to maintain or to return to their normal activities and quality of life following any disruptive events as quickly as possible (i.e. normal family life, work, recreation etc).
	Longer-timescale goals	That the setting is enhanced in the longer-term in relation to resilience and sustainability, and that the wider neighbourhood is improvement and transformed in the terms of quality of life, and a more sustainable and resilient local environment.

The persona and scenario can be used as a design tool that builds on the persona, setting, and scenario as a basis to use Future-Oriented Goals to:

- To investigate the characteristics and needs of specific building occupants or user groups;
- Identify gaps or vulnerabilities in the setting that frustrate the persona (building occupants or user groups) achieving their goals; and,
- Highlight opportunities for improving the resilience within the setting, site, and immediate environment)

Having provided a detailed overview of persona and scenario objectives, as well as the structural (modular) framework underpinning the development of the baseline personas for Minority Report, the next section will detail the outputs from the community engagement activities (Round 1) completed in each of the pilot sites; the outputs are being drawn up in the 'fleshing out' of the detailed personas and scenarios, in order to ensure a strong place-based focus (Objective 2, Section 3.3),and one that is grounded in the particular aspects of each site.

5.4 Community Engagement: Place-based Outputs Informing Persona and Scenario Development

Section 2 has detailed the methodology applied across the pilot sites as part of Round 1 Community Engagement. In the following sub-sections, this deliverable to present an overview of the results of the engagement activities in Dublin (5.4.1), Patra (5.4.2), and Wellington (5.4.3).

5.4.1 Pilot Site: Ringsend (Dublin, Ireland)

Figure 8: Photo - Minority Report – Community Engagement Workshop in Ringsend on May 14, 2025.

The community Engagement workshop took place in Ringsend in Dublin on May 14, 2025. The workshop was facilitated by two TCD research team members, and comprised the following activities:

- Mapping the Neighbourhood
- Completing individual 24-hr Daily Clocks
- Minority Report – Diaries (A full week)

General Overview of participants

In total, 15 participants engaging in some or all of the activities during the course of the afternoon. Of those that participated, 69% (11/15) were women, and 31% (4/15) were men. The age-breakdown of participants was as follows:

- Middle childhood (7-12 yrs old): 3
- Early Adulthood (21-40 years old): 2
- Middle Adulthood (41-64 years old): 9
- Older Adults (65-80+): 1

Of the 15 participants, one had a mobility issue, requiring a mobility aid (walking cane).

Most of the participants were either (a) 'born and buttered' (as one participant put it) in Ringsend, (b) frequent visitors to the area (due to previous residency and/or community connections), or (c) had recently moved to the area, with the most recent arrival being a young women in her 20s, who had moved to Ringsend from Italy and had lived in the area for 10 months.

Mapping the Neighbourhood - Ringsend

Figure 9: Workshop participant completing the 'Mapping the Neighbourhood' exercise, facilitated by TCD Researcher Tom Grey.

Figures 10 and 11 below provide an overview of key outputs from the 'Mapping the Neighbourhood' Exercise. Firstly, participants indicated what they perceived to be the boundary of the neighbourhood, while Figure 11 captures the knowledge, awareness, and experience of participants of natural disasters and climate-induced events, and their impact on the Ringsend neighbourhood.

Figure 10: Outputs from the 'Mapping the Neighbourhood' Exercise – Neighbourhood boundary.

As can be noted from the figure, the approx. neighbourhood boundary is 1km (an approximate average based on the input from participants); however, some participants highlighted a much wider boundary, including one participant who captured his sense of the neighbourhood, as he had experienced it across his entire lifetime, noting that as a child, he and his friends would frequently go as far as the Poolbeg Lighthouse (furthest right point on the map).

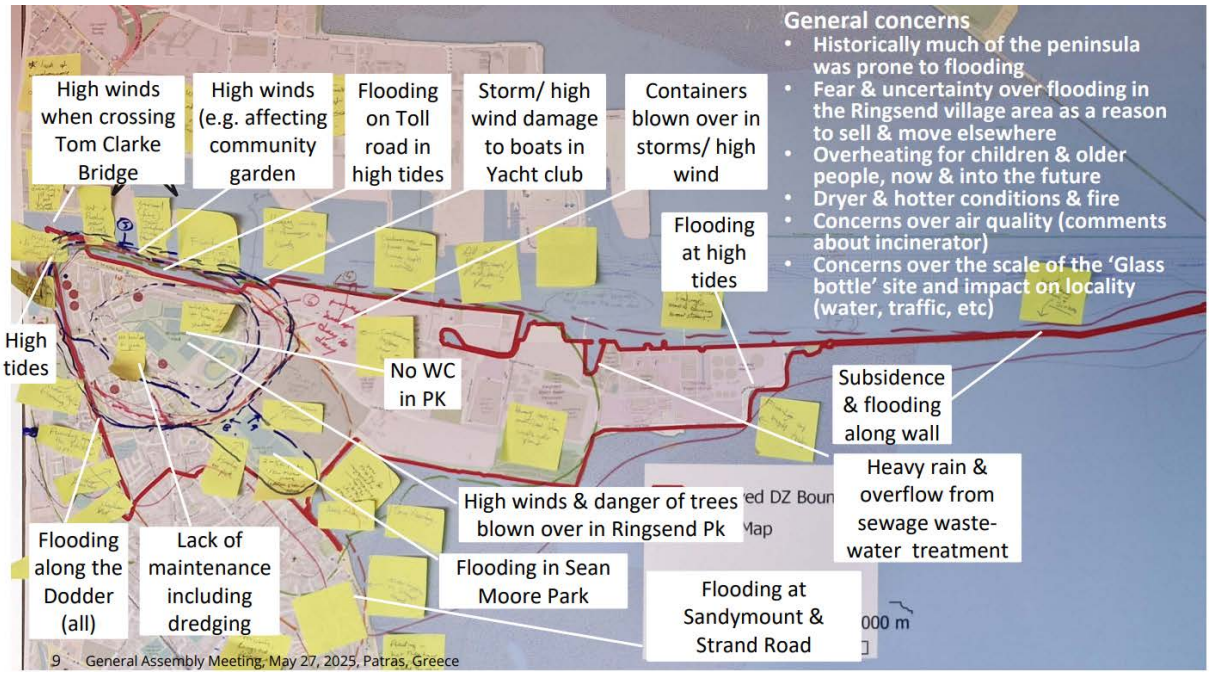


Figure 11: Key concerns and experience of climate-related events, and their impact on Ringsend.

The issue of high winds and flooding were highlighted as significant in terms of climate-related events and impacts specific to the Ringsend area. General concerns note that, historically, much of the peninsula is prone to flooding. Fear and uncertainty over flooding in Ringsend village was noted as a

key concern and reason for wanting to sell property and move elsewhere. More recently, hotter temperatures and overheating for vulnerable groups, especially children and older persons, are becoming more of an issue now, and are viewed as continuing into the future. Dryer and hotter conditions are also causing concerns related to fire. Some participants also noted concerns specific to air quality (i.e. incinerator), and finally, the potential impact on the locality (i.e. water, traffic) as a result of the scale of the 'Glass Bottle' site.

Daily Clock Exercise

Figure 12: Workshop participants completing the Daily Clock exercise in Ringsend, Dublin May 14, 2025.

All 15 participants completed a Daily Clock exercise during the workshop. Table 10 provides a breakdown of where and how much time each participant spent in a particular space / setting during a typical 24hr day. NB: Participant 11 struggled to complete the daily clock; their final percentages do not contribute to the overall average calculated for all clocks.

Table 10. Ringsend Workshop – Daily Clocks

Participant	Daily Clock – Full Breakdown (%)				
	Home	Work / School	3rd Space	Out in the Community	Other
1	50	25	8.33	16.67	0
2	83.3	0	4	10.4	0
3	50	35.4	4	6.25	4
4	42	42	4	8.33	4
5	62.5	0	12.5	25	0
6	56.3	27.1	6.25	10.4	0
7	45.8	37.5	8.33	8.33	0
8	41.7	29.2	16.7	12.5	0
9	25	33.3	8.3	8.3	25
10	45.8	20.8	12.5	12.5	8.3
11					
12	91.7	0	0	8.3	0
13	50	29.2	0	0	25
14	54.2	25	0	0	18.7
15	37.5	37.5	4.2	12.5	8.3 (travel)

Average (%)	**52.58**	**24.43**	**6.34**	**9.96**	**6.09**
Average (hours)	**12.62**	**5.86**	**1.52**	**2.39**	**1.46**

On average, participants spent a little over 50% of their day in their homes; this was followed by an average of almost 25% in either a workplace or school; of the 15 participants, 2 were retired, and 2 participants worked from home. Appendix XX includes all the completed Ringsend Daily Clocks.

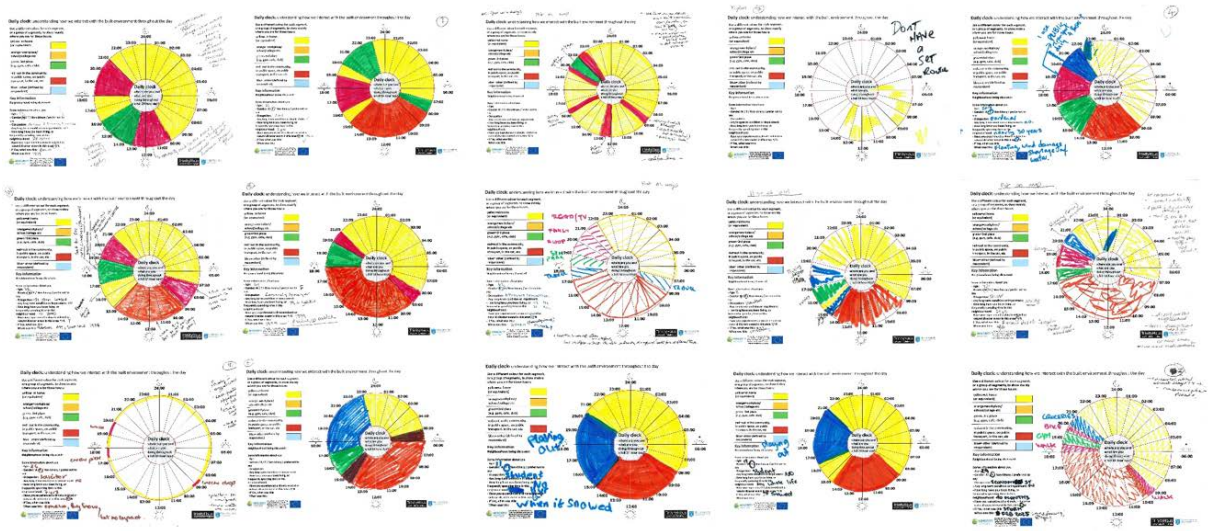


Figure 13: Minority report Community Workshop – Completed Daily Clocks, Ringsend Dublin.

Minority Report: Diaries (Full Week)

A total of 4 dairies were distributed to participants at the Ringsend Community Workshop; included in the package with the diary was a self-addressed stamped envelope; once participants completed the diary, were asked to slot it into the envelope provided and return it by post. The return rate for the diaries was 1 / 4.

5.4.2 Pilot Site: Patra (Greece)

Figure 14: Photo - Community Engagement – Morning Session, Patra university Campus

The community Engagement workshop took place on May 26, 2025, across the following two locations in Patra, Greece: University Campus (morning community engagement workshop); and a Greek Grocery Chain, (afternoon community workshop) The workshop across both locations was facilitated

by a Greek-speaking researcher (TCD) with support from Patra and Region of Western Greece colleagues who provided support to participants to complete the Daily Clocks. The workshops (in both locations) comprised the following activities:

- Mapping the Neighbourhood
- Completing individual 24-hr Daily Clocks
- Minority Report – Diaries (A full week)

General Overview of participants

Overall, both workshops were very well-attended, with many participants engaging in some or all of the activities introduced to them. That said, it is not possible to provide an accurate breakdown of the total number of participants across both workshops. The most accurate reflection is captured in the total number of individuals who completed the Daily Clock exercise – 68. However, a significant number of the daily clocks had to be excluded due to (a) being illegible, rendering general information about the participant themselves difficult or impossible to decipher; or (b) the clocks themselves were filled in incorrectly, and it was not possible for the facilitator to determine which colour represented which space across the 24hr cycle. As a result, a total of 27 participants are not captured in the general overview of participants below; the final number is based on the 41 completed daily clocks, where it was possible to gather some/all participant information. Taking this into account, of the 41 total participants (as represented by the completed Daily Clocks across both locations), 42% (15/36) were men, and 58% (21/36) were women. 5 of the participants did not include information about their gender, accounting for the lower overall numbers for gender (out of 36, and not 41).

The age-breakdown of participants (out of 41 participants, 3 did not include age) was as follows:

- Adolescent (13-20 years old) 12
- Early Adulthood (21-40 years old): 12
- Middle Adulthood (41-64 years old): 7
- Older Adults (65-80+): 7

The majority of adolescent and early adulthood participants represent students who attend the University of Patra (central to the pilot site for the city), while the majority of middle and older adults represent individuals from the larger community and who were engaged with during the afternoon session while on their way to or from buying their groceries. The youngest participants were aged 18, with the oldest participant being a 78-year-old man.

Mapping the Neighbourhood – Patra (University Campus and surrounding areas)

Figure 15: Mapping the neighbourhood with a participant during the afternoon engagement session, May 26, 2025.

The maps below provide an overview of key outputs from the 'Mapping the Neighbourhood' Exercise, across both the morning (Figure 16) and afternoon (Figure 17) engagement sessions. Due to the volume of participants that were present, it was not possible to identify an overall neighbourhood boundary; however, the mapping exercise facilitated good discussions with residents and students regarding their experiences of Patra, both in terms of normal, everyday activities, and during recent (and past) climate events. The key aspects are summarised below.

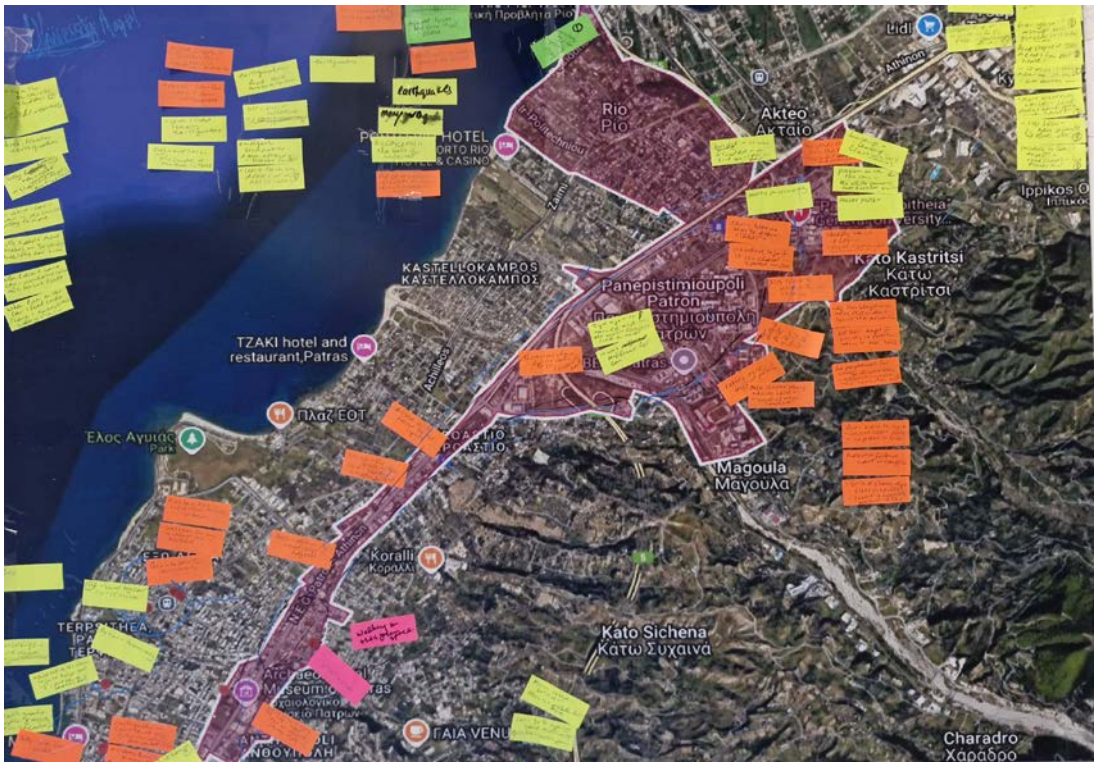


Figure 16: Patras map 1

Figure 17: Patras map 2

Participants across both workshops noted the frequent heavy rains as an issue, with university students highlighting that the university campus will experience frequent and prolonged flooding – with one participant describing 'lakes' on campus, and that there is nowhere for the water to go, where there is closed space. In addition, several students highlighted that during heavy rains, buildings will experience leaks, making it difficult to attend classes. Finally, one student shared an experience in 2023, of having to put sandbags around the entrance to a building to stop water from flowing in. Beyond the campus, participants noted that flooding is an issue for the city of Patra.

Fires were also noted by several participants as a significant concern and issue. One participant noted having a fear of fire, of it being very close; another participant shared an experience of a recent wildfire, and proximity to it, due to living outside of the city, and closer to nature. In particular, this participant reflected on the speed of the fire spreading, noting that "you can't imagine how quickly it moves; within 10 mins, it was just a kilometre away. Only the fields got burned, so we didn't have a problem with the house; there were problems with bees and insects (dying) – and some sheep. But we were protected".

Participants noted that Patra is not an easy city to get around in, unless you have a car. Students stated that there were not enough buses, and when you could get on one, it was cramped, and not pleasant. Furthermore, for pedestrians, access isn't very good. One participant shared that in their view, it is very difficult to walk around in the city if you are an older person; someone in a wheelchair would also struggle – space in the city makes it difficult. Overall, the perception from participants is one that views pedestrian access in Patra as challenging, and difficult – whether able-bodied or not.

During one discussion, it was felt that there were no evacuation plans for the city. One participant shared that apartments are very tall/high, and the roads are very narrow – it is difficult for firefighters or emergency vehicles to get through in a situation where someone would need help. Even in places where there are ramps (for mobility and for wheelchair users), they can often be blocked as cars will park in the way.

Finally, participants also highlighted strong winds, and earthquakes as key concerns.

Daily Clock Exercise

Figure 18: Workshop participants completing the Daily Clock exercise in Patra during the morning session (University Campus) and the afternoon session (Grocery Store).

Table 11 provides a breakdown of where and how much time each participant spent in a particular space / setting during a typical 24hr day.

Table 11. Patra breakdown of times

Participant	Daily Clock – Full Breakdown (%)				
	Home	Work / School	3rd Space	Out in the Community	Other
1	63	25	4	8	0
2	34	29	8	17	4
3	46	25	0	29	0
4	46	29	0	8	17
5	38	42	0	25	0
6	46	46	0	8	0
7	58	21	13	8	0
8	48	33	8	8	0
9	38	50	4	8	4
10	50	25	13	13	0
11	21	25	33	0	25
12	46	17	8	8	21
13	33	33	21	13	0
14	54	33	10	4	0
15	46	25	17	8	4
16	46	25	16	16	0
17	46	23	8	4	17
18	63	21	0	8	8
19	54	0	13	8	25
20	42	33	8	4	21
21	46	33	8	17	0
22	33	25	8	8	21
23	50	21	8	21	0
24	66	17	0	17	0
25	58	31	0	17	4
26	50	38	4	8	0
27	46	33	4	4	0
28	92	0	8	0	0
29	50	0	8	0	42
30	83	0	0	17	0
31	58	29	4	13	4
32	71	8	4	8	0
33	33	25	4	21	17
34	50	25	8	4	17
35	33	25	8	4	29
36	42	0	0	37	21
37	71	0	17	4	8
38	50	25	17	8	0
39	54	33	8	4	0
40	79	0	13	8	0
41	79	0	13	8	0
Average (%)	**51.51**	**22.63**	**8**	**10.56**	**7.54**
Average (hours)	**12.36**	**5.43**	**1.92**	**2.53**	**1.80**

On average, participants spent a little over 50% of their day in their homes; this was followed by an average of 22% in either a workplace or school.

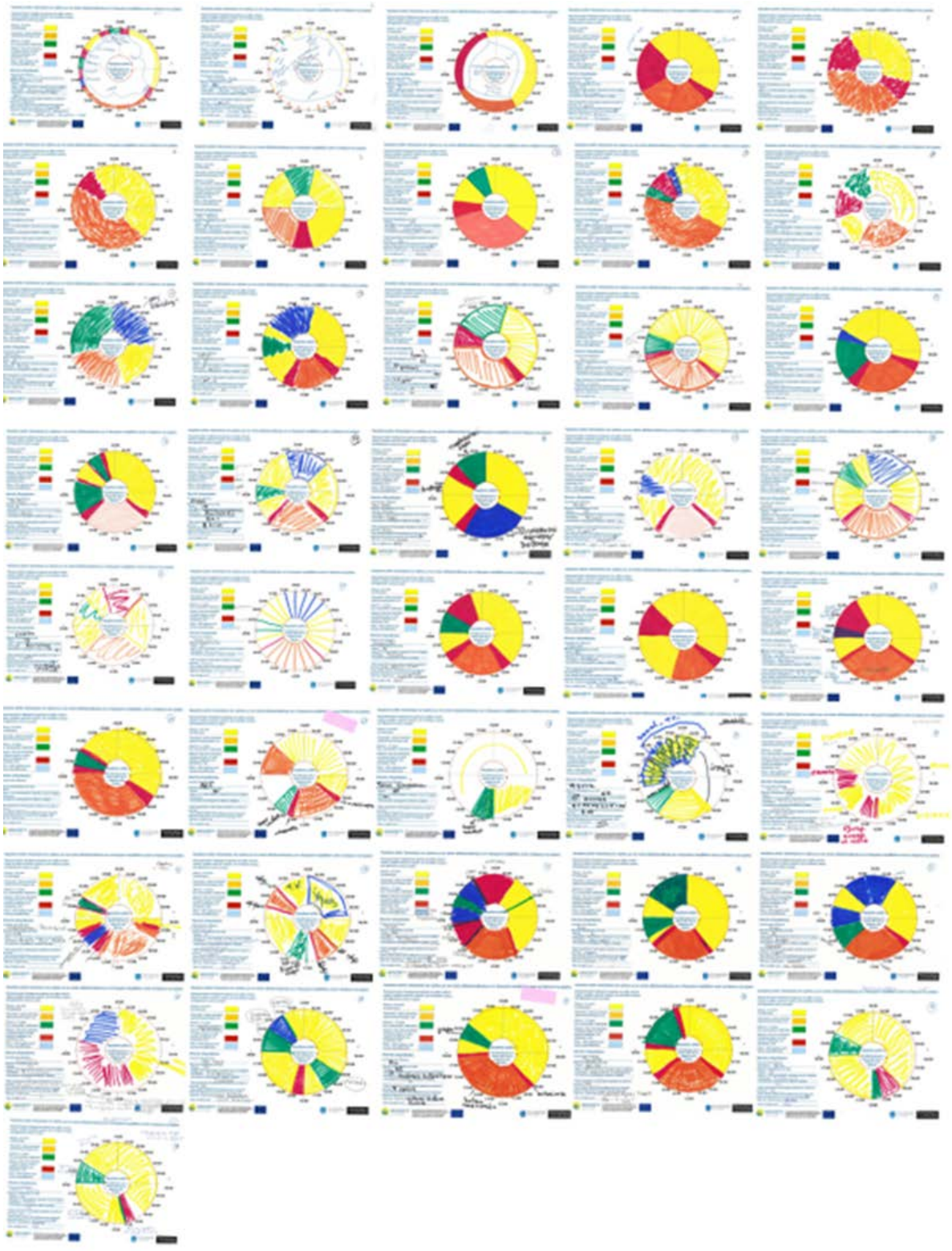


Figure 19: Minority report Community Workshop – Completed Daily Clocks, Patra (Greece).

Minority Report: Diaries (Full Week)

A total of 3 dairies were distributed to participants – two were given to participants at the University-based engagement session, and 1 was given to a participant at the afternoon session. All participants were invited to contact a researcher via an email included in the diary package, for instructions on how to return the completed diaries. The return rate for the diaries from the Patra engagement activity was 0/3.

5.4.3 Pilot Site: Wellington, New Zealand

The Wellington Community Engagement activities were subject to ethical approval; the application and process was only completed in October 2025[5], with the community engagement workshop taking place on November 1st. While TCD has received all the workshop material, it has not been possible to complete the detailed analysis, nor to finalize the baseline personas for Wellington in time for the deliverable submission. Following submission of D1.2, TCD will complete the analysis of the Wellington community engagement outputs and prepare the master matrix and baseline personas for pilot site.

5.5 Persona and Scenario Master Matrix

5.5.1 Master Matrix

Drawing together all the information detailed across Section 3-5, **Appendix C** provides a structured overview of the persona and scenario matrix. It includes key details across each of the modules; when taken together, this information forms the foundation for the comprehensive persona narrative and scenario presented in Section 5.6.

For each of Ringsend and Patra, a total of 10 baseline personas are outlined in the matrix; efforts have been made to ensure a diverse range of personas, across different ages, genders, and life experiences – drawing on the information and details from the community engagement activities as required, to ensure a person-centred and place-based approach to the overall persona and scenario development.

5.6 Detailed Personas and Scenarios

5.6.1 Ringsend Personas and Scenarios

Table 12 introduces each of the Ringsend Personas and Scenarios that have been developed for Ringsend, while Appendix D comprises the detailed description of each.

[5] It should be noted that the request to extend the submission of D2.1 from September 2025 to November 2025 was made with the understanding that ethical approval was due to be given in June 2025, allowing for the community engagement activities to be completed before the end of September 2025; this timeline would have provided adequate time for the processing of the workshop outputs, to feed into the development of the 10 baseline personas for Wellington, and for them to be included in D2.1 for the end of November submission. However, as ethics approval was only secured in October, this pushed the delivery of the community workshops into November, and there has not been sufficient time to finalize this aspect of the work for Wellington. For the purposes of D4.3 a 'draft' set of skeletal persona information has been provided; subsequent to the final personas for Wellington being completed, TCD will follow-up with UoC to update the persona set, to ensure it aligns with the final versions, drawing on the community engagement outputs. This is necessary to ensure the personas are addressing the objectives, as laid out in section 5.2.

Table 12: Ringsend Personas and Scenarios: Outline

Name	Age	Ethnicity	Health	Dwelling	Event
Mary	92	White-Irish	Dementia; uses a rollator.	Ground floor of three-storey, supported housing complex for older people	Storm, and flooding
Claire	17	White-Irish	Autism; no other health issues.	Community Centre	Heatwave
James	68	White-Irish	Blind; no other health issues.	Apartment; 3rd floor (with balcony)	Flooding
Stephen	42	Polish	No issues	Public Realm (responding during an event); lives in a terrace apartment.	Flooding
Maeve	33	White-Irish	No issues; 7 months pregnant.	Two-bedroom terrace home	Windstorm
Patrick	29	Black-Irish	No issues	Restaurant; lives in an apartment block – 2nd floor.	Storm Éowyn
Sarah	26	Spanish	Deaf; no other health issues.	AirBnB (visiting Dublin on a holiday)	Windstorm
Paul	20	White-Irish	Wheelchair user; no other health issues	Public Realm; lives in semi-detached 4 bedroom, his bedroom is on the ground floor and is fully accessible.	Storm Éowyn
Eve	12	White-Irish	Broken leg; no other health issues	Public Realm; School. Lives on the ground floor of a 4-floor apartment block.	Severe Wind gusts.
Liam	4	Irish-Chinese	No issues	Detached home	Severe wind; power outage for days.

5.6.2 Patra Personas and Scenarios

Similarly to section 5.6.1, Table 13 introduces each of the Patra Personas and Scenarios that have been developed for the pilot site, while Appendix E comprises the detailed description of each.

Table 13: Patra Personas and Scenarios: Outline

Name	Age	Ethnicity	Health	Dwelling	Event
Petro	23	Greek	No issues; gets sick more frequently because of damp.	Lives in an apartment with other students in Patra	Flooding/Heavy Rains

Name	Age	Ethnicity	Health	Dwelling	Event
Maria	60	Greek	No issues	Private home; concern for elderly parents that live on the outskirts of Patra	Wildfire
Angeliki	72	Greek	No issues	Apartment, third floor; city-wide.	Smoke
Sarah	26	Spanish	Deaf; otherwise, no health issues	AirBnB	Severe winds
Pavlo	20	Greek	Wheelchair user; no other health issues	Student accommodation; on campus.	Flooding
Stefano	42	Greek	No health issues	Responding during emergency – flooding University of Patra	Flooding
Kostadina	33	Greek	No health issues; 7-months pregnant	Two-bedroom home	Windstorm
Eva	12	Greek	No issues; broken leg and uses crutches to get around.	Public Realm; School. Lives on the ground floor of a 4-floor apartment block.	Severe winds
Leonidas	4	Greek-Nigerian	No issues	Detached home	Windstorms

6 Conclusion and Next Steps

6.1 Conclusion

As described in the introduction and methodology section, this deliverable has been underpinned by a people-centred and place-based approach. An overall framework was developed to structure both the indicators and personas, and to provide an integrated approach to investigating how human characteristics, community, place, and disruptive event types combine to shape human behaviour in an emergency. This framework as described in Section 4.2 is broken down into four main categories including the **Person**, which ranges from core attributes (e.g. Age, Gender) to housing situation, social and place connection. The second category, **Place,** includes overall location**,** setting related Issues, location and proximity to hazard, site conditions, and more. The third category is **Scenario**, and refers the event type, severity, time, and level of impact on the setting. The final category is **Future-oriented goals and timescale and** refers to the kind of resilience-based interventions that the personas want over a short, medium, or long timescale.

Building on this framework, the indicators described in Section 4 primarily draw on the first category, with some references to the second category through build environment related indicators. The personas and scenarios contained in Section 5 draw on all four categories, as they present a more complete, person-centred, and place-specific approach to resilience, the pilot sites, and in response to a specific disruptive event.

While deliverable D1.2 'Characterisation of Stakeholder Behaviour & Identification of KPIs to Model Behaviour' as set out in the Grant Agreement primarily focussed on the indicators, it became apparent that the persona development and individual personas should be well-integrated with the indicators. As a result, this deliverable provides a comprehensive framework where the first layer contains a set of 'behaviour-built environment-systems' indicators, while the second layer takes these further and through a modular persona matrix, develops detailed, context relevant personas. Overall, this approach greatly supports the people-centred focus of Minority Report and provides a sound basis for the development of relevant place-based urban resilience tools as the project progresses.

6.2 Next steps

While D1.2 contains the complete deliverable (with integrated personas), it is intended to further develop these outputs as part of the second round of engagement in Minority Report as follows:

- **Refining the personas**: In the second-round of engagement activities the personas will be presented to community members for further refinement and contextualisation.
- **Working with specific groups**: The second-round of engagement will involve discussions with key representative groups in each pilot site such as people with disabilities, older persons, and children. A questionnaire is being developed for circulation to these groups to ascertain their perspective on climate related disruptive events and the impact these have on their members. This process will also be used to refine personas relevant to the specific groups (i.e. engagement with visual impairment groups to refine persona who is blind).
- **Engaging with end-users**: As described in Section 5, the personas have a range of potential uses, including those relevant to the end-users of the future Minority Report tools. For example, where the personas can act as a design tool to identify key issues, challenges and measures to improve resilience; or for investigating the characteristics and needs of specific users. In this context, as part of the end-user workshops in round two, the role of the Minority Report personas for planners, engineers, architects, and others, will be discussed to determine how they might be further integrated or used as part of the Minority Report tools and processes.

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8 Appendices

8.1 Protocols

Minority Report is dedicated to enhancing the resilience of vulnerable urban populations and their built environments against disruptive climate events. As climate change accelerates, the frequency and intensity of events such as flash floods, forest fires, and storm force winds increase, disproportionately affecting the most vulnerable communities.

Our mission is to leverage cutting-edge technologies and collaborative approaches to safeguard these populations and their homes. To achieve this, Minority Report will develop a people-centric technology platform for a functional, environmentally, and economically sustainable circular value chain for the construction and renovation of built environments, enabling the development of dedicated strategies to improve climate change mitigation and adaptation (heat waves, category 5 storms, wildfire) and disaster resilience (floods, earthquakes, etc.), that combine building adaptation and renovation at the city and building scale.

As part of the development of this platform, Minority Report will apply a co-creation framework across three pilot sites representing three distinct climatic areas, situated in Dublin, Ireland; Patras, Greece; and Wellington, New Zealand. A series of engagement activities will be conducted across all three sites during the 3.5 years of the project to ensure that the perspective, needs, and knowledge of diverse stakeholders across a wide range of sectors is integrated into the project.

This document provides an overview of the protocols for the following engagement activities (Round 1). They apply to T1.3, as well as the overall engagement process.

- Mapping the Neighbourhood
- Daily Clock Canvas – Capturing the Lived Experience of How and Where People Spend their Time in the Built Environment

Protocol 1: Mapping the Neighbourhood

Purpose

Neighbourhoods are important social and spatial geographical units that impact a range of wellbeing, sustainability, and resilience issues. And while the physical boundary of a 'neighbourhood' varies depending on a person's perspective, circumstances, local knowledge, or other factors, there is often a significant overlap in terms of neighbourhood delineation when people are asked to indicate boundaries. Furthermore, key community focal points, natural and built environment features, and social or cultural characteristics are often associated with specific neighbourhoods. Therefore, understanding the approximate boundary and the overall urban structure of a neighbourhood is an important part of community resilience.

In this context, an approximate mapping of any neighbourhoods (along with their boundaries and key urban structure features) will be conducted in each demo site to act as a foundation for subsequent work including the mapping of specific local hazards and mitigation opportunities in each demo, or the contextualizing and place-based focus of the personas.

NB - this exercise will also inform, locate (or place), and contextualize any discussion around the daily clocks.

Objectives

With the help of a facilitator, participants (local community members) will be asked to:

1. Identify key neighbourhoods within the demo site
2. Draw what they consider to be the approximate boundary of the neighbourhood for them.
3. Describe the main parts or spatial components within each neighbourhood (i.e. River, railway line, park, urban quarter, business park, campus, etc)

Mapping Methodology: in person, focus group

Setting: in-person focus group (e.g. an office meeting room, or café, community centre).

Number of participants: approx. 10 participants

1. Provide large scale printed map of the demo site
2. Provide post-its and ask people to write the name of the neighbourhood and place the post-it on where they perceive is the centre of that neighbourhood.
3. Provide pins and string and ask people to mark out what they think is the boundary of that neighbourhood
4. Provide post-its and ask people to identify key features, or the main parts of the neighbourhood (i.e. How is it broken up)

Findings from this exercise will be used to:

a) Inform research into the **behavior of different citizen stakeholders**, and their interactions with the built environment under stress, because of, and in response to, climate related hazards and events across a range of common urban settings.

d) Underpin the development of selected design **personas and scenarios** that are being developed to provide a realistic and contextually appropriate narrative account of key user experiences/perspectives (persona) in relation to, firstly the everyday (normal), and then acute situations (an event) that occur in specific built environment settings (scenarios). These personas will represent a cross section of the community in each demo site.

Protocol 2: Daily Clock Canvas – Capturing the Lived Experience of How and Where People Spend their Time in the Built Environment

Purpose

The Daily Activity Clock[6] activity illustrates all the different kinds of activities carried out in one day; in this way, the activity provides a participatory way to explore the activities and tasks that individuals do during an average day. As a method, it has been used to look at workloads between different groups of people in the community. For Minority Report, the daily clock will be adapted to create a visual record of where and how participants spend time in the built environment (over a 24hr period).

For this project, the Daily clock will be used in the following ways:

1. Observational – single point of time reflecting on the present; and

[6] Adapted from https://waterforwomen.uts.edu.au/qualkit/tools/clock/

2. Comparative – single point of time comparing different types of people.

Information captured in the daily clock exercise will contribute to the development of personas and scenarios (T1.3B) centered around the real-life experience and knowledge of individuals who are intimately connected with their neighbourhoods, settings, etc.

Objectives

The completed daily clocks will be used to drill into the spatial scales and ask the group for more details regarding the experiences in the places where they spend their time and reflect on how the built environment supports them (A) during regular conditions, and (B) during an extreme or emergency event.

Daily Clock Methodology - <u>in person</u>, focus group

Setting: in-person focus group (e.g. an office meeting room, or café, community centre).

Number of participants: approx. 10 participants

With the support a facilitator, participants will be guided to complete their daily clocks, as follows:

1. The facilitator will Introduce the topic of a daily clock – To ensure that participants understand, the facilitator will provide an example.
2. Each participant will be provided with a blank Daily Clock canvas to complete. Starting with when participants wake up, participants mark the start and end of time spent in a particular space / place; participants will colour in section of clock (NB – each space / place will have a designated colour so that comparisons across the clocks are easier to see and reflect on).
3. As part of completing their clocks, participants will be invited to include any relevant information related to their activity / time spent in that space.
4. Once the clocks are completed, each participant will describe them with the wider group.
5. During this time, the facilitator will take notes and prompt participants for more detail, based on feedback. Questions include:
    - Bearing in mind the spaces and places you've indicated in your Daily Clock, how well do these support your activities on a daily basis (i.e. access, usability, comfort, etc.).
    - How does the time-of-day impact on your perception and use of the places and spaces you've highlighted in your Daily Clock?
    - Thinking about the neighbourhood where you spend a lot of time, outline a few key types of climate and natural disaster events that you believe would have a serious impact on this neighbourhood.
    - Taking one such event and its impact, consider the following:
        - Consider the impacts on the wider neighbourhood (i.e. travel, access to health services, schools, etc.)
        - Taking two of the settings where the Daily Clock shows you spending most of your time, consider the impacts of this event on these two settings/places/spaces (including site, key spaces within a building).
        - At the wider neighbourhood level, or at the two selected settings, consider the impacts of this event on environmental conditions (i.e. air quality, thermal comfort) building components and systems, and various technologies.
        - Any other issues that come to mind, in relation to the places/spaces, and the emergency events?

Findings from this exercise will be used to:

a) Support **overall engagement** in the project and ensure diverse community representation within the three demo sites.

b) Inform research into the **behaviour of different citizen stakeholders**, and their interactions with the built environment under stress, because of, and in response to, climate related hazards and events across a range of common urban settings.

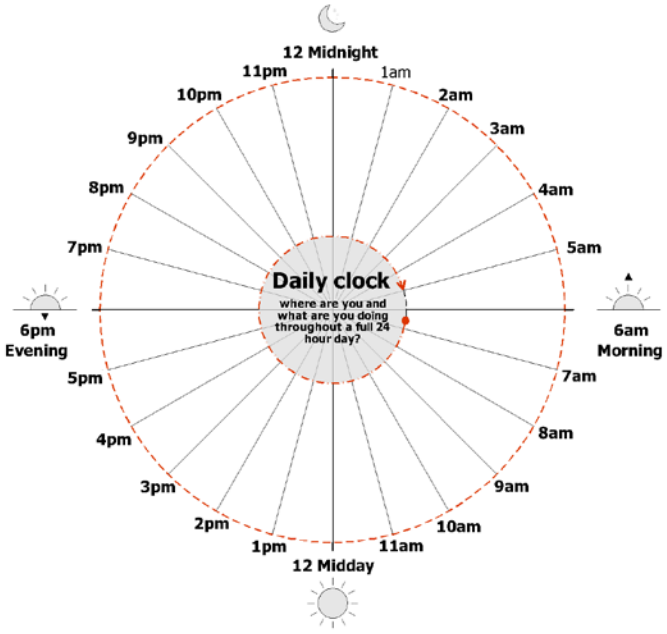
c) Underpin the development of selected design **personas and scenarios** that are being developed to provide a realistic and contextually appropriate narrative account of key user experiences/perspectives (persona) in relation to, firstly the everyday (normal), and then acute situations (an event) that occur in specific built environment settings (scenarios). These personas will represent a cross section of the community in each demo site.

Daily Clock Canvas Template

Daily clock: how we interact with the built environment throughout the day

Use a different colour for each segment, or a group of segments, to show mainly where you are for those hours:

- yellow=at home (or equivalent).....
- orange=workplace/ school/college etc.....
- green=3rd place (e.g. gym, cafe).....
- red=out in the community, in public space, on public transport, in the car, etc...
- blue= other (defined by respondent).....



Key information

Neighbourhood being discussed:

Some information about you

- Age:
- Gender: M / F / Non-binary / prefer not to say
- Occupation:
- Any long-term condition or impairment:
- How long have you been living, or frequently spending time in this neighbourhood:
- Have you experienced a climate-related or natural disaster event in this area: Y/ N
- If Yes, what was this:
  When was this:

Follow-up questions

1. Bearing in mind the spaces and places you've indicated in your Daily Clock, how well do these support your activities on a daily basis (i.e. access, usability, comfort, etc.).

2. How does the time-of-day impact on your perception and use of the places and spaces you've highlighted in your Daily Clock?

3. Thinking about the neighbourhood where you spend a lot of time, outline a few key types of climate and natural disaster events that you believe would have a serious impact on this neighbourhood.

4. Taking one such event and its impact, consider the following:
a) Consider the impacts on the wider neighbourhood (i.e. travel, access to health services, schools, etc.)

b) Taking two of the settings where the Daily Clock shows you spending most of your time, consider the impacts of this event on these two settings/places/spaces (including site, key spaces within a building).

c) At the wider neighbourhood level, or at the two selected settings, consider the impacts of this event on environmental conditions (i.e. air quality, thermal comfort) building components and systems, and various technologies.

5. Any other issues that come to mind, in relation to the places/spaces, and the emergency events?

8.2 Matrix – Ringsend (Dublin, Ireland)

				P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
				Mary 92, cognitive impairment (dementia)	**Claire** (17, autistic)	**James** 68 (recently retired, blind)	**Stephen** 42 (responder, Polish, married)	**Maeve** 33 (pregnant, 7 months)	**Patrick** 29 (Black-Irish, married; restaurant owner.	**Sarah** 26 (visiting Dublin; from Spain)	**Paul** (20, attends National College of Ireland)	**Eve** (12, 6th class), has a broken leg)	**Liam** (4, in creche, school next year)
A) Person													
1. Core Attributes	**Age**	**Infancy**[7] 0-2 years Pre-school **3-6 years**											4 years old
		Middle Childhood 7-12years										12 years old	
		Adolescence 13-20 years			17 years old						2o years old		
		Early Adulthood[8] 21-40 years **Middle Adulthood** 41-65 years					42 years old	33 years old	29 years old	26 years old			
		Older Adults[9] 65 – 80+ years	young-old			68 yrs old							
			middle-old										
			old-old	92 years old									
	Sexual Orientation (Irish CSO)	Straight or heterosexual											
		Gay or lesbian											
		Bisexual											
	Gender	Man	Cis										
			Trans			Man	Man		Man		Man		Man (boy)
		Woman	Cis	Woman	Woman (girl)			Woman		Woman		Woman (girl)	
			Trans										
		Non-Binary											
	Race / Ethnicity	Dublin (Ringsend)	White-Irish		White - Irish	White - Irish	White - Irish		White - Irish			White - Irish	White - Irish	
			Black-Irish							Black-Irish				
			Irish Traveler / Roma											
			Other White Background							White - Spanish				

[7] We are going to bring together 0-2 and 2-6 as an overall life-stage.

[8] We are going to bring together 20-40 and 40-65 as an overall life-stage.

[9] This age category can be further broken down (qualitatively) into young old, middle-old, and old-old for the purposes of persona development.

					P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
					Mary 92, cognitive impairment (dementia)	**Claire** (17, autistic)	**James** 68 (recently retired, blind)	**Stephen** 42 (responder, Polish, married)	**Maeve** 33 (pregnant, 7 months)	**Patrick** 29 (Black-Irish, married; restaurant owner.	**Sarah** 26 (visiting Dublin; from Spain)	**Paul** (20, attends National College of Ireland)	**Eve** (12, 6th class), has a broken leg)	**Liam** (4, in creche, school next year)
			Other Background					White - Polish						Mixed– Irish dad; Chinese Mom.
2. Human Functions and Characteristics	**Physical functions**	Without Impairment				Without Impairment	Without impairment	Without impairment	Without impairment	Without impairment	Without impairment		Without impairment	Without impairment
		Mild / Moderate Impairment			Moderate (see health status)									
		Severe Impairment										Wheelchair user		
	Sensory Functions	Eyesight					Blind							
		Hearing									Deaf			
	Cognitive	Dementia			Early dementia									
	Immunological (not currently used)													
	Neurological	Autism				Autism								
	Age-related, and general health Status	Heath Condition	None			None	None	None	None	None	None	None		None
			Chronic											
			Acute						Pregnancy				Broken leg	
		Frailty	L1 (FS1-3)			L1	L1	L1	L1	L1	L1	L1		L1
			L2 (FS 4-6)		L2								L2	
			L3 (FS 7-9)											
		Pregnancy	Early Term											
			Mid-Term											
			Late-Term						Late-term					
		N/A						N/A			N/A			
	Implications for the persona (i.e. due to one or combination of above.				Uses rollator when out in community; disorientation because of dementia.	Sensory Overload (heat, noise)	Uses a white cane to navigate and move about in community.	N/A	Physical challenges – swollen feet, back pain, poor sleep patterns	N/A	challenges with visual communication, safety, and navigation	Reliant on wheelchair to move about in community; accessibility key.		N/A
3. Family & Carer	**Marital Status**	Single				Single					Single	Single		
		Married						Married	Married	Married				
		Divorced												
		Widowed			Widowed		Widowed							
		N/A											N/A	N/A
	Parental Status				10 children (all grown)	N/A	No children	2 children (12 and 7)	Pregnant with first child	N/A	N/A	N/A	N/A	N/A

				P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
				Mary 92, cognitive impairment (dementia)	**Claire** (17, autistic)	**James** 68 (recently retired, blind)	**Stephen** 42 (responder, Polish, married)	**Maeve** 33 (pregnant, 7 months)	**Patrick** 29 (Black-Irish, married; restaurant owner.	**Sarah** 26 (visiting Dublin; from Spain)	**Paul** (20, attends National College of Ireland)	**Eve** (12, 6th class), has a broken leg)	**Liam** (4, in creche, school next year)
	Family Relationships			Most of her kids live near her.	Lives with parents and younger sister.	Lives alone	Married; wife and 2 children	Married	Married; 1-yr old.	N/A	Originally from Laois. Moved to Dublin for school. Family – parents, 5 brothers, all back home.	Lives with her mom. Dad lives in Stoneybatter.	Lives with his mom and dad.
	Care-giving responsibilities												
4. SES	**Education**	Third Level				Third Level	Third Level	Third Level	Third Level	Third Level (Recent Graduate)	Third Level (Attending)	6th class	
		Secondary		Secondary (highest achieved)	Secondary (going into Leaving Cert year)								
		Primary										Primary Level 6th class	
		Not Applicable											N/A (creche)
	Employment Statues	Full-Time					Full-Time (First Responder)	Full-Time (about to go on maternity leave)	Full-time (business owner)				
		Part-Time									Part-Time		
		Unemployed								Unemployed			
		Semi-retired											
		Retired		Retired		Retired							
		Student			Student						Student	Student	
		Volunteering			Volunteer								
		Not Applicable											N/A
5. Housing Situation	**Housing Status**	Private/owner				Private Owner (1-bedroom flat)		Private Owner (2-bedroom house)					
		Renter	Public Housing	Local Authority tenant (sheltered housing for older people)									
			Housing Association										
			Private Rent Sector				Private Rent		Private Rent		Renting – shared accommodation with 3 other students		
			Co-Operative										
		Homeless	In shelter										

				P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
				Mary 92, cognitive impairment (dementia)	**Claire** (17, autistic)	**James** 68 (recently retired, blind)	**Stephen** 42 (responder, Polish, married)	**Maeve** 33 (pregnant, 7 months)	**Patrick** 29 (Black-Irish, married; restaurant owner.	**Sarah** 26 (visiting Dublin; from Spain)	**Paul** (20, attends National College of Ireland)	**Eve** (12, 6th class), has a broken leg)	**Liam** (4, in creche, school next year)
			In streets										
			Other (e.g. squatting)										
		Other (See Settings)	Hotel										
			Hostel										
			AirBnB							AirBnB			
		N/A			N/A							N/A	N/A
	Household/Family type/size	Nuclear family					Lives with wife, and two children; together 25 yrs	Lives with her partner, together 10 years	Married, with 1 year old				Nuclear family
		Single parent or guardian with children										Lives with her mom (parents divorced)	
		Shared Living (e.g. shared rental)									Single person, living with 3 other people		
		Single person (living alone)		Single person, living alone		Single person, living alone (widower)							
		Multi-generational (e.g. 3 generations living together)			Lives with parents, sister and grandmother								
	Dwelling type	Detached	Single Two Storey 3 or more storeys				3-bedroom Terrace						Detached home
		Semi-Detached	Single Two Storey 3 or more storeys								Semi-Detached – 4 bedroom (his bedroom on the ground floor – fully accessible).		
		Terrace	Single Two Storey 3 or more storeys		3-storey terrace home (converted attic)			2-bedroom Terrace home					
		Apartment / Duplex	Total no. of floors	Apartment Complex / 3 floors		5 floors			Apartment Block (4 floors)			Apartment Block – 4 floors,	

				P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
				Mary 92, cognitive impairment (dementia)	**Claire** (17, autistic)	**James** 68 (recently retired, blind)	**Stephen** 42 (responder, Polish, married)	**Maeve** 33 (pregnant, 7 months)	**Patrick** 29 (Black-Irish, married; restaurant owner.	**Sarah** 26 (visiting Dublin; from Spain)	**Paul** (20, attends National College of Ireland)	**Eve** (12, 6th class), has a broken leg)	**Liam** (4, in creche, school next year)
			floor lived on)	Ground Floor		1-bedflat on 3rd floor; has balcony			– 2 bed on 2nd floor.			living on ground floor.	
			Lift (Y/N)	N/A		Y			Y			N/A	
		Other (See Settings)	Hotel Hostel AirBnB							Airbnb			
6. Social and Place Connection	**Social Connection**	Strength of Relationship within community	High	High	High		High	High	High			High	High
			Medium			Medium							
			Low							Low			
		Membership of relevant organisations (social, cultural, political, etc)				Member of Ringsend ‘Men’s shed’	Member of Irish Polish Society				Student association;		N/A
	Place Attachment	Level of Attachment to general locality	High	High	High	High		High	High			High	High
			Medium								Medium		
			Low				Low			Low			
		Level of attachment to specific location or building (e.g. home, farm, shop)	High	High	High	High		High	High		High	High	High
			Medium										
			Low				Low			Low			
		Level of Fear of leaving due to security/ safety/need to protect	High					High	High	High			
			Medium			Medium							
			Low	Low	Low		Low				Low	Low	Low
7. Knowledge, awareness and experience	**Level of Local knowledge of terrain, natural conditions (e.g., traditional, ecological knowledge)**	High		High	High			High	High				
		Medium				Medium					Medium		
		Low					Low			Low		Low	Low
	Level of Knowledge of safety or evacuation plans or procedures	High			High	High	High		High		High	High	
		Medium						Medium					
		Low		Low						Low			Low
	Level of Awareness of key hazards and appropriate response	High				High	high		High				
		Medium			Medium						Medium	Medium	
		Low		Low				Low		Low			Low
	Level of Actual experience	Yes		Yes		Yes	Yes		Yes			Yes	
		No			No			No		No	No		No

				P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
				Mary 92, cognitive impairment (dementia)	**Claire** (17, autistic)	**James** **68 (recently retired, blind)**	**Stephen** **42 (responder, Polish, married)**	**Maeve** **33 (pregnant, 7 months)**	**Patrick** **29 (Black-Irish, married; restaurant owner.**	**Sarah** **26 (visiting Dublin; from Spain)**	**Paul** **(20, attends National College of Ireland)**	**Eve** **(12, 6th class), has a broken leg)**	**Liam** **(4, in creche, school next year)**
B) Place													
8. Overall Location	**Country**			Ireland	Ireland	Ireland	Ireland	Ireland	Ireland	Ireland	Ireland	Ireland	Ireland
	City or Town			Dublin	Dublin	Dublin	Dublin	Dublin	Dublin	Dublin	Dublin	Dublin	Dublin
	District or General Area			Ringsend	Ringsend	Ringsend	Ringsend	Ringsend	Ringsend	Ringsend	Ringsend	Ringsend	Ringsend
	Name of Neighbourhood			Ringsend	Ringsend	Ringsend	Ringsend	Ringsend	Ringsend	Ringsend	Ringsend	Ringsend	Ringsend
	Specific Location in Neighbourhood			Liffey Court	Community Centre	Waterside Apartments	Cambridge Avenue	Pembrooke Cottages	Ringsend Rd	AirBnB	York Road	Fairview Ave	Fitzwilliam Quay
9. Setting	**Residential**	Standard				Standard	Standard	Standard		Standard	Standard (Wheelchair Accessible)		
		Supported (high- & low-level support)		Support; Housing for older persons									
	Long-term residential care	Older Persons											
		People with Disabilities											
		Children											
	Healthcare	Hospital											
		Primary Care Settings											
		GPs											
	Childcare	Pre-School (creche)											Creche
	Education	Primary										Primary	
		Secondary											
		Third											
	Community facilities & other				Community Centre								
	Work / Employment (e.g. offices, factory)												
	Commercial / Retail								Restaurant				
	Sports & Recreation (primary indoor)												
	Transport and mobility infrastructure (e.g. bus station)												
	Outdoor spaces – public realm (public squares, streets, parks, etc)				Walking to and from Community Centre								

				P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
				Mary 92, cognitive impairment (dementia)	**Claire** (17, autistic)	**James** 68 (recently retired, blind)	**Stephen** 42 (responder, Polish, married)	**Maeve** 33 (pregnant, 7 months)	**Patrick** 29 (Black-Irish, married; restaurant owner.	**Sarah** 26 (visiting Dublin; from Spain)	**Paul** (20, attends National College of Ireland)	**Eve** (12, 6th class), has a broken leg)	**Liam** (4, in creche, school next year)
10. Key Setting-related Resilience Issues	**Open landscape (beaches, coastal areas, forests, etc**												
	Spatial Scale	Hazard Type	Hazard vulnerability (Key Examples)										
	Location and proximity to hazard, and overall topography) (geographic location & topography)	Wind	Elevated site, exposed to wind					Wind	Wind	Wind	Wind	Wind	Wind
		Flood	Adjacent to river or shoreline, low-lying ground, poor ground conditions or drainage	Flood		Flood	Flood		Flood				
		Heat / cold	Solar exposure, lack of shade		Heat								
		Fire	Proximity to fire hazards (e.g. vegetation, derelict sites) & wind exposure										
		Other (e.g. Costal Erosion)											
	Local Urban Form (spatial structure such as street network/width, street typography, or building heights/mass)	Wind	Wind tunnelling					Wind	Wind	Wind	Wind	Wind	Wind
		Flood	Low-lying ground, poor drainage	Flood		Flood	Flood		Flood				
		Heat / cold	Heat Island effect		Heat								
		Fire	Density & proximity to other buildings										
		Other											
	Site Conditions (within the site curtilage including open areas, parking, etc.)	Wind	Site orientation, degree of onsite shelter/wind breaks					Wind	Wind	Wind	Wind	Wind	Wind
		Flood	Low-lying ground, poor ground conditions or drainage	Flood		Flood	Flood		Flood				
		Heat / cold	Solar exposure, lack of shade		Heat								
		Fire	Onsite fire hazards										
		Other											
	Building Form (including heigh and mass) and	Wind	Building height, shape, orientation & exposure					Wind	Wind	Wind	Wind	Wind	Wind

				P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
				Mary 92, cognitive impairment (dementia)	**Claire** (17, autistic)	**James** 68 (recently retired, blind)	**Stephen** 42 (responder, Polish, married)	**Maeve** 33 (pregnant, 7 months)	**Patrick** 29 (Black-Irish, married; restaurant owner.	**Sarah** 26 (visiting Dublin; from Spain)	**Paul** (20, attends National College of Ireland)	**Eve** (12, 6th class), has a broken leg)	**Liam** (4, in creche, school next year)
	layout (including overall configuration, circulation, and room layouts)	Flood	Vulnerability of ground floor units	Flood		Flood	Flood		Flood				
		Heat / cold	Solar orientation & exposure, degree of glazing		Heat	Heat							
		Fire	Poor building design and egress										
		Other											
	Structure and Materials (incl. age and condition of building)	Wind	Inadequate wind resistant structure & cladding					Wind	Wind	Wind	Wind	Wind	Wind
		Flood	Inadequate flood resistant structure & cladding	Flood		Flood	Flood						
		Heat / cold	Poor thermal insulation & windows, poor thermal mass										
		Fire	Inadequate fire-resistant structures & materials in s										
		Other											
	Environmental Conditions and Associated Services (e.g. ventilation, heating, cooling)	Wind	Unprotected services (e.g power)					Wind	Wind	Wind	Wind	Wind	Wind
		Flood	See above	Flood		Flood	Flood		Flood				
		Heat / cold	Inadequate natural/mechanical ventilation, heating or cooling systems		Heat	Heat							
		Fire	Lack of fire safety systems (alarms, sprinklers etc)										
		Other											
C) Scenario													
11. Event	**Event Type**	Wind						Wind	Wind	Wind	Wind	Wind	Wind
		Flood		Flood		Flood	Flood		Flood				
		Heat			Heatwave								
		Fire											
		Other											
	Severity (low med high)	High		High	High	High	High	High	High	High			High
		Medium									Medium	Medium	
		Low											
	Time (time of day, date, duration	Time of Day (i.e. Daytime/Nighttime)	Daytime (6:00AM-6:00PM)	4-6th February	July 2024		October 2024	January 2025	January 2025	May 2025	January 2025	May 2025	N/A (on-going power outages)
			Nighttime (6:00PM-6:00AM)			February 1, 2025							

				P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
				Mary 92, cognitive impairment (dementia)	**Claire** (17, autistic)	**James** 68 (recently retired, blind)	**Stephen** 42 (responder, Polish, married)	**Maeve** 33 (pregnant, 7 months)	**Patrick** 29 (Black-Irish, married; restaurant owner.	**Sarah** 26 (visiting Dublin; from Spain)	**Paul** (20, attends National College of Ireland)	**Eve** (12, 6th class), has a broken leg)	**Liam** (4, in creche, school next year)
		Date (i.e. DD/MM/YY)											
		Duration	Hours			12 hrs							
			Days	3	8 days			3 days			3 days	3 days	On-going for several days
			Weeks										
12. Impact on Setting	**Level of Impact**	High		High			High		High			High	High
		Medium			Medium	Medium		Medium		Medium	Medium		
		Low											
13. Impact on Person	Level of Impact (See A-for personal contextual factors)	High					High		High	High		High	
		Medium		Medium	Medium			Medium			Medium		Medium
		Low				Low							
D) Goals and Timescales													
1. Goals and time scale	**Goals – Immediate timescale: That the setting helps the persona to cope and respond to the disruptive climate event in a way that protects their immediate safety, health, and wellbeing, while also protecting their loved ones or friends (if relevant).**			maintain power	centre cooler & quieter	inadequate drainage and ventilation systems – need to update.	more support for first responders that are required to aid in emergency situations. Also – risk mitigation through education.	what the council can do to protect power and broadband lines from going down in storms.	The storm caused severe losses to business; support or 'shop-local' campaign could be initiated to encourage community members to shop in their businesses and boost business.	list of procedures about what to do in an emergency event. This would be very helpful, she said, for anyone staying in temporary accommodation without local expertise to consult, which would be available if she was staying in a hotel.	clearing an accessible pathway after such storm events	Plan to get to and from school safely while Eva is using crutches	

		P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
		Mary 92, cognitive impairment (dementia)	**Claire** (17, autistic)	**James** **68 (recently retired, blind)**	**Stephen** **42 (responder, Polish, married)**	**Maeve** **33 (pregnant, 7 months)**	**Patrick** **29 (Black-Irish, married; restaurant owner.**	**Sarah** **26 (visiting Dublin; from Spain)**	**Paul** **(20, attends National College of Ireland)**	**Eve** **(12, 6th class), has a broken leg)**	**Liam** **(4, in creche, school next year)**
	Goals – Medium timescale: That the setting helps the persona to maintain or to return to their normal activities and quality of life following any disruptive events as quickly as possible (i.e. normal family life, work, recreation etc).	local flood defenses installed	Maintain running of summer school; good work and learning environment more pleasant, comfortable public realm	combined effort of improvements to his residence and the greater community area will increase its resilience so he does not have to move from his home and the community that he is a part of.	council can implement better infrastructure (re draining). Due to water, local roads often become impassable in the event of an emergency. Furthermore, many of the roads and side streets in Patra are too narrow for emergency vehicles, making evacuations in emergency situations, especially of vulnerable groups, very difficult, and potentially dangerous.	ask the city to do an assessment of the areas surrounding their homes to address any potential hazards.		helpful for there to be a list from a deaf organization in Patra about dealing with issues in the city that arise.	campus caretakers and facility management to ensure that campus streets and sidewalks are accessible for all quickly after a storm.	If the power and broadband go out, won't be able to communicate between Eve and her mom and her dad.	worried about childcare should parents need to work in an inclement weather situation.

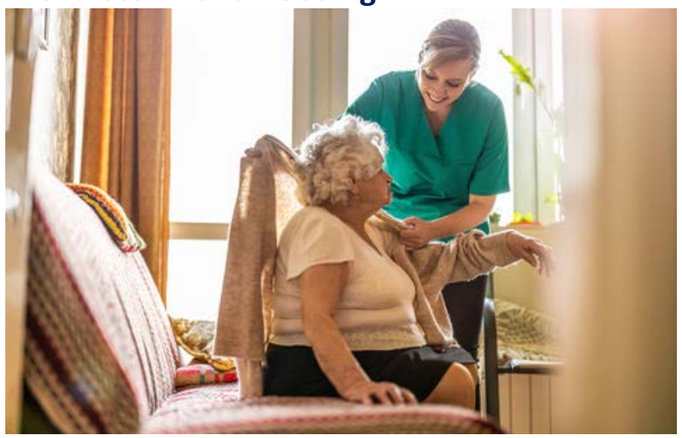
	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
	Mary 92, cognitive impairment (dementia)	**Claire** (17, autistic)	**James** 68 (recently retired, blind)	**Stephen** 42 (responder, Polish, married)	**Maeve** 33 (pregnant, 7 months)	**Patrick** 29 (Black-Irish, married; restaurant owner.	**Sarah** 26 (visiting Dublin; from Spain)	**Paul** (20, attends National College of Ireland)	**Eve** (12, 6th class), has a broken leg)	**Liam** (4, in creche, school next year)
Goals – Long-term timescale: That the setting is enhanced in the longer-term in relation to resilience and sustainability, and that the wider neighbourhood is improvement and transformed in the terms of quality of life, and a more sustainable and resilient local environment.	plans to deal more naturally with floods	regulate the temperature of building and overall area	hopes that the council implements better flooding solutions that maintain the security of people's ways of life and allows for businesses and community organizations to flourish.	Better infrastructure improve safety, security, and overall quality of life.	What can be done to mitigate flooding / damage to ground floor in the future.	He wonders whether there will be efforts to ensure that infrastructure is better suited for resilience. He's worried that he would have to sell his restaurant, removing him from his regulars and the business that has been successful for him thus far.	Airbnb makes detailed evacuation and emergency scenario lists a necessary component of hosting for all owners. Such guides would be critical to safety in an emergency event where the owner is inaccessible for help or guidance.	He hopes the facilities management department can put together a more comprehensive plan to address future storms, taking the concerns and needs of wheelchair users, as well as others with mobility issues, into account. In particular, the issue of flooding is a persistent one, and needs significant attention, as it does impact on the quality of student life and experience on campus.	school's protocol and education look like for emergency situations.	what Leonida's school's protocol will be for weather situations.

8.3 Personas and Scenarios – Ringsend (Dublin, Ireland)

Name: **Mary**

Key setting: **At home**

Event: **Storm and flooding**



Age: 92
Gender: Female
Ethnicity: White Irish
Health: Mild cognitive impairment (dementia) & moderately frail, and typically uses rollator when she goes outside
Family status: Widow who lives alone
Occupation: Homemaker, but family are now grown up
Dwelling type: Lives on the ground floor of three-storey, supported housing complex for older people

Location: Cambridge Road, Ringsend, Dublin 4

Key location issues

Exposure to hazards: Exposure to hazards: Located on peninsula & subject to flooding. Disruption: potential for disruption to access & essential services due to road flooding.
Little to no shading / green space; high risk of overheating / heat island effect. Disruption: potential for disruption to the running of community services; impact to social fabric.

Meet Mary

Mary is 92, and despite having early dementia and being moderately frail, she lives a happy and independent life. Her husband Mark died 11 years ago, and she now lives alone, but has a carer who comes in for an hour every day to help her with bathing and preparing meals. Most of her 10 children and their families live locally, and they often visit her where she lives in a local authority supported housing complex for older people. She was born and bred in Ringsend, goes out and about with her rollator to do a bit of shopping, and to go to bingo on Wednesday night. She loves her house, has some great friends in the complex, and says she'd never want to leave.

Where Mary lives

Lives in 'Liffey Court', a local authority owned, three-storey, supported housing complex for older people (no onsite care / management). Liffey Court is centrally located in Ringsend and is only a short distance down to the shops. Her apartment is on the ground floor; she finds it relatively easy to go out and about.

The site on which the complex was built is quite level, and very near the Liffey, where the river meets the sea. The area has flooded on a few occasions over the last 50 years. As there are apartments on the ground floor, there are always concerns about flooding.

Storm X

Event type: Severe storm with flooding from strong winds & high tides.
Date and duration: 4th to the 6th of February 2024
Impact on setting: Wind damage to building and flooding to local roads and parts of the site.
Impact on residents: Some taken off site for health and safety reasons, others confined to their dwelling with restricted access for services and visitors.

How Mary was affected

On the night of the 4th of February 2024, Mary was at home and sheltering from the storm that was forecast to peak that night. Family and neighbours had been checking in on her, but being fiercely independent, she insisted that she didn't need anyone to stay with her. At around midnight parts of Mary's building were damaged, and trees were knocked. In addition, the site and immediate locality (including the adjacent public street) were flooded.

Mary was unharmed and woke early in the morning to find she had no electricity or heating, and that the emergency services and local authorly staff had arrived to check on residents and assess the situation. The building lost mains power for 3 days, but on the second day temporary power was provided by an onsite generator. Mary could not leave the building for 7 days, and her usual carer could not get access during this time. Emergency services and family brought supplies, so Mary was kept safe and healthy, but the situation left her very anxious and upset. The noise of the generator, and the break in her usual routine was exacerbated by her dementia. She was also sad that one of her friend's health had suffered during the event and has had to move out of the complex.

What she would like to see happen in the future

Goals – Immediate timescale: While Mary understands that a major storm will cause disruptions, and can accept being confined for a few days, she believes that it is crucial to maintain power or at least have a back-up generator on site that kicks in immediately.

Goals: Medium timescale: Being confined and without her usual carer for 7 days was a big upset so Mary hopes that local flood defenses will be installed to limit the extent and duration of flooding events in the future so she could go out and about sooner.

Goals - Long timescale: Mary would like to see plans for the wider Ringsend area to deal more naturally with floods. As a child she remembers some open areas in the locality that would flood and not affect anyone, and she wonders if we need more spaces like this.

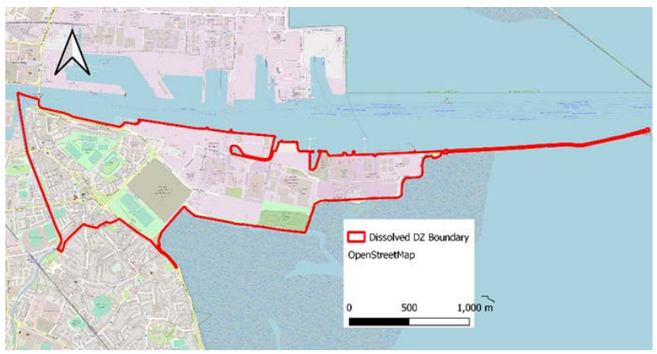
"If I survived 10 children and nearly 60 years of marriage, sure look it, I can survive a little storm!" – Mary

Name: **Claire**

Key Setting**: Community Centre**

Event**: Heatwave**

Age: 17
Gender: Female
Ethnicity: White Irish
Health: Autism (diagnosed at 9 years old)
Family status: Multi-generational - lives with parents, younger sister, and her 79-old grandmother
Occupation: Student (just finished 5th year); Volunteers in the Summer Camp run by the Ringsend and Irishtown Community Centre – Coding Workshops
Dwelling type: Community Centre (RICC)
Location: Thorncastle Street (Community Centre).



Key location issues

Exposure to hazards**:** Exposure to hazards: Located on peninsula & subject to flooding. Disruption: potential for disruption to access & essential services due to road flooding.
Little to no shading / green space; high risk of overheating / heat island effect. Disruption: potential for disruption to the running of community services; impact to social fabric.

Meet Claire

Claire is 17 and she has just completed 5th year. She is spending her summer volunteering at the local community centre, which runs a summer programme for young children. Claire was diagnosed with autism when she was 9 years old. While she struggles with social cues and can sometimes become anxious, she has an affinity for computers and software programming and is responsible for the running of the coding workshops that the community centre offers. Every day, she walks to the community centre, as it is very close to where she lives (approx. 1km). She enjoys the workshops; they provide a good structure, allow her to focus, and provide a daily routine for her during the summer months; plus, they are on a subject which she is super excited about, making it easier for her to engage with people in the centre. That said, Claire has difficulty coping with surprises or unexpected events that alter her day-to-day habits.

Where Claire Volunteers

The community centre was built in the 1980s and refurbished in 2019. It is 3-storey southwest facing building, with a lot of glazing, and minimal shading, as well as poor ventilation.

Heatwave

Event type: Heatwave (8 days); sustained temperatures of 29 degrees.
Date and duration: Monday 15th to Sunday 23rd of July 2024.
Impact on setting: During the initial days of the heatwave, it became uncomfortably warm; windows were kept open to ventilate and cool the internal environment during summer school. However, some of the windows facing out onto the quieter courtyard were not functioning properly (and would not open). On the 3rd day, fans were introduced as a further cooling measure; this has led to a higher demand on electricity.
Impact on people: Despite attempts to cool the building down (ventilation via windows), people experienced a lot of discomfort due to overheating of the internal environment.

How Claire was affected

Claire experienced a lot of discomfort in the community centre due to the high temperatures, especially from the third day, where the combined effects of the high temperatures, and noises (i.e. coming from the outside due to the open windows, and the sustained noise from the multiple fans) have caused a
Claire to experience sensory overload and have left her feeling severely overwhelmed and struggling to cope. On the fourth and fifth days, she struggled to effectively complete the workshop activities with the kids and was left feeling emotionally exhausted.

What she would like to see happen in the future

Short-timescale impacts: Claire knows that during a heatwave a building will get and feel hotter; still, she does wonder what, if anything can be done to keep the place cooler and make things generally quieter so she can focus on running her workshop with the kids.

Medium-timescale impacts: Claire is worried that if temperatures get high again, that there will be another heatwave, and that the rest of the summer school programme will be cancelled. She wonders if there are any interventions that can be introduced to ensure the summer school continues to run so that her routine can stay as is (which would make her happy), while maintaining a good learning and working environment for everyone. Also, because she walks to and from the community centre every day, she thinks a lot about the kinds of things that could be introduced on her way to work, to make it a more pleasant and comfortable experience for her.

Long timescale impacts: Claire really loves volunteering in the community centre and hopes to continue running the workshops the next summer and beyond; however, she would like to see measures introduced (e.g. outdoor shading areas, more trees and other plants) to help regulate the temperature of the building and overall area.

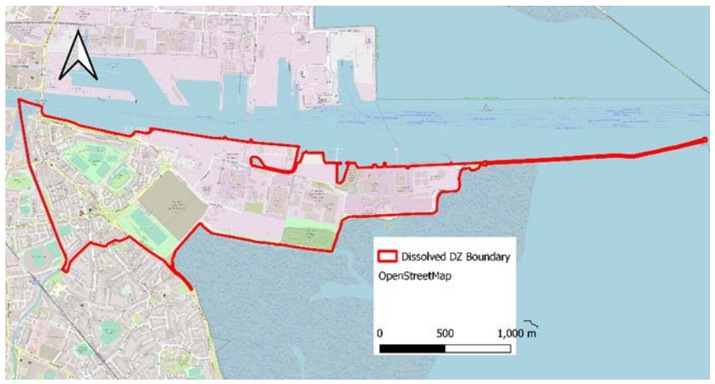
"I really like the coding workshops; but I am upset about how the heat makes me feel, and maybe other people are OK, but I find the noise from the open windows and the fans that are running super distracting"– Claire

Name: **James**

Key Setting**: Waterside Apartments**

Event**: Flooding**

Age: 68
Gender: Male
Ethnicity: White Irish
Health: Blind;
Family status: Widower
Occupation: Recently retired
Dwelling type: 1-bedroom apartment (3floor; lift); balcony.
Location: Waterside Apartments



Key location issues

Exposure to hazards: Exposure to hazards: Located on peninsula & subject to flooding. Disruption: potential for disruption to access & essential services due to road flooding. Little to no shading / green space; high risk of overheating / heat island effect. Disruption: potential for disruption to the running of community services; impact to social fabric.

Meet James

James is 68 years old; he is a widower (lost his wife to cancer three years ago) who lives alone in a lovely 1-bedroom flat in a good location, near the water, in Ringsend. He is newly retired and is looking forward to engaging further with his Ringsend community in retirement. He is a member of the Ringsend 'Men's shed', a community organization that brings together men in the community where they can learn and share new skills while building connections. Through this, he is hoping to build and enhance his already strong community ties through hands-on activities. As a blind man, James navigates his community using a white cane.

Where James Lives

James lives in the Waterside Apartments in Ringsend. The apartment is five floors and has a lift. James lives in a one-bedroom flat with a balcony on the third floor that he owns. He is highly attached to the area that he lives in and his apartment. This attachment has increased his fears around leaving his flat for security and safety reasons, but for this reason he has a high level of knowledge about safety and evacuation plans and procedures to be sure that he's prepared for any possible event. He's maintained a high level of awareness of key hazards and how to respond to these in the event of an emergency, which he has implemented in the past.

Event

Event type: Flooding
Date and duration: 1st February, 2025
Impact on setting: Flooding throughout Dublin City led to hundreds of buildings being damaged or destroyed.
Impact on people: The major flooding that occurred on the 1st of February, 2025 led to the expansion of flooding reduction measures in the Ringsend area. In the immediate aftermath, a floodwall was built along the River Dodder by Dublin City Council. 100 people were evacuated from the Ringsend area and many houses and buildings were destroyed. The Irish army was called in to evacuate individuals and provide relief from the storm.

How James was affected

James' apartment is near to the river. The land itself is low-lying with poor drainage making it vulnerable to flooding in heavy rain. As James is blind and uses a cane to navigate his surroundings, he was trapped in his third story apartment until the flooding subsided. Luckily, he wasn't on the ground level, as his apartment would have been heavily damaged due to their vulnerability and the lack of built infrastructure. James recounted this a high severity event for himself, the apartment buildings, and the Ringsend area as a whole. Although it had a low-impact on him compared to others in his community, it did make him aware of the importance of understanding emergency procedures in the event of a severe weather event.

What he would like to see happen in the future

Short-timescale impacts:
James noted that his apartment has inadequate drainage and ventilation systems. Although primarily related to temperature regulation, this could also have detrimental impacts in the aftermath of flooding, especially where residents could be affected by dampness. James hopes that the apartment management fixes this critical infrastructure before future storms.

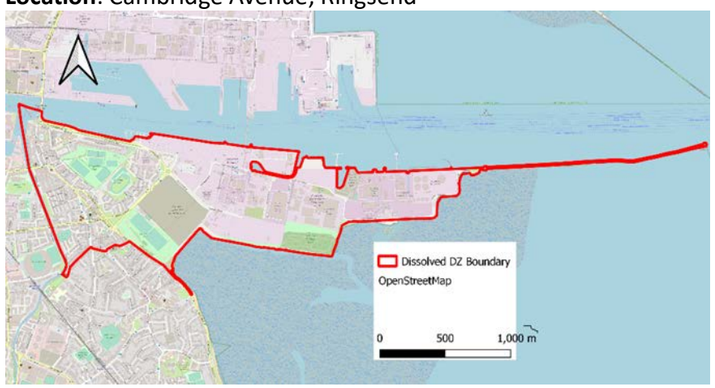
Medium-timescale impacts:
As he is so attached to where he lives and feels knowledgeable about the surrounding areas and emergency procedures, James does not want to move from his apartment. He hopes that a combined effort of improvements to his residence and the greater Ringsend community will increase its resilience, so he does not have to move from his home and the community that he is a part of.

Long timescale impacts:
James is worried that as flooding caused by severe storms and water-levels more generally increase, that the social fabric of Ringsend will change because people move away for climate related reasons. To prevent this, he hopes that the council implements better flooding solutions that maintain the security of people's ways of life and allows for businesses and community organizations to flourish.

"I wouldn't want to leave my flat; I am very used to it. It is also the last place I shared with my wife before she passed – it means a lot to me for that"– James

Name: **Stephen**
Key Setting**: First responder**
Event**: Flood**

Age: 42
Gender: Male
Ethnicity: Polish
Health: Good
Family status: Married
Occupation: First Responder
Dwelling type: 3-bedroom terrace house, private rent
Location: Cambridge Avenue, Ringsend



Key location issues
Exposure to hazards**:** Exposure to hazards: Located on peninsula & subject to flooding. Disruption: potential for disruption to access & essential services due to road flooding.
Little to no shading / green space; high risk of overheating / heat island effect. Disruption: potential for disruption to the running of community services; impact to social fabric.

Meet Stephen

Stephen is a first responder, originally from Poland. He has been with his wife for 25 years and together they have two children aged 12 and 7. He has a strong relationship to his community, through his family, his membership in the Irish Polish Society, and his work as a first responder. Despite this, he is generally not deeply attached to the Ringsend area specifically, though he enjoys his apartment and worries about the impacts of flooding and other severe weather events. Stephen lives with his wife and kids in a three-bedroom terrace apartment that they rent in Ringsend, however, he spends most of his time at work.

Where Stephen Works

Stephen is a first responder, which means that he interacts with his community every day to ensure safety throughout all weather, social, and community conditions. Because of this, he is deeply aware of the pressures that are placed on infrastructure when disasters hit.

Event

Event type: Flooding
Date and duration: 24th October, 2024
Impact on setting: Flooding at ESB Sportsco, Ringsend, Dublin
Impact on people: Heavy rainfall in a short period of time led to localized flooding and water levels inside the sports and recreational building up to 3 inches in some places. The surrounding roads were impassable for 400 meters due to water levels.

How Stephen was affected

As a first responder, Stephen was called out to aid individuals in his community and ensure their safety. Although the sports center itself was not a dangerous situation, he was frustrated by the impassability of the roads to get to the sports centre and the dangerous conditions driving in the heavy rains and flooding. He worries about putting his life at risk in severe disaster situations where first responder infrastructure is over extended. Stephen is also worried that in future storms he would not be able to respond in a timely manner because of flooding on the roads. He believes that the poor drainage infrastructure exacerbates the impacts of heavy rains and flooding throughout Dublin, but especially in Ringsend.

What he would like to see happen in the future

Short-timescale impacts:
Stephen feels that there should be more support for first responders that are required to aid in emergency situations. He also wonders if there is a way to promote a public education campaign that encourages community members to better understand what they should be in the event of an emergency. Although Stephen enjoys his job, he does think that a lot of risk could be mitigated through risk-reduction education.

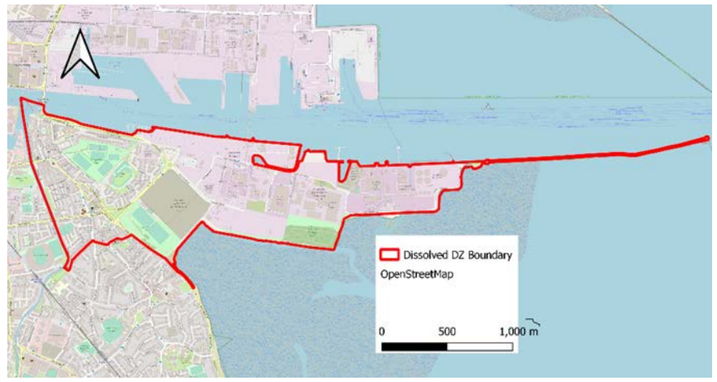
Medium-timescale impacts:
Beyond his work, Stephen is worried about how poor infrastructure will affect him, his house, and his family in the event of an emergency. As a first responder he honors his duty to protect and aid his community members, but he worries that something could happen to his family or himself if they were to be separated. He is also concerned about the first floor of his terrace home being ruined in the event of flooding as the surrounding area has poor infrastructure to facilitate draining. He hopes that the council can implement better infrastructure to protect himself and his family. Stephen also believes that this could inhibit his ability to respond in an emergency situation, as local roads often become impassable in the event of an emergency.

Long timescale impacts:
Stephen worries that if flooding continues, he and his family will need to move somewhere safer. Although he enjoys the Ringsend area, he does not want his kids to live somewhere that could be destroyed from such inclement weather. He is also concerned that day-time flooding could leave them stranded at school during heavy rains. Although he does not want to move them and does not consider that necessary at the moment, he is worried that if better infrastructure is not put in place he would need to consider that for their safety.

"I'm here to help people; the roads make it difficult, even in everyday situations – when flooding is involved, it makes it so much harder to do my job well, and for the community"– Stephen

Name: Maeve
Key Setting: Ringsend Neighborhood
Event: Windstorm

Age: 33
Gender: Female
Ethnicity: White - Irish
Health: none, 7 months pregnant
Family status: Married, pregnant with first child
Occupation: Full time, about to go on maternity leave
Dwelling type: Two-bedroom cottage
Location: Ringsend, Dublin



Key location issues

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Little to no shading / green space; high risk of overheating / heat island effect. Disruption: potential for disruption to the running of community services; impact to social fabric.

Meet Maeve

Maeve is 33 years old and lives in a privately owned 2-bedroom house with her partner of 10 years. She has a third level qualification and is currently working, but will soon go on maternity leave as she is 7-months pregnant with her first child. She is highly involved in her community and feels strong ties within it. She is highly attached to both her home and the surrounding area, especially as a place to raise her first child with her partner.

Additional Information

Although in generally good health, she has experienced physical challenges as a result of her late-term pregnancy. This includes swollen feet, back pain, and poor sleep patterns. She is aware of her local hospital, located on Hollis Street, but is otherwise relatively unaware of emergency and safety procedures that she would follow in the event of a disaster. Her attachment to the community and the imminent birth of her first child mean that she is deeply concerned about leaving for security reasons.

Storm Éowyn

Event type: Wind storm, some localized flooding
Date and duration: 23rd – 24th January, 2025
Impact on setting: Strong winds felled trees and powerlines around Dublin, there was also damages caused to infrastructure and buildings.
Impact on people: Around 40,000 homes were left without power and transport, schools, and parks were all closed due to gusts of over 130 km/h. There was also coastal flooding due to the waves generated from the extreme winds. Many areas lost broadband connection and water due to the damages from the winds. Many businesses and shops closed their doors for the entire duration of the storm. In Ringsend, a lamp-post fell onto a house causing severe structural damage.

How Maeve was affected

Maeve was worried about having to leave her home during the windstorm. As she could work from home, she wasn't concerned about travelling during the red warning. As someone who is aware of the impacts of climate change, she was deeply concerned that the entirety of Ireland was placed under a red warning. It made her consider what she and her partner would do when their child was enrolled in school, as well as what climate-related changes to the environment would mean more generally in the future. Living in Ringsend, she understands that the coastal location makes the community prone to greater wind gusts and localized flooding, especially in low-lying areas. Other hazards, such as felled power lines, are concerning, especially in tandem with flooding. Maeve is worried that storms will get more severe in the near future, with longer absences of power and broadband in the following days.

What she would like to see happen in the future

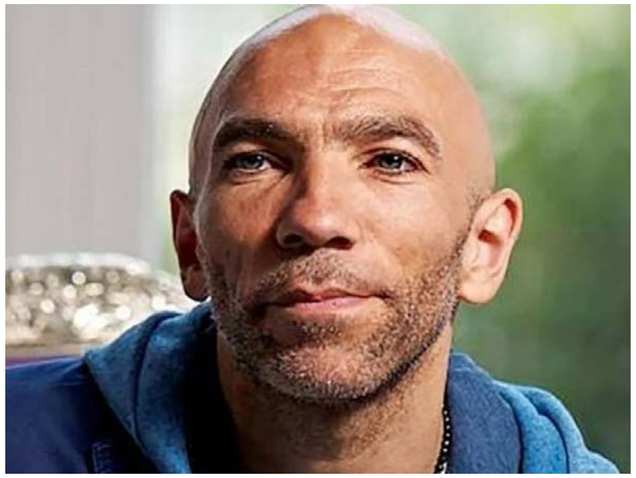
Short-timescale impacts:
Maeve is wondering what the council can do to protect power and broadband lines from going down in storms. She's worried about what a power outage would be with a newborn child and how she would maintain communication with the rest of her family if the outage persisted for many days.

Medium-timescale impacts:
Maeve and her neighbors are worried that there is infrastructure that could fall on their houses, like the lamp-post that fell on a house. They plan to ask the city to do an assessment of the areas surrounding their homes to address any potential hazards.

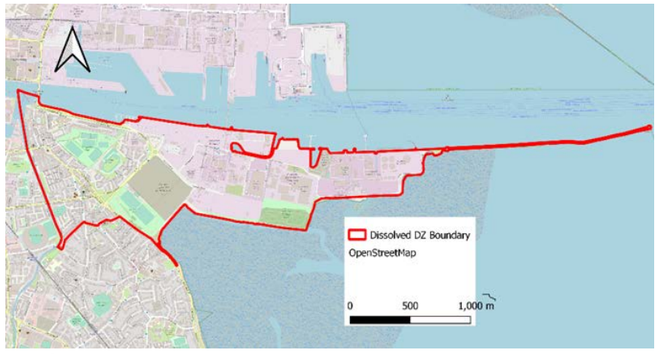
Long timescale impacts:
Maeve lives in a terraced house and her residence is primarily on the ground floor. She's heard of people in terraced houses in the area experiencing flooding due to poor drainage in common areas and worries that it could impact her home as well. She plans to enquire with the other households in her terraced housing about what they could do as a community.

"I can't help but be worried; I am going to be having a baby soon – what happens if another storm like this happens, and I am in labour? What if my partner isn't with me? What happens if I can't make it to the hospital in time, or if the hospital loses power?"– Maeve

Name: Patrick
Key Setting: Restaurant
Event: Storm Éowyn



Age: 29
Gender: Male
Ethnicity: Black-Irish
Health: Without impairment
Family status: Married with 1 year old
Occupation: Full-time business owner
Dwelling type: Apartment block (4 floors), 2 bed on 2nd floor
Location: Ringsend Rd, Ringsend



Key location issues

Exposure to hazards: Exposure to hazards: Located on peninsula & subject to flooding. Disruption: potential for disruption to access & essential services due to road flooding.

Little to no shading / green space; high risk of overheating / heat island effect. Disruption: potential for disruption to the running of community services; impact to social fabric.

Meet Patrick

Patrick is a 29-year-old restaurant owner that lives in a two-bedroom flat with his wife and one year old daughter in Ringsend. He enjoys living and working in Ringsend, especially for the diverse, multinational, and close-knit community that it celebrates. He is very worried about the threat of displacement caused by severe weather or climate related disasters, especially those caused by the low-lying ground in Ringsend.

Where Patrick Works

Patrick's restaurant is near many of the best cultural and entertainment venues in the country. With Bord Gáis theater, Irish Town and Aviva Stadiums nearby, it is busy with regulars and those out for a night in Dublin. There is also a steady lunch crowd from the surrounding high-tech multinational companies and Windmill Lane Studios.

Storm Éowyn

Event type: Wind storm
Date and duration: 23rd – 24th January, 2025
Impact on setting: Strong winds felled trees and powerlines around Dublin, there was also damages caused to infrastructure and buildings.
Impact on people: Around 40,000 homes were left without power and transport, schools, and parks were all closed due to gusts of over 130 km/h. There was also coastal flooding due to the waves generated from the extreme winds. Many areas lost broadband connection and water due to the damages from the winds. Many businesses and shops closed their doors for the entire duration of the storm. In Ringsend, a lamp-post fell onto a house causing severe structural damage.

How Patrick was affected

As a restaurant owner, Patrick closed his business on both the 23rd and 24th of January for the safety of his staff and customers. Although the right decision given the severity of the storm, he missed out on profits from a Thursday and Friday night – two of the busiest nights of the week for a restaurant set around many cultural and entertainment venues. Additionally, with people working from home in the days before and after, the restaurant missed out on the business of the busy work lunch crowds from the surrounding technology companies. On the second day of the storm the restaurant's power went out. Although they had a back-up generator, it was old and gave out. Patrick was unable to go in to check on the restaurant until Sunday because of localized flooding and the dangerous winds, but it was too late and the food had gone off. This caused additional devastating losses for the restaurant. Storms increasing in frequency, especially during the slower months of January and February worry Patrick. He thinks that one bad storm with even slightly more loss could drastically harm his business, customers, and employees.

What she would like to see happen in the future

Short-timescale impacts:
The storm caused severe losses to business. In conversation with other local business owners, he has learned that others in his areas suffered the same experience. He wonders what type of support or 'shop-local' campaign could be initiated to encourage community members to shop in their businesses and boost business.

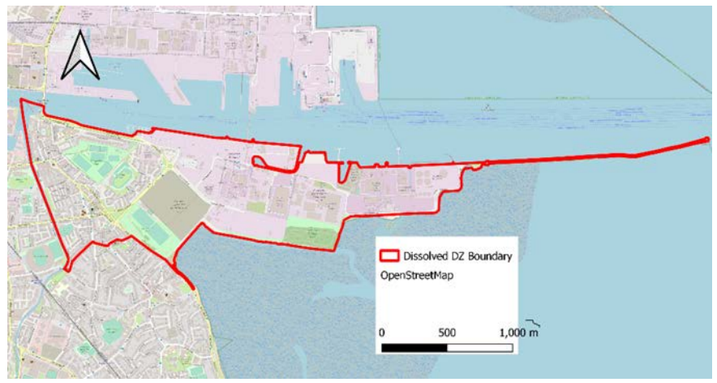
Medium-timescale impacts:
Patrick is disappointed that the generator he had did not help maintain the restaurant in the storm. He is going to buy a new generator to ensure that in the next storm, they do not suffer such drastic capital losses through food waste.

Long timescale impacts:
Patrick is worried that because of climate change there will be an increase in the frequency of such devastating storms. Although he's unsure of what this means for his business specifically, he is worried about the safety of his wife and child. He wonders whether there will be efforts to ensure that infrastructure is better suited for resilience. He's worried that he would either lose or have to sell his restaurant, removing him from his regulars and the business that has been successful for him thus far.

"This is my livelihood; I can't afford to go through something like this again. I will lose my restaurant"– Patrick

Name: Sarah
Key Setting: Airbnb
Event: Extreme Wind

Age: 26
Gender: Female
Ethnicity: White - Spanish
Health: Deaf, otherwise without impairment
Family status: Single
Occupation: Unemployed
Dwelling type: Airbnb
Location: Ringsend



Key location issues

Exposure to hazards: Exposure to hazards: Located on peninsula & subject to flooding. Disruption: potential for disruption to access & essential services due to road flooding.Little to no shading / green space; high risk of overheating / heat island effect. Disruption: potential for disruption to the running of community services; impact to social fabric.

Meet Sarah

Sarah is a 26-year-old woman from Spain, who was visiting Dublin at the time of interview. She is deaf and has challenges with visual communication, safety, and navigation. Although she is well able to make her way around her home community in Spain, when she travels it often takes time to adapt to moving around a new, foreign environment. This is her first time in Dublin and although she enjoys the city, she does not feel a high level of connection with the community or the building that she is living in. She does, however, feel a high-level of fear about what she would do should there be an extreme weather event, especially because her level of local knowledge is relatively low.

Additional Information

Sarah is worried that in the event of an emergency while travelling she would be unable to orient herself and be able to communicate with locals that could help her. Although she is fluent in sign-language and can lip read well, she is worried that there would not be anyone that signs to help accurately relay information to her.

Extreme Wind

Event type: Wind tunneling at evening
Date and duration: 5th May, 2025
Impact on setting: Due to the built environment and coastal proximity of Ringsend, wind tunneling is extremely common. There was a brief power outage due to the high winds.
Impact on people: With a moderate warning for wind, individuals already prone to being disoriented were advised that it would likely exacerbate the situation. Individuals who are frail or unsteady were warned to stay inside as gales may knock them off balance.

How Sarah was affected

Sarah struggles with navigation and safety. On her first night in Dublin, she experienced extreme wind tunneling while walking around the city. She found it incredibly disorienting. When she arrived back at the Airbnb, she discovered a brief power outage caused by the high winds. Although she has experienced power outages before, she quickly realized that she did not know what to do while in a foreign environment and staying in an Airbnb. She tried to contact the owner, but he was unresponsive to her enquiries. Sarah was frustrated that he did not provide a list of what to do in emergency situations and was unresponsive to her requests for further information. The power turned back on after only a half an hour, but she was frustrated and upset by the situation. Throughout the event she was worried about going outside again to ask help from someone else, but Sarah was concerned that she would once again become disoriented by the high-force winds.

What she would like to see happen in the future

Short-timescale impacts:
Sarah was most frustrated by the lack of responsiveness from Airbnb owner. She hopes that in the future, the Airbnb owner would provide at least a basic, if not detailed, list of procedures about what to do in an emergency event. This would be very helpful, she said, for anyone staying in temporary accommodation without local expertise to consult, which would be available if she was staying in a hotel.

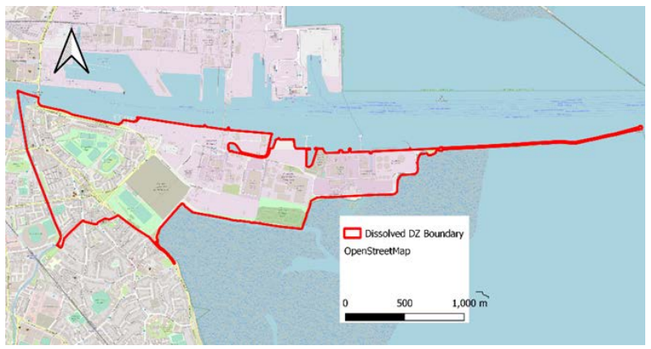
Medium-timescale impacts:
Sarah also thinks that it'd be helpful for there to be a list from a deaf organization in Dublin about dealing with issues in the city that arise. She knows that other deaf people can face the same navigational issues as her, so a list of organizations or people that could be communicated with would be very helpful.

Long timescale impacts:
In the long term, Sarah hopes that Airbnb makes detailed evacuation and emergency scenario lists a necessary component of hosting for all owners. She says that this would be very helpful to anyone, not just individuals with disabilities, as Airbnbs come without any guide to the city that the person is visiting. Such guides would be critical to safety in an emergency event where the owner is inaccessible for help or guidance.

"I really didn't feel safe where I was staying; there was no support, and I couldn't be in touch with my family during the power-outages. They were really worried about me. "– Sarah

Name: Paul
Key Setting**:** Public Spaces
Event**: Wind**

Age: 20 years old
Gender: Male
Ethnicity: White - Irish
Health: Wheelchair user, otherwise none
Family status: Originally from Laois but moved to Dublin for school. Family, parents and 5 brothers, all live at home.
Occupation: Part-time, main responsibility is university
Dwelling type: Renting – shared accommodation with 3 other students. Semi-detached 4 bedroom, his bedroom is on the ground floor and is fully accessible.
Location: Ringsend, Dublin



Key location issues

Exposure to hazards**:** Exposure to hazards: Located on peninsula & subject to flooding. Disruption: potential for disruption to access & essential services due to road flooding.
Little to no shading / green space; high risk of overheating / heat island effect. Disruption: potential for disruption to the running of community services; impact to social fabric.

Meet Paul

Paul is a 20-year-old wheelchair user originally from Laois, living in Dublin to attend National College of Ireland. As he uses a wheelchair, he is dependent on accessible infrastructure to move through the city. Generally, Dublin is much most accessible that Laois. He is able to take the Luas and bus lines throughout the city and the house that he lives in is wheelchair accessible. He'd had concerns when he first moved to Dublin, especially because he was moving away from his parents and five brothers for the first time, but he's learned independence very quickly. On top of his school work, Paul works part-time and is involved in student societies.

Paul's Home

Although not specifically attached to Ringsend, Paul is very attached to his home. He found it difficult to find wheelchair accessible housing that was also affordable when planning his move to Dublin. He was worried that he would have to live in expensive private student accommodation or commute from home, he felt very fortunate to find the house that he lives in now.

Storm Éowyn

Event type: Wind Storm
Date and duration: 23rd – 24th January, 2025
Impact on setting: Strong winds felled trees and powerlines around Dublin, there was also damages caused to infrastructure and buildings.
Impact on people: Around 40,000 homes were left without power and transport, schools, and parks were all closed due to gusts of over 130 km/h. There was also coastal flooding due to the waves generated from the extreme winds. Many areas lost broadband connection and water due to the damages from the winds. Many businesses and shops closed their doors for the entire duration of the storm. In Ringsend, a lamp-post fell onto a house causing severe structural damage.

How Paul was affected

In bouts of extreme wind, Paul finds it incredibly hard to safely navigate the city. Alongside the difficulty of wheeling his chair in the wind, the sidewalks and streets of Dublin become heavily obstructed from debris that blows around during the storm. He recalled that in Storm Éowyn, the largest storm that he's experienced in Dublin, he was unable to navigate sidewalks because many of his neighbor's bins blew over. The bins themselves were physical barriers and the contents that were strewn around meant that he was rolling through waste. Paul had to go into college on Monday for classes early in the morning. When he left the house for his 30-minute commute many of the sidewalks throughout the city were still covered in debris, including large tree branches in many areas. He understands that cleaning up after such events can be difficult and takes a large-scale effort on behalf of the city, but he still needed to make it into college and unfortunately had to turn back.

What he would like to see happen in the future

Short-timescale impacts:
Paul was very frustrated by the bins and their contents inhibiting his path. He plans to ask his neighbors to put them in a more secure location ahead of the next storm to be sure that once the storm ends, he is able to resume his usual day-to-day activities.

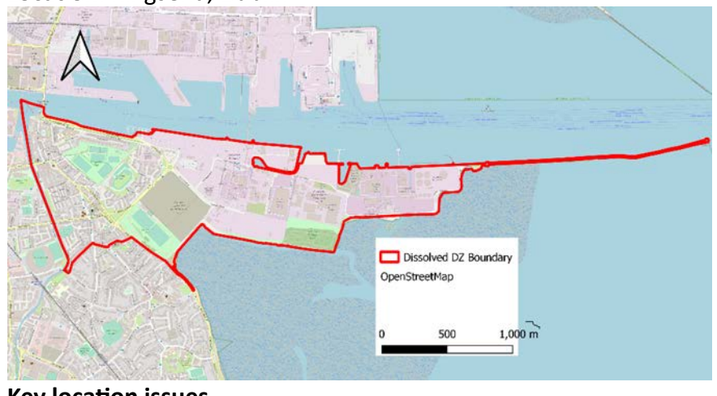
Medium-timescale impacts:
Paul was also unsure of what to do when he was going into college on Monday for class. There is a bus that goes part of the way, but he still has to wheel over half the distance. Most of the time he wheels himself the whole 30 minutes to college. Yet along the way, he had to take multiple diversions to avoid fallen trees, electrical lines, strewn waste and bins, and other barriers that he could not maneuver around without going a significant way in traffic. Eventually, he had to give up and turn back home because it was taking too long and he wouldn't make it to class on time. Paul wonders if there is anything more that the council can do to ensure that streets and sidewalks are accessible for all quickly after a storm.

Long timescale impacts:
Paul wonders how other public spaces will be impacted in future storms. He hopes the council can put together a more comprehensive plan to address future storms.

"It was really frustrating to not be able to go to class; my flat-mates had no problem – they could move around things; I couldn't. It isn't fair"– Paul

Name: Eve
Key Setting**: School / Public Realm**
Event**: Severe Wind Gusts**

Age: 12
Gender: Female
Ethnicity: White-Irish
Health: Without impairment, broken leg (using crutches to move around in school and at home)
Family status: Parents are divorced, lives with mom (dad lives in Stoneybatter)
Occupation: In Primary Level 6th Class
Dwelling type: Apartment block, 4 floors, living on ground floor
Location: Ringsend, Dublin



Key location issues
Exposure to hazards**:** Located on peninsula & subject to flooding. Disruption: potential for disruption to access & essential services due to road flooding. Little to no shading / green space; high risk of overheating / heat island effect. Disruption: potential for disruption to the running of community services; impact to social fabric.

Meet Eve
Eve is a 12-year-old that lives in Ringsend with her mom. Her dad lives in Stoneybatter. She attends primary school in the area and enjoys playing outside with her friends at the playgrounds and parks at school and in their neighborhood. Eve loves to be outside, whether that's while playing sports or spending time with her friends and family she's happy that the weather in Ireland is generally pretty temperate.

Eve's Broken Leg
Eve recently broke her leg while playing football and uses crutches to get around at school, in transit, and at home. She's gotten used to using them quite quickly, but she has noticed how much harder it can be to go some places or do some of the things that she used to do. At school, she can't participate in recess and go on the jungle gym with her friends. Although they still play with her on the sidelines, she feels left out, especially when she goes to her football team's matches and has to cheer from the bench.

Wind
Event type: Severe Wind Gusts
Date and duration: Early May 2025
Impact on setting: None.
Impact on people: Large wind gusts created wind tunneling effects that could easily make someone who is frail or already injured unbalanced.

How Eve was affected
Eve was at school when the windstorm started. She's used to large gusts and gales that often begin in the coastal area that she lives in, but she felt it was more difficult this time because she's using crutches. When walking home from school she had to go very slowly because she felt unsteady and was worried that she would hurt herself more. Although she made it home safely, it was the first time that she felt scared because of a storm like this. She became worried that if there was a more severe storm while she was still in a cast and using crutches that she wouldn't be able to get home. Although there wasn't any flooding, she also began to think about how she would get around if that were to happen. She can't get her cast wet and is worried that she would slip in the water.

What she would like to see happen in the future
Short-timescale impacts:
Eve decided that she would talk to her mom and dad about what she should do if she can't get home in a storm. She thought it would be good to come up with a plan for travelling to and from school in the case of an emergency, especially with her cast on. She knows that storms like this will become more frequent so she wants to be prepared.

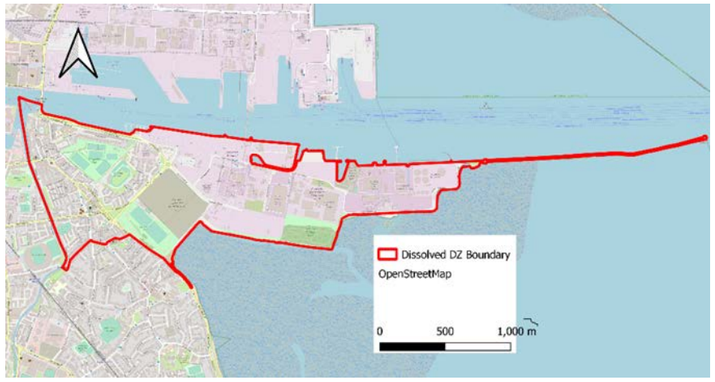
Medium-timescale impacts:
Eve and her parents are worried that if there is a big storm and the power and broadband go out, that they won't be able to communicate between Eve and her mom and her dad. They wonder what they can do to create a plan for a situation where that happens.

Long timescale impacts:
Eve's parents wonder what the school's protocol and education look like for emergency situations. Although they have discussions with Eve about what she should do, they do hope that the school has such conversations to be sure that the kids are ready for any event. They say that it's important also that schools educate kids about climate change, natural disasters, and what to do in situations where they or their neighbors might be in danger.

"I just want my cast off so I can go back to doing all the things, like playing out with my friends. The wind was strong – and I had to really be careful walking home, especially with my crutches. I wish there was somewhere along the way I could have stopped, for shelter; we don't really have those, unless it's for buses, but I don't think this would have helped me"– Eve

Name: Liam
Key Setting**: Residential**
Event**: Extreme Wind**

Age: 4
Gender: Male
Ethnicity: Mixed -- Irish dad, Chinese mom
Health: Without impairment
Family status: Nuclear family
Occupation: student
Dwelling type: detached home
Location: Ringsend, Dublin



Key location issues

Exposure to hazards**:** Located on peninsula & subject to flooding. Disruption: potential for disruption to access & essential services due to road flooding. Little to no shading / green space; high risk of overheating / heat island effect. Disruption: potential for disruption to the running of community services; impact to social fabric.

Meet Liam

Liam is four years old and lives in Ringsend with his parents. They live in a detached home. All of Liam's friends live nearby, they enjoy playing in each other's homes and in the local park when the weather is nice. His parents have befriended many of his friend's parents, they all say that public parks and infrastructure that is safe is critical to the wellbeing of the kids in the area and the neighborhood as a whole. Liam is enrolled in a local creche and will begin school in the new year. His parents are happy that he'll be able to attend the local school, as it is nearby, and they are able to walk him to school on their way to work each morning.

Additional Information

Liam's parents are both emergency responders. His dad is a firefighter in the Dublin Fire Brigade and his mom is an EMT. Often, they get called into work in severe weather situations.

Wind

Event type: Extreme Wind
Date and duration: N/A, power outage for multiple days
Impact on setting: High winds downed trees and powerlines throughout Dublin, but especially in Ringsend.
Impact on people: Many homes lost power for multiple days following the storm. In some areas, people lost water as well. The scale of the damages was so severe that it took many days for crews to address all of the outages.

How Liam was affected

Liam's home has lost power multiple times now because of wind storms, sometimes for multiple days at a time. He recalled one time during the winter when the power and water went out for multiple days. He said that he was very cold and had to wear his winter coat inside. He's worried that the power will go out for longer again soon and that he won't be able to go to school because the power will be out there too. His parents aren't sure what they would do if there were an emergency and school was closed. They're both emergency responders, so they often are called into the community when there are big storms to be sure that the public is safe. Liam is too young to stay home alone and they have some neighbors that they trust to mind him, but they do not want to be a burden, especially when the power is out. Liam's grandparents live in a different part of Dublin and it would be very difficult to get him to their home if public transport is delayed or stopped because of the storm.

What Liam's family would like to see happen in the future

Short-timescale impacts:
Liam's parents are going to talk through what they should do as a family in an emergency event.

Medium-timescale impacts:
Liam's parents are worried about childcare should they need to work in an inclement weather situation. They decided that they are going to talk to their neighbors and some of Liam's friends' parents that live nearby to create a plan should they need to work when school is closed. They hope that having a plan will ease both themselves and Liam in a high stress situation.

Long timescale impacts:
They wonder what Liam's school's protocol will be for weather situations. As emergency responders, they may not be able to leave their jobs to pick Liam up and bring him home. They hope that there will be opportunities to discuss this with the school, other parents, and that the kids are taught about what to do in severe weather in the classroom.

"I don't like the dark; and my mammy won't let me go out and play with my friends."– Liam

8.4 Matrix – Patra (Greece)

				P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
				Petro (23, without impairment; attends university of Patra)	**Maria** (60, without impairment; care-giving responsiblities)	**James** **68 (recently retired, blind; expat, living in Patra)**	**Stefano** **42 (responder, Polish, married)**	**Kosta-dina** **33 (pregnant, 7 months)**	**Angeliki** **(76 , without impairment)**	**Sarah** **26 (visiting Dublin; from Spain)**	**Pavlo** **(20,attends university of Patra; wheelchair user)**	**Eva** **(12, 6th class), has a broken leg)**	**Leonidas** **(4, in creche, school next year)**
A) Person													
1. Core Attributes	**Age**	**Infancy**[10] 0-2 years Pre-school **3-6 years**											4 years old
		Middle Childhood 7-12years										12 years old	
		Adolescence 13-20 years									2o years old		
		Early Adulthood[11] 21-40 years **Middle Adulthood** 41-65 years		23 years old			42 years old	33 years old		26 years old			
		Older Adults[12] 65 – 80+ years	young-old		60 years old	68 yrs old							
			middle-old						76 yrs old				
			old-old										
	Sexual Orientation (Irish CSO)	Straight or heterosexual											
		Gay or lesbian											
		Bisexual											
	Gender	Man	Cis										
			Trans	Man		Man	Man				Man		Man
		Woman	Cis		Woman			Woman	Woman	Woman		Woman	
			Trans										
		Non-Binary											
	Race / Ethnicity	Greece / Patra	Greek	Greek	Greek		Greek	Greek	Greek		Greek	Greek	
			Other White Background							White - Spanish			
			Other Background			White - English							Greek-Nigerian

[10] We are going to bring together 0-2 and 2-6 as an overall life-stage.

[11] We are going to bring together 20-40 and 40-65 as an overall life-stage.

[12] This age category can be further broken down (qualitatively) into young old, middle-old, and old-old for the purposes of persona development.

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2. Human Functions and Characteristics	**Physical functions**	Without Impairment		Without Impairment	Without Impairment	Without impairment	Without impairment	Without impairment	Without impairment	Without impairment		Without impairment /broken leg	Without impairment
		Mild / Moderate Impairment		Moderate (see health status)									
		Severe Impairment									Wheelchair user		
	Sensory Functions	Eyesight				Blind							
		Hearing								Deaf			
	Cognitive	Dementia											
	Immunological (not currently used)												
	Neurological	Autism											
	Age-related, and general health Status	Heath Condition	None		None	None	None	None	None	None	None		None
			Chronic										
			Acute	Falls ill due to damp weather				Pregnancy				Broken leg	
		Frailty	L1 (FS1-3)	L1	L1	L1	L1	L1		L1	L1		L1
			L2 (FS 4-6)									L2	
			L3 (FS 7-9)						L3				
		Pregnancy	Early Term										
			Mid-Term										
			Late-Term					Late-term					
		N/A					N/A			N/A			
	Implications for the persona (i.e. due to one or combination of above.			Feels tired and rundown from frequent bouts of being sick due to damp weather.		Uses a white cane to navigate and move about in community.	N/A	Physical challenges – swollen feet, back pain, poor sleep patterns	Angeliki is very caution walking around her house, as she does not want to risk a fall, leading to a more serious impairment.	challenges with visual communication, safety, and navigation	Reliant on wheelchair to move about in community; accessibility key.	Needs crutches to walk and move around.	N/A
3. Family & Carer	**Marital Status**	Single		Single						Single	Single		
		Married			Married		Married	Married	Married				
		Divorced											
		Widowed				Widowed							
		N/A										N/A	N/A
	Parental Status			N/A	2 adult children	No children	2 children (12 and 7)	Pregnant with first child	N/A	N/A	N/A	N/A	N/A

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	Family Relationships			Parents live in the village.		Lives alone	Married; wife and 2 children	Married	Married; 1 grandchild.	N/A	Originally from Pyrgo. Moved to Patra for school. Family – parents, 5 brothers, all back home.	Lives with her mom in Patra city centre. Dad lives in Rio.	Lives with his mom and dad.
	Care-giving responsibilities				Yes – elderly parents (living in village 1.5 hrs from Patra)				Take care of grandson after school.				
4. SES	**Education**	Third Level		Third level (currently enrolled in university)	Third Level	Third Level	Third Level	Third Level		Third Level (Recent Graduate)	Third Level (Attending)	6th class	
		Secondary											
		Primary							Primary			Primary Level 6th class	
		Not Applicable											N/A (creche)
	Employment Statues	Full-Time					Full-Time (First Responder)	Full-Time (about to go on maternity leave)					
		Part-Time									Part-Time		
		Unemployed								Unemployed			
		Semi-retired											
		Retired				Retired; moved to Patra			Retired				
		Student		Student							Student	Student	
		Volunteering											
		Not Applicable											N/A
5. Housing Situation	**Housing Status**	Private/owner			Private, owner	Private Owner (1-bedroom flat)		Private Owner (2-bedroom house)					
		Renter	Public Housing										
			Housing Association										
			Private Rent Sector	Renting, with two other students.			Private Rent		Private Rent				
			Co-Operative										

				P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
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			On-Campus Residence								1-bedroom (on campus residence; wheelchair accessible)		
		Homeless	In shelter										
			In streets										
			Other (e.g. squatting)										
		Other (See Settings)	Hotel										
			Hostel										
			AirBnB							AirBnB			
		N/A										N/A	N/A
	Household/Family type/size	Nuclear family					Lives with wife, and two children; together 25 yrs	Lives with her partner, together 10 years	Married; 1 grandchild				Nuclear family
		Single parent or guardian with children										Lives with her mom (parents divorced)	
		Shared Living (e.g. shared rental, campus accommodation)		Sharing apartment with 2 other students							Residence hall (+300 students)		
		Single person (living alone)				Single person, living alone (widower)							
		Multi-generational (e.g. 3 generations living together)											
		With pets											
	Dwelling type	Detached	Single Two Storey 3 or more storeys										Detached home
		Semi-Detached	Single Two Storey 3 or more storeys										
		Terrace	Single Two Storey 3 or more storeys		Two storey			2-bedroom home					
		Maisonette											
		Apartment / Duplex	Total no. of floors	Apartment Complex / 3 floors		5 floors	3-bedroom apartment/10 floors		Apartment (4 floors)			Apartment Block – 4 floors,	

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			floor lived on)	3rd Floor		1-bedflat on 3rd floor; has balcony	7th floor		– 2 bed on 2nd floor.			living on ground floor.	
			Lift (Y/N)	N		Y	Y		Y			N/A	
		Other (See Settings)	Hotel Hostel AirBnB							AirBnB	Multi-storey residency hall on campus		
6. Social and Place Connection	**Social Connection**	Strength of Relationship within community	High		High		High	High	High			High	High
			Medium	Medium		Medium							
			Low							Low			
		Membership of relevant organisations (social, cultural, political, etc)				Member of Patra ex-pat community					Student association;		N/A
	Place Attachment	Level of Attachment to general locality	High	High	High	High		High	High			High	High
			Medium								Medium		
			Low				Low			Low			
		Level of attachment to specific location or building (e.g. home, farm, shop)	High	High	High	High		High	High		High	High	High
			Medium										
			Low				Low			Low			
		Level of Fear of leaving due to security/ safety/need to protect	High					High	High	High			
			Medium			Medium							
			Low	Low	Low		Low				Low	Low	Low
7. Knowledge, awareness and experience	**Level of Local knowledge of terrain, natural conditions (e.g., traditional, ecological knowledge)**	High			High			High	High				
		Medium				Medium					Medium		
		Low		Low			Low			Low		Low	Low
	Level of Knowledge of safety or evacuation plans or procedures	High		High	High	High	High		High		High	High	
		Medium						Medium					
		Low								Low			Low
	Level of Awareness of key hazards and appropriate response	High		High		High	high		High				
		Medium			Medium						Medium	Medium	
		Low						Low		Low			Low
	Level of Actual experience	Yes		Yes		Yes	Yes		Yes			Yes	
		No			No			No		No	No		No

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B) Place													
8. Overall Location	**Country**			Greece	Greece	Greece	Greece	Greece	Greece	Greece	Greece	Greece	Greece
	City or Town			Patra	Patra	Patra	Patra	Patra	Patra	Patra	Patra	Patra	Patra
	District or General Area					Rio	Rio	Rio	Rio	Rio	University Campus		
	Name of Neighbourhood			Patra		Rio	Rio	Rio	Rio	Rio	University Campus		
	Specific Location in Neighbourhood			Near the university campus		Sea-side apartments					Univrsity Campus		
9. Setting	**Residential**	Standard		Standard	Standard	Standard	Standard	Standard	Standard	Standard (airBnB)			
		Supported (high- & low-level support)											
		Campus accommodation									Campus wheelchair accessible		
	Long-term residential care	Older Persons											
		People with Disabilities											
		Children											
	Healthcare	Hospital											
		Primary Care Settings											
		GPs											
	Childcare	Pre-School (creche)											Creche
	Education	Primary										Primary	
		Secondary											
		Third											
	Community facilities & other												
	Work / Employment (e.g. offices, factory)												
	Commercial / Retail												
	Sports & Recreation (primary indoor)												
	Transport and mobility infrastructure (e.g. bus station)												
	Outdoor spaces – public realm (public squares, streets, parks, etc)												

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	Open landscape (beaches, coastal areas, forests, etc												
10. Key Setting-related Resilience Issues	Spatial Scale	Hazard Type	Hazard vulnerability (Key Examples)										
	Location and proximity to hazard, and overall topography) (geographic location & topography)	Wind	Elevated site, exposed to wind					Wind		Wind		Wind	Wind
		Flood	Adjacent to river or shoreline, low-lying ground, poor ground conditions or drainage	Flood (and heavy rains		Flood	Flood				Flooding, due to heavy rains		
		Heat / cold	Solar exposure, lack of shade										
		Fire	Proximity to fire hazards (e.g. vegetation, derelict sites) & wind exposure		Fire (in relation to parents)				Smoke (fire)				
		Other (e.g. Costal Erosion)											
	Local Urban Form (spatial structure such as street network/width, street typography, or building heights/mass)	Wind	Wind tunnelling					Wind		Wind		Wind	Wind
		Flood	Low-lying ground, poor drainage	Flood (and heavy rains)		Flood	Flood				Flooding, due to heavy rains		
		Heat / cold	Heat Island effect										
		Fire	Density & proximity to other buildings		Fire (in relation to parents)				Smoke (fire)				
		Other											
	Site Conditions (within the site curtilage including open areas, parking, etc.)	Wind	Site orientation, degree of onsite shelter/wind breaks					Wind		Wind		Wind	Wind
		Flood	Low-lying ground, poor ground conditions or drainage	Flood (and heavy rains)		Flood	Flood				Flooding, due to heavy rains		
		Heat / cold	Solar exposure, lack of shade										
		Fire	Onsite fire hazards		Fire (in relation to parents)								
		Other											

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	Building Form (including heigh and mass) and layout (including overall configuration, circulation, and room layouts)	Wind	Building height, shape, orientation & exposure					Wind		Wind		Wind	Wind
		Flood	Vulnerability of ground floor units	Flood (and heavy rains)		Flood	Flood				Flooding, due to heavy rains		
		Heat / cold	Solar orientation & exposure, degree of glazing			Heat							
		Fire	Poor building design and egress		Fire (in relation to parents)				Smoke (fire)				
		Other											
	Structure and Materials (incl. age and condition of building)	Wind	Inadequate wind resistant structure & cladding					Wind		Wind		Wind	Wind
		Flood	Inadequate flood resistant structure & cladding	Flood (and heavy rains)		Flood	Flood				Flooding, due to heavy rains		
		Heat / cold	Poor thermal insulation & windows, poor thermal mass										
		Fire	Inadequate fire-resistant structures & materials in s		Fire (in relation to parents)				Smoke (fire)				
		Other											
	Environmental Conditions and Associated Services (e.g. ventilation, heating, cooling)	Wind	Unprotected services (e.g power)					Wind		Wind		Wind	Wind
		Flood	See above	Flood (and heavy rains)		Flood	Flood				Flooding, due to heavy rains		
		Heat / cold	Inadequate natural/mechanical ventilation, heating or cooling systems			Heat							
		Fire	Lack of fire safety systems (alarms, sprinklers etc)		Fire (in relation to parents)				Smoke (fire)				
		Other											

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C) Scenario													
14. Event	**Event Type**	Wind								Wind		Wind	Wind
		Flood		Flood (and heavy rains)		Flood	Flood				Flooding, due to heavy rains		
		Heat											
		Fire			Fire (in relation to parents); smoke impacted air quality in Patra				Smoke (fire)				
		Other											
	Severity (low med high)	High		High	High	High	High	High	High	High			High
		Medium									Medium	Medium	
		Low											
	Time (time of day, date, duration	Time of Day (i.e. Daytime/Nighttime)	Daytime (6:00AM-6:00PM)	November 2024	June 2022	February 2025	October 2024	January 2025	July 2014		May 2025	April 2025	N/A (power-outage for multiple days)
			Nighttime (6:00PM-6:00AM)										
		Date (i.e. DD/MM/YY)											
		Duration	Hours	24 hrs							24 hrs		
			Days		5 days fire	7 days	4 days	2 days					5 days
			Weeks		Up to 4 weeks smoke (air quality in Patra)				2 weeks				
15. Impact on Setting	**Level of Impact**	High		High	High		High		High		High	High	High
		Medium				Medium (as he is on a higher floor)		Medium		Medium			
		Low											
16. Impact on Person	Level of Impact (See A-for personal contextual factors)	High			High (psychological – parents; physical – smoke in Patra)		High		High	High	High	High	
		Medium		Medium				Medium					Medium

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		Low				Low							
D) Goals and Timescales													
Goals and time scale	**Goals – Immediate timescale: That the setting helps the persona to cope and respond to the disruptive climate event in a way that protects their immediate safety, health, and wellbeing, while also protecting their loved ones or friends (if relevant).**			Improve public transport for overall safety and security	Improved transport options	inadequate drainage and ventilation systems – need to update.	more support for first responders that are required to aid in emergency situations. Also – risk mitigation through education.	what the council can do to protect power and broadband lines from going down in storms.	protect animals in the smoke.	list of procedures about what to do in an emergency event. This would be very helpful, she said, for anyone staying in temporary accommodation without local expertise to consult, which would be available if she was staying in a hotel.	clearing an accessible pathway after such storm events	Plan to get to and from school safely while Eva is using crutches	

		P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
		Petro (23, without impairment; attends university of Patra)	**Maria** (60, without impairment; care-giving responsiblities)	**James** **68 (recently retired, blind; expat, living in Patra)**	**Stefano** **42 (responder, Polish, married)**	**Kosta-dina** **33 (pregnant, 7 months)**	**Angeliki** **(76 , without impairment)**	**Sarah** **26 (visiting Dublin; from Spain)**	**Pavlo** **(20,attends university of Patra; wheelchair user)**	**Eva** **(12, 6th class), has a broken leg)**	**Leonidas** **(4, in creche, school next year)**
	Goals – Medium timescale: That the setting helps the persona to maintain or to return to their normal activities and quality of life following any disruptive events as quickly as possible (i.e. normal family life, work, recreation etc.).	Improve awareness of the student body around climate change and the impacts on flooding.	Evacuation plans and protocols in place for her parents who live near fire risk.	combined effort of improvements to his residence and the greater community area will increase its resilience so he does not have to move from his home and the community that he is a part of.	council can implement better infrastructure (re draining). Due to water, local roads often become impassable in the event of an emergency. Furthermore, many of the roads and side streets in Patra are too narrow for emergency vehicles, making evacuations in emergency situations, especially of vulnerable groups, very difficult, and potentially dangerous.	ask the city to do an assessment of the areas surrounding their homes to address any potential hazards.	more comprehensive warnings should be put out about air quality. How to improve air quality (i.e. children playing outside; esp. those vulnerable – her grandson who has asthma	helpful for there to be a list from a deaf organization in Patra about dealing with issues in the city that arise.	campus caretakers and facility management to ensure that campus streets and sidewalks are accessible for all quickly after a storm.	If the power and broadband go out, won't be able to communicate between Eve and her mom and her dad.	worried about childcare should parents need to work in an inclement weather situation.

	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
	Petro (23, without impairment; attends university of Patra)	**Maria** (60, without impairment; care-giving responsiblities)	**James** **68 (recently retired, blind; expat, living in Patra)**	**Stefano** **42 (responder, Polish, married)**	**Kosta-dina** **33 (pregnant, 7 months)**	**Angeliki** **(76 , without impairment)**	**Sarah** **26 (visiting Dublin; from Spain)**	**Pavlo** **(20,attends university of Patra; wheelchair user)**	**Eva** **(12, 6th class), has a broken leg)**	**Leonidas** **(4, in creche, school next year)**
Goals – Long-term timescale: That the setting is enhanced in the longer-term in relation to resilience and sustainability, and that the wider neighbourhood is improvement and transformed in the terms of quality of life, and a more sustainable and resilient local environment.	updates to the infrastructure could be made in the university to diminish the flooding and leaking from heavy rains.	Prescribed burning; citizen coalition on fire prevention.	hopes that the council implements better flooding solutions that maintain the security of people's ways of life and allows for businesses and community organizations to flourish.	Better infrastructure improve safety, security, and overall quality of life.	What can be done to mitigate flooding / damage to ground floor in the future.	air quality in her home is affected – long-term improvements to ventilation to reduce impacts on overall health.	Airbnb makes detailed evacuation and emergency scenario lists a necessary component of hosting for all owners. Such guides would be critical to safety in an emergency event where the owner is inaccessible for help or guidance.	He hopes the facilities management department can put together a more comprehensive plan to address future storms, taking the concerns and needs of wheelchair users, as well as others with mobility issues, into account. In particular, the issue of flooding is a persistent one, and needs significant attention, as it does impact on the quality of student life and experience on campus.	school's protocol and education look like for emergency situations.	what Leonida's school's protocol will be for weather situations.

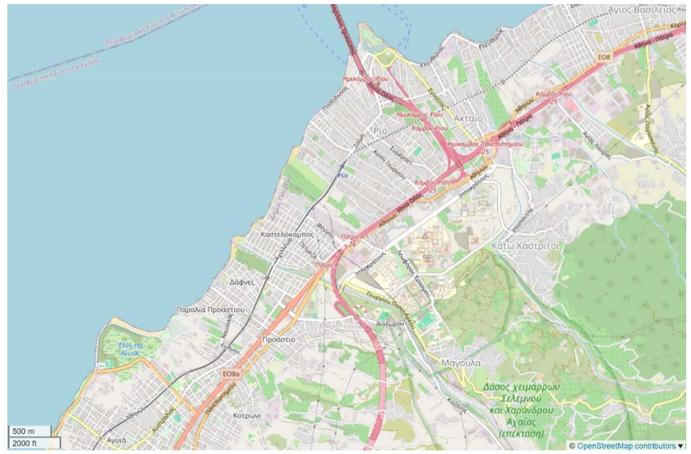
8.5 Personas and Scenarios – Patra (Greece)

Name: Petro

Key Setting**: University**

Event**: Flooding/Heavy Rains**

Age: 23
Gender: Male
Ethnicity: Greek
Health: Without impairment
Family status: Together, live in the village at home
Occupation: Student, University
Dwelling type: Apartment with other students
Location: Patras



Key location issues

Flooding; Wildfires (knock-on to biodiversity, air quality); Heatwaves. Earthquakes. Disruption: potential for disruption to the running of community services; impact to social fabric.

Meet Petro

Petro is a university student in the University of Patras. He is in his final year, studying engineering. He grew up in a village just an hour and a half outside of Patras, but the narrow roads into the city make the commute much longer at rush hour. Because of this, he decided to move into an apartment closer to campus, though still a long commute during peak travel times. He lives in a third-floor apartment with two other students. Their flat is three bedrooms and there is no elevator, only stairs access. He does not have any disabilities, and he has generally good health, though he does fall ill easily in damp environments.

Additional Information

As an engineering student, Petro spends much of his time in classes or in the library. He's noticed that the infrastructure of the university is degrading and is not necessarily up the standard that he would expect for safe learning and teaching conditions.

Heavy Rains

Event type: Heavy rains and flooding
Date and duration: November 20, 2024, 24hrs
Impact on setting: Rainfall of near 30mm in the span of 24 hours fell on Patras. This caused flooding throughout the city, especially on the Patras university campus, which has old drainage infrastructure.
Impact on people: Many students are stuck indoors until the flooding subsides, unless they want to wade through a flooded campus. Many classrooms also experienced leaks due to poor infrastructure.

How Petro was affected

Petro was in class when the rains started. Throughout the day, he noticed that more and more of his classrooms were experiencing leaks. Although not severe, it did make the environment uncomfortably damp. Most classrooms had to use buckets and trash bins to collect the water, which then resulted in a collection of dirty rainwater sitting open in the classrooms. The library was the same, with some of the windows leaking creating cold, damp conditions to study in. Petro was worried that he would catch an illness. The rain also creates localized flash flooding in Patras. In the university, common spaces such as the courtyard that sits between buildings, flood. This makes moving between buildings uncomfortable and difficult. The flooding also impacts the bus routes which are already crowded and uncomfortable at rush hour but become incredibly damp during the rains. They are delayed due the slow-moving traffic in the flooding conditions and sometimes routes are cancelled, leaving Petro with no way to get home in the rain.

What Petro would like to see happen in the future

Short-timescale impacts:
Petro understands that it is difficult to provide reliable public transportation services in inclement weather. However, he does think that the overcrowding that occurs at these times especially is unsafe for commuters. He wonders what the city or public transport company can do to resolve the issue, for the safety of drivers, riders, and pedestrians.

Medium-timescale impacts:
Students are not very educated about the effects of flooding on their day-to-day life and what they should do in a natural disaster. Although some have knowledge from prior experiences, many do not know what they should do when such weather occurs. Petro believes that the university should give educational information to students when they first arrive at university and each year before the term starts.

Long timescale impacts:
Petro wonders what updates to the infrastructure could be made in the university to diminish the flooding and leaking from heavy rains. He understands that it would likely be an expensive fix, but it is important, in his opinion, that students and lecturers are able to learn and work in a safe environment.

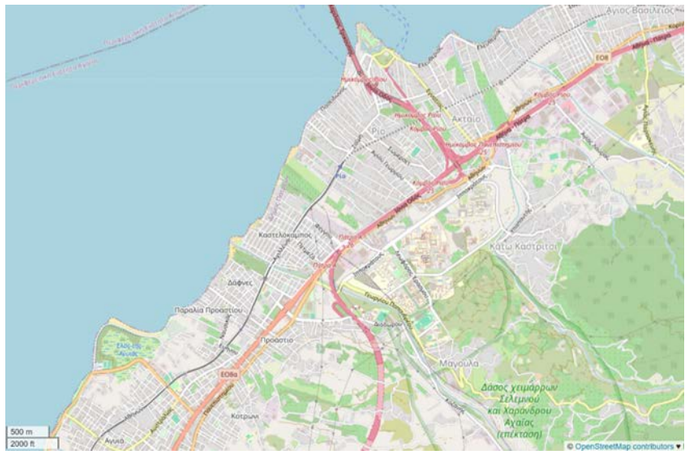
"We need better classrooms – leaking from the ceiling? This needs to be addressed. And it is really cold and damp sometimes. It makes it hard to concentrate in class"– Petro

Name: Maria

Key Setting**: Village (parents living outside Patra)**

Event**: Smoke**

Age: 60
Gender: Female
Ethnicity: Greek
Health: Without impairment
Family status: Married with two adult children
Occupation: Trader
Dwelling type: Home, private
Location: Patras



Key location issues

Flooding; Wildfires (knock-on to biodiversity, air quality); Heatwaves. Earthquakes. Disruption: potential for disruption to the running of community services; impact to social fabric.

Meet Maria

Maria is a trader that has lived in Patras for 20 years. She enjoys her job, though it is very demanding. Most days she spends 1/3 of her time at work. Her commute is quite short as she and her husband live near to the city center in the house that they own. This centrality means that she walks most places that she goes, including her work. Though, she has noticed that in the summer the heat and sun have become more and more overbearing. When there are wildfires, the smoke can be unbearable to walk through – she worries that it's ruining her health. Maria is considering using her car more for comfort and safety reasons.

Additional Information

Maria's elderly parents live in a village about an hour and a half outside the outer limits of Patras. They live in the house that Maria grew up in and are deeply attached to the surrounding area. Her parents have developed a rich community in the area, with all of the friends and extended family living nearby. Maria has begun to worry that wildfires will encroach on the house, as it is surrounded by wooded areas and farm fields.

Wildfire, 2022

Event type: Wildfire
Date and duration: June 2022 (Wildfire – 5 days; smoke impacting air quality up to a month)
Impact on setting: Residential (not affected; impact specific to her childhood home, and her elderly parents) is of deeper concern to Maria.
Impact on people: Smoke from the wildfire filled Patras and surrounding areas for weeks following the fires. It deteriorated air quality and trapped in the heat from the sun.

How Maria was affected

The wildfires hit very close to home for Maria. Though not directly near her home, her elderly parents live in a village outside the city. The flames came within 500m of their house, which really worried Maria. She wanted to go evacuate them from their house, as neither of them drive, but the roads in and out of Patras are so narrow that amongst the traffic of evacuations, she didn't know if she would be able to make it back to the city safely. There were reports that first responders could not make it through to help residents in the most damaged villages. Maria believes that her parents wouldn't be able to evacuate themselves if a fire actually did get near their house. Her and her husband have begun considering moving her parents into their home with her, though they do not want to hamper their independence. Maria is also worried about the wildlife affected by the fires. Growing up in the village, she knows the diversity of the ecosystem in the surrounding forests. As the environmental impact mounts from the wildfires each year, more and more insects, pollinators, and farm animals die.

What Maria would like to see happen in the future

Short-timescale impacts:
Maria is going to look into better options than driving when the air quality is bad, and the weather is too hot. She doesn't like the public transit in Patras, as it's dangerous and crowded, but she'd rather take the bus than drive her car for environmental reasons. She plans on talking to her neighbors and co-workers to see if anyone would want to carpool together.

Medium-timescale impacts:
After the fire got so close to her parents' house, Maria decided that she needed to arrange evacuation plans with her husband and her adult children to be sure that they are safe in the next wildfire. They decided that her son, who lives closer to her parents, will pick up his grandparents if there are severe risks or reports of a fire. The roads from her son's house to her parents' house are generally less crowded, even in disasters. She thinks that having a plan in place, even if it's imperfect, is better than no plan at all.

Long timescale impacts:
Maria has heard that countries like the US and Canada use prescribed burns to prevent wildfires. She wonders if that could work in Greece as well and if the government is looking into that at all. Maria has a few friends that work in conservation and she plans to ask them what they think can and should be done to prevent wildfires. She might create a citizen's coalition to advocate for better preventative action.

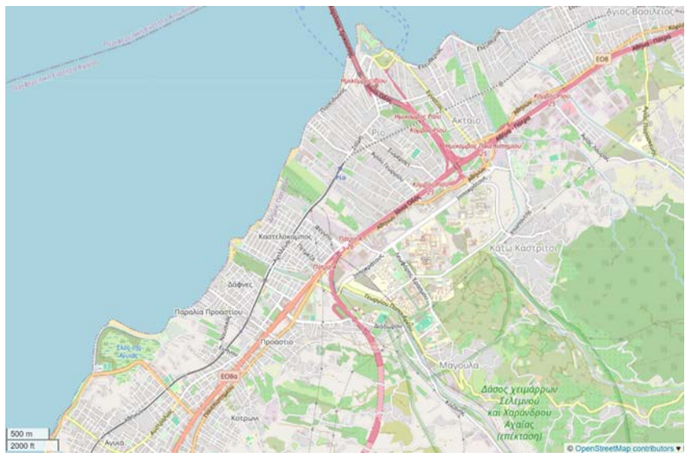
"I am worried for myself, my husband – what the smoke is doing to our health. But my parents also. They won't move to be closer with us – and it feels very unsafe for them to stay; but it is our family home. Our lives hold so much there"– Maria

Name: James

Key Setting**: Seaside Apartments**

Event**: Flooding**

Age: 68
Gender: Male
Ethnicity: Irish
Health: Blind;
Family status: Widower
Occupation: Recently retired
Dwelling type: 1-bedroom apartment (3floor; lift); balcony.
Location: Seaside Apartments in Rio, Patra



Key location issues

Flooding; Wildfires (knock-on to biodiversity, air quality); Heatwaves. Earthquakes. Disruption: potential for disruption to the running of community services; impact to social fabric.

Meet James

James is 68 years old; he is a widower (lost his wife to cancer three years ago) who lives alone in a lovely 1-bedroom flat in a good location, near the water, in Patra. He is newly retired and move to Patra; is looking forward to engaging further with his community in retirement. He is a member of the 'Expats in Patra Greece', a community group that brings together men in the community where they can learn and share new skills while building connections. Through this, he is hoping to build and enhance community ties through hands-on activities. As a blind man, James navigates his community using a white cane.

Where James Lives

James lives in Seaside Apartments in Patra. The apartment is five floors and has a lift. James lives in a one-bedroom flat with a balcony on the third floor that he owns. He is highly attached to the area that he lives in and his apartment (before she passed away, James and his wife would travel and vacation in Patra). This attachment has increased his fears around leaving his flat for security and safety reasons, but for this reason he has a high level of knowledge about safety and evacuation plans and procedures to be sure that he's prepared for any possible event. He's maintained a high level of awareness of key hazards and how to respond to these in the event of an emergency, which he has implemented in the past.

Event

Event type: Flooding
Date and duration: 1st February, 2025
Impact on setting: Flooding throughout Patra led to hundreds of buildings being damaged or destroyed.
Impact on people: 300 people were evacuated from the most impacted areas and many houses and buildings were destroyed. The Greek army was called in to evacuate individuals and provide relief from the storm.

How James was affected

James' apartment is near to the sea. The land itself is low-lying with poor drainage making it vulnerable to flooding in heavy rain. As James is blind and uses a cane to navigate his surroundings, he was trapped in his third story apartment until the flooding subsided. Luckily, he wasn't on the ground level, as his apartment would have been heavily damaged due to their vulnerability and the lack of built infrastructure. James recounted this a high severity event for himself, the apartment buildings, and Patra area as a whole. Although it had a low-impact on him compared to others in his community, it did make him aware of the importance of understanding emergency procedures in the event of a severe weather event.

What he would like to see happen in the future

Short-timescale impacts:
James noted that his apartment has inadequate drainage and ventilation systems. Although primarily related to temperature regulation, this could also have detrimental impacts in the aftermath of flooding, especially where residents could be affected by dampness. James hopes that the apartment management fixes this critical infrastructure before future storms.

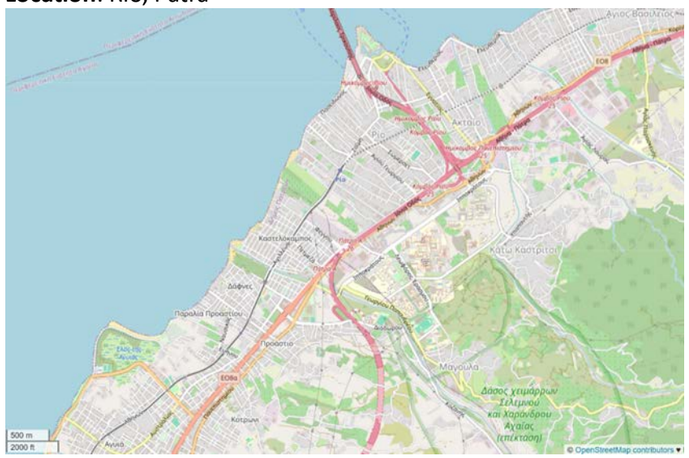
Medium-timescale impacts:
As he is so attached to where he lives and feels knowledgeable about the surrounding areas and emergency procedures, James does not want to move from his apartment. He hopes that a combined effort of improvements to his residence and the greater community area will increase its resilience so he does not have to move from his home and the community that he is a part of.

Long timescale impacts:
James is worried that as flooding caused by severe storms and water-levels more generally increase, that the social fabric of Patra will change because people move away for climate related reasons. To prevent this, he hopes that the council implements better flooding solutions that maintain the security of people's ways of life and allows for businesses and community organizations to flourish.

"I wouldn't want to leave my flat; I am very used to it. It is also the place where I have good memories with my wife, before she got sick – it means a lot to me for that"– James

Name: Stefano
Key Setting**: First responder**
Event**: Flood**

Age: 42
Gender: Male
Ethnicity: Greek
Health: Good
Family status: Married
Occupation: First Responder
Dwelling type: 3-bedroom apartment (7th floor; 10 floors), private rent
Location: Rio, Patra



Key location issues
Flooding; Wildfires (knock-on to biodiversity, air quality); Heatwaves. Earthquakes. Disruption: potential for disruption to the running of community services; impact to social fabric.

Meet Stefano
Stephen is a first responder. He has been with his wife for 25 years and together they have two children aged 12 and 7. He has a strong relationship to his community, through his family, and his work as a first responder. Despite this, he is generally not deeply attached to Patra specifically, though he enjoys his home and worries about the impacts of flooding and other severe weather events. Stefano lives with his wife and kids in a three-bedroom apartment that they rent in the Rio district; however, he spends most of his time at work.

Where Stephen Works
Stefano is a first responder, which means that he interacts with his community every day to ensure safety throughout all weather, social, and community conditions. Because of this, he is deeply aware of the pressures that are placed on infrastructure when disasters hit.

Event
Event type: Flooding
Date and duration: 24th October 2024
Impact on setting: Flooding at Patra University
Impact on people: Heavy rainfall in a short period of time led to localized flooding and water levels inside the sports and recreational building up to 3 inches in some places. The surrounding roads were impassable for 400 meters due to water levels.

How Stefano was affected
As a first responder, Stephen was called out to aid individuals in his community and ensure their safety. Although the sports center itself was not a dangerous situation, he was frustrated by the impassability of the roads to get to the sports centre and the dangerous conditions driving in the heavy rains and flooding. He worries about putting his life at risk in severe disaster situations where first responder infrastructure is over extended. Stephen is also worried that in future storms he would not be able to respond in a timely manner because of flooding on the roads. He believes that the poor drainage infrastructure exacerbates the impacts of heavy rains and flooding throughout Patra, but especially on the university campus.

What he would like to see happen in the future
Short-timescale impacts:
Stefano feels that there should be more support for first responders that are required to aid in emergency situations. He also wonders if there is a way to promote a public education campaign that encourages community members to better understand what they should be in the event of an emergency. Although Stephen enjoys his job, he does think that a lot of risk could be mitigated through risk-reduction education.

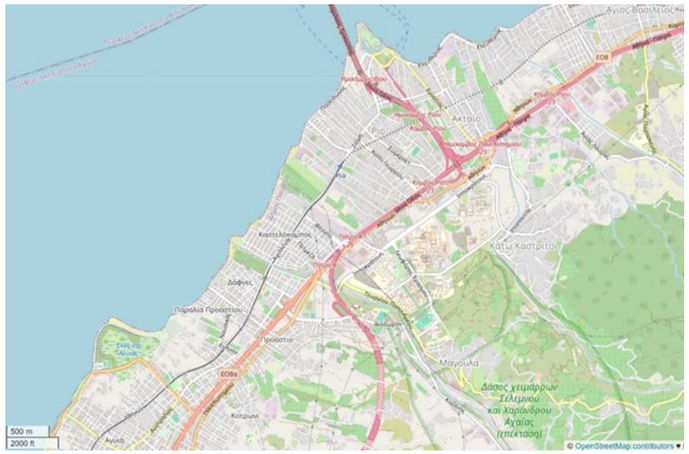
Medium-timescale impacts:
Beyond his work, Stefano is worried about how poor infrastructure will affect him, his house, and his family in the event of an emergency. As a first responder he honors his duty to protect and aid his community members, but he worries that something could happen to his family or himself if they were to be separated. He is also concerned about the lower floors the apartment building being ruined in the event of flooding as the surrounding area has poor infrastructure to facilitate draining. He hopes that the council can implement better infrastructure to protect himself and his family. Stefano also believes that this could inhibit his ability to respond in an emergency situation, as local roads often become impassable in the event of an emergency. Furthermore, many of the roads and side streets in Patra are too narrow for emergency vehicles, making evacuations in emergency situations, especially of vulnerable groups, very difficult, and potentially dangerous.

Long timescale impacts:
Stephen worries that if flooding continues, he and his family will need to move somewhere safer. Although he enjoys living in Rio, he does not want his kids to live somewhere that could be destroyed from such inclement weather. He is also concerned that day-time flooding could leave them stranded at school during heavy rains. Although he does not want to move them and does not consider that necessary at the moment, he is worried that if better infrastructure is not put in place he would need to consider that for their safety.

"I'm here to help people; the roads make it difficult, even in everyday situations – when flooding is involved, it makes it so much harder to do my job well, and for the community"– Stefano

Name: Kostadina
Key Setting: Rio Neighbourhood
Event: Wind Storm

Age: 33
Gender: Female
Ethnicity: Greek
Health: none, 7 months pregnant
Family status: Married, pregnant with first child
Occupation: Full time, about to go on maternity leave
Dwelling type: Two-bedroom house
Location: Rio, Patra



Key location issues

Flooding; Wildfires (knock-on to biodiversity, air quality); Heatwaves. Earthquakes. Disruption: potential for disruption to the running of community services; impact to social fabric.

Meet Kostadina

Kostadina is 33 years old and lives in a privately owned 2-bedroom house with her partner of 10 years. She has a third level qualification and is currently working but will soon go on maternity leave as she is 7-months pregnant with her first child. She is highly involved in her community and feels strong ties within it. She is highly attached to both her home and the surrounding area, especially as a place to raise her first child with her partner.

Additional Information

Although in generally good health, she has experienced physical challenges as a result of her late-term pregnancy. This includes swollen feet, back pain, and poor sleep patterns. She is aware of her local hospital, in Patra (which is the main hospital for the Peloponnese region) but is otherwise relatively unaware of emergency and safety procedures that she would follow in the event of a disaster. Her attachment to the community and the imminent birth of her first child mean that she is deeply concerned about leaving for security reasons.

Storm with Heavy and strong winds

Event type: Wind storm, some localized flooding
Date and duration: 23rd – 24th January, 2025
Impact on setting: Strong winds felled trees and powerlines around Patra, there was also damages caused to infrastructure and buildings (left weakened and vulnerable due to recent and frequent earthquakes)..
Impact on people: Around 40,000 homes were left without power and transport, schools, and parks were all closed due to gusts of over 130 km/h. There was also coastal flooding due to the waves generated from the extreme winds. Many areas lost broadband connection and water due to the damages from the winds. Many businesses and shops closed their doors for the entire duration of the storm. In Rio, there was also coastal flooding due to the high waves.

How Kostadina was affected

Kostadina was worried about having to leave her home during the wind storm. As she could work from home, she wasn't concerned about travelling during the height of the storm when the winds were the strongest. As someone who is aware of the impacts of climate change, she was deeply concerned about the long-terms impacts on the surrounding area, in the aftermath of the storm; this made her consider what she and her partner would do when their child was enrolled in school, as well as what climate-related changes to the environment would mean more generally in the future. Living in Rio (and in Patra, the second-largest port city in Greece), she understands that the coastal location makes the community prone to greater wind gusts and localized flooding, especially in low-lying areas. Other hazards, such as felled power lines, are concerning, especially in tandem with flooding. Kostadina is worried that storms will get more severe in the near future, with longer absences of power and broadband in the following days. This is particularly concerning for her, given she will be giving birth soon and wants to make sure she has contact with her family (who live further away, especially her mother, and two sisters – all of whom live in Athens).

What she would like to see happen in the future

Short-timescale impacts:
Kostadina is wondering what the council can do to protect power and broadband lines from going down in storms. She's worried about what a power outage would be with a newborn child and how she would maintain communication with the rest of her family if the outage persisted for many days.

Medium-timescale impacts:
Kostadina and her neighbors are worried that there is infrastructure that could fall on their houses, like a piece of a building that fell on an older person, causing their death. They plan to ask the city to do an assessment of the areas surrounding their homes to address any potential hazards.

Long timescale impacts:
Kostadina lives in a terraced house and her residence is primarily on the ground floor. She's heard of people in terraced houses in the area experiencing flooding due to poor drainage in common areas and worries that it could impact her home as well. She plans to enquire with the other households in her terraced housing about what they could do as a community.

"I can't help but be worried; I am going to be having a baby soon – what happens if another storm like this happens, and I am in labour? What if my partner isn't with me? What happens if I can't make it to the hospital in time, or if the hospital loses power?"– Kostadina

Name: Angeliki

Key Setting**: home / city-wide**

Event**: Smoke**

Age: 76
Gender: Female
Ethnicity: Greek
Health: Good
Family status: Married, one grandchild
Occupation: Retired
Dwelling type: Apartment, third floor
Location: Patra

Key location issues

Flooding; Wildfires (knock-on to biodiversity, air quality); Heatwaves. Earthquakes. Disruption: potential for disruption to the running of community services; impact to social fabric.

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Meet Angeliki

Angeliki is 76 years old and has lived in Patras for 25 years. She moved here with her husband for a job after her children moved away. In the time that she's lived in Patras, she has developed a great network of friends that live in surrounding apartments. She loves spending time with her grandson, who she picks up from each day. He lives in a different neighborhood than her, so she travels around the city on public transportation to pick him up.

Additional Information

Angeliki has one dog and two cats which she generally let roam free in her apartment. She and her husband take turns taking the dog for walks, usually three times a day at the very least. Angeliki has noticed that the weather in the summer has gotten too hot for animals. Her dog that used to enjoy endless walks gets exhausted and dehydrated very quickly. She's also noticed that the wildfires are getting more severe, that means that the smoke is also getting more severe and, in the summer, when there isn't rain or wind to blow it away, it lingers around for a long time.

Wildfire

Event type: Severe smoke
Date and duration: July, 2024
Impact on setting: Driven by winds upwards of 42 km/h and extreme heat that reached 42 degrees Celsius, fires quickly swept over the city of Patras.
Impact on people: Dozens of homes and a children's hospital were evacuated. The fires also created immense amounts of smoke that lingered in the air due to the dry, hot conditions. There wasn't rain or wind for a few weeks following the fire, meaning there was nothing to sweep away the smoke.

How Angeliki was affected

The most recent wildfires brought smoke that lingered for nearly a month in Patras. Angeliki, though used to this happening before, began to worry about the health of her grandson and pets more than she had in the past. She noticed that even her cats, that remain inside, were having trouble breathing normally. Her grandson, who has mild asthma, began needing to use his inhaler every day to prevent an asthma attack. Her daughter, her grandson's mom, had to bring him to the doctor who said that nothing could be done. Angeliki is worried that an increase in smoke presence will harm his health over time. She's also needed to limit the amount of time that herself, her husband, and her dog spend outside on walks. This has noticeably impacted her dog's behavior; he's been restless and has been acting out because he has no way to channel his energy.

What Angeliki would like to see happen in the future

Short-timescale impacts:
Angeliki is going to ask other animal owners what they do to protect them in the smoke. She also might ask her vet how they recommend they keep their pets safe amongst long-term smoke presence.

Medium-timescale impacts:
Angeliki is worried that her grandson is especially impacted by the smoke. She plans to enquire whether or not the kids are outside over their breaks. She doesn't think that it's healthy for them to be participating in physical activity outside when the smoke is so bad. This is tied, also, to the response of the government. Angeliki thinks that more comprehensive warnings should be put out about air quality.

Long timescale impacts:
She is also worried that the air quality in her home is affected. Her cats, herself, and her husband have all seen significant impacts to their breathing. Angeliki plans to ask her building manager how old the building and ventilation systems are to see if they need to be replaced. She's worried that they are old and not functioning the way that they should be.

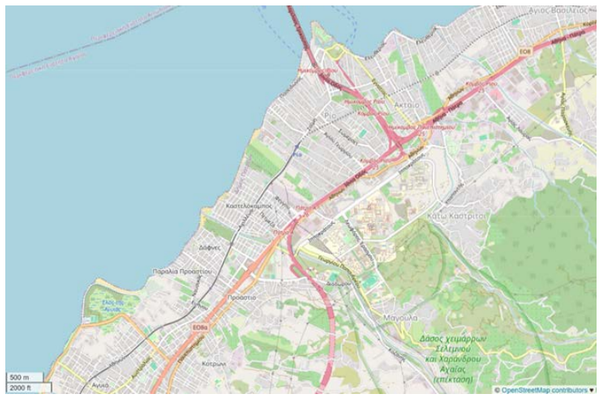
"We need good air, to breathe. The smoke is unbearable, for everyone – my husband, my grandchild, and my pets"– Angeliki

Name: Sarah

Key Setting: Airbnb

Event: Extreme Wind

Age: 26
Gender: Female
Ethnicity: White - Spanish
Health: Deaf, otherwise without impairment
Family status: Single
Occupation: Unemployed
Dwelling type: Airbnb
Location: Patra (Rio district)



Key location issues

Flooding; Wildfires (knock-on to biodiversity, air quality); Heatwaves. Earthquakes. Disruption: potential for disruption to the running of community services; impact to social fabric.

Meet Sarah

Sarah is a 26-year-old woman from Spain, who was visiting Patra at the time of interview. She is deaf and has challenges with visual communication, safety, and navigation. Although she is well able to make her way around her home community in Spain, when she travels it often takes time to adapt to moving around a new, foreign environment. This is her first time in Patra and although she enjoys the city, she does not feel a high level of connection with the community or the building that she is staying in. She does, however, feel a high-level of fear about what she would do should there be an extreme weather event, especially because her level of local knowledge is relatively low.

Additional Information

Sarah is worried that in the event of an emergency while travelling she would be unable to orient herself and be able to communicate with locals that could help her. Although she is fluent in sign-language and can lip read well, she is worried that there would not be anyone that signs to help accurately relay information to her.

Extreme Wind

Event type: Wind tunneling at evening
Date and duration: 5th May, 2025
Impact on setting: Due to the built environment and coastal proximity of Patra (and the Rio district where she is staying), wind tunneling is extremely common. There was a brief power outage due to the high winds.
Impact on people: With a moderate warning for wind, individuals already prone to being disoriented were advised that it would likely exacerbate the situation. Individuals who are frail or unsteady were warned to stay inside as gales may knock them off balance.

How Sarah was affected

Sarah struggles with navigation and safety. On her first night in Patra, she experienced extreme wind tunneling while walking around the city. She found it incredibly disorienting. When she arrived back at the Airbnb, she discovered a brief power outage caused by the high winds. Although she has experienced power outages before, she quickly realized that she did not know what to do while in a foreign environment and staying in an Airbnb. She tried to contact the owner, but he was unresponsive to her enquiries. Sarah was frustrated that he did not provide a list of what to do in emergency situations and was unresponsive to her requests for further information. The power turned back on 5 hours later, but she was frustrated and upset by the situation. Throughout the event she was worried about going outside again to ask help from someone else, but Sarah was concerned that she would once again become disoriented by the high-force winds.

What she would like to see happen in the future

Short-timescale impacts:
Sarah was most frustrated by the lack of responsiveness from Airbnb owner. She hopes that in the future, the Airbnb owner would provide at least a basic, if not detailed, list of procedures about what to do in an emergency event. This would be very helpful, she said, for anyone staying in temporary accommodation without local expertise to consult, which would be available if she was staying in a hotel.

Medium-timescale impacts:
Sarah also thinks that it'd be helpful for there to be a list from a deaf organization in Patra about dealing with issues in the city that arise. She knows that other deaf people can face the same navigational issues as her, so a list of organizations or people that could be communicated with would be very helpful.

Long timescale impacts:
In the long term, Sarah hopes that Airbnb makes detailed evacuation and emergency scenario lists a necessary component of hosting for all owners. She says that this would be very helpful to anyone, not just individuals with disabilities, as Airbnb come without any guide to the city that the person is visiting. Such guides would be critical to safety in an emergency event where the owner is inaccessible for help or guidance.

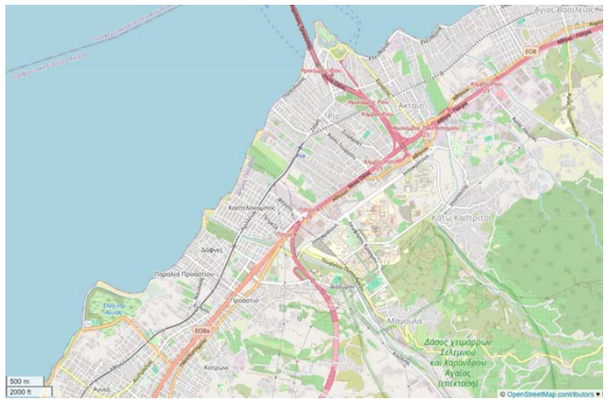
"I really didn't feel safe where I was staying; there was no support, and I couldn't be in touch with my family during the power-outages. They were really worried about me. "– Sarah

Name: Pavlo

Key Setting**:** Public Spaces

Event**: Flooding**

Age: 20 years old
Gender: Male
Ethnicity: Greek
Health: Wheelchair user, otherwise none
Family status: Originally from Pyrgo, he moved to Patra for school. Family, parents and 5 brothers, all live at home.
Occupation: Part-time, main responsibility is university
Dwelling type: Renting – student residence hall, on-campus; single bedroom;
Location: University of Patra (campus)



Key location issues

Flooding; Wildfires (knock-on to biodiversity, air quality); Heatwaves. Earthquakes. Disruption: potential for disruption to the running of community services; impact to social fabric.

Meet Pavlo

Pavlo is a 20-year-old wheelchair user originally from Pyrgo, living in Patra to attend University. As he uses a wheelchair, he is dependent on accessible infrastructure to move through the city. Generally, Patra is not a highly accessible city; as such, Pavlo opted to find accommodation on campus. He'd had concerns when he first moved to Patra, especially because he was moving away from his parents and five brothers for the first time, but felt campus accommodation would support his independence. On top of his schoolwork, Paul works part-time in one of the school cafeterias, and is involved in student societies.

Pavlo's Home

Although not specifically attached to Patra, Paul is very attached to his single bedroom, as wheelchair accessible accommodation is not plentiful. He lives on the second floor; and there is a wheelchair- accessible lift. He was worried that he would have to live in expensive private student accommodation.

Heavy rainstorm, resulting in flooding

Event type: Heavy rains
Date and duration: 25th May, 2025
Impact on setting: Impact on setting: Rainfall of near 30mm in the span of 24 hours fell on Patras. This caused flooding throughout the city, especially on the Patras university campus, which has old drainage infrastructure. This is not the first time the campus has experienced this level of flooding; many students refer to the large pools of water that remain after the rains as 'campus lakes'.
Impact on people: Many students are stuck indoors until the flooding subsides, unless they want to wade through a flooded campus. Many classrooms also experienced leaks due to poor infrastructure.

How Pavlo was affected

Paul finds it incredibly hard to safely navigate the campus on a normal day, due to the poor conditions of the sidewalks, their narrowness, or instances, lack of wheelchair accessible infrastructure. Due to the storm, and the resulting flooding, he is unable to navigate sidewalks, and as a result, he cannot attend classes (even though he lives on campus), nor can he go to work, as the flooding imposes a physical barrier he cannot negotiate around. As such, Pavlo had to stay in his single bedroom the day of, and the day after the storm. On the second day, he had to attend classes, and he had a shift at work; when he left the student residence for his short commute to his class, many of the sidewalks throughout the campus were still covered in debris, and many parts of the campus were still flooded. He understands that cleaning up after such events can be difficult and takes a large-scale effort on behalf of the university facilities management team, but he still needed to make it into his classroom and unfortunately had to turn back.

What he would like to see happen in the future

Short-timescale impacts:
Pavlo was very frustrated by the debris and flooding that obstructed his path. He would like the university to prioritize clearing an accessible pathway after such storm events so that he is able to resume his usual day-to-day activities.

Medium-timescale impacts:
Pavlo was also unsure of what to do when he was leaving his residency hall, to go to class. He has a particular route that he takes 'on a good day' as it is the one he finds most accessible. It normally takes him 20 mins to get to class. Along the way, he had to take multiple diversions to avoid significant pools of water, waste and bins, and other barriers that he could not maneuver around without risk of losing balance and tipping his wheelchair over. Eventually, he had to give up and turn back home because it was taking too long and he wouldn't make it to class on time. Pavlo wonders if there is anything more that the campus caretakers and facility management can do to ensure that campus streets and sidewalks are accessible for all quickly after a storm.

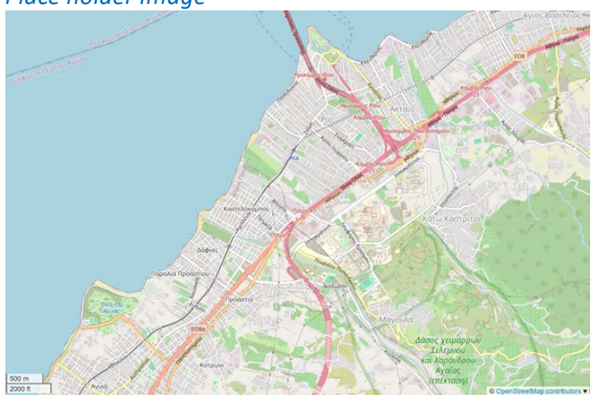
Long timescale impacts:
Paul wonders how the campus will be impacted in future storms. He hopes the facilities management department can put together a more comprehensive plan to address future storms, taking the concerns and needs of wheelchair users, as well as others with mobility issues, into account. In particular, the issue of flooding is a persistent one, and needs significant attention, as it does impact on the quality of student life and experience on campus, especially for Pavlo.

"It was really frustrating to not be able to go to class; some of the other students had no problem – they could move around things; I couldn't. It isn't fair; the campus isn't so accessible for me"– Pavlo

Name: Eva
Key Setting**: School**
Event**: Severe winds**

Age: 12
Gender: Female
Ethnicity: Greek
Health: Without impairment, broken leg (using crutches to move around in school and at home)
Family status: Parents are divorced, lives with mom and her grandparents in Patra city centre (dad lives in Rio district)
Occupation: In Primary Level 6th Class
Dwelling type: Apartment block, 4 floors, living on ground floor
Location: Patra, Greece

Place holder Image



Key location issues
Exposure to hazards**:** Little to no shading / green space; high risk of overheating / heat island effect.
Disruption: potential for disruption to the running of community services; impact to social fabric.

Meet Eva
Eve is a 12-year-old that lives in Patra city centre with her mom, her papou and yiayia. Her dad lives in Rio district She attends primary school in the area and enjoys playing outside with her friends at the playgrounds and parks at school and in their neighborhood. Eva loves to be outside, whether that's while playing sports or spending time with her friends and family she's happy when the weather in Patra is not too hot, or rainy; however, she feels that in the summer, the hotter days are becoming much more frequent.

Eva's Broken Leg
Eve recently broke her leg while playing football and uses crutches to get around at school, in transit, and at home. She's gotten used to using them quite quickly, but she has noticed how much harder it can be to go some places or do some of the things that she used to do. At school, she can't participate in recess and go on the jungle gym with her friends. Although they still play with her on the sidelines, she feels left out, especially when she goes to her football team's matches and has to cheer from the bench.

Wind
Event type: Severe Wind Gusts
Date and duration: Early April, 2025
Impact on setting: public realm; flying debri, causing blockages.
Impact on people: Large wind gusts created wind tunneling effects that could easily make someone who is frail or already injured unbalanced.

How Eva was affected
Eva was at school when the windstorm started. The power went out, and students were advised to go home. She's used to large gusts and gales that often begin in the coastal area that her dad lives in, but she felt it was more difficult this time because she's using crutches. When walking home from school she had to go very slowly because she felt unsteady and was worried that she would hurt herself more. Although she made it home safely, it was the first time that she felt scared because of a storm like this. She became worried that if there was a more severe storm while she was still in a cast and using crutches that she wouldn't be able to get home. Although there wasn't any flooding, she also began to think about how she would get around if that were to happen. She can't get her cast wet and is worried that she would slip in the water.

What she would like to see happen in the future
Short-timescale impacts:
Eve decided that she would talk to her mom and dad about what she should do if she can't get home in a storm. She thought it would be good to come up with a plan for travelling to and from school in the case of an emergency, especially with her cast on. She knows that storms like this will become more frequent so she wants to be prepared.

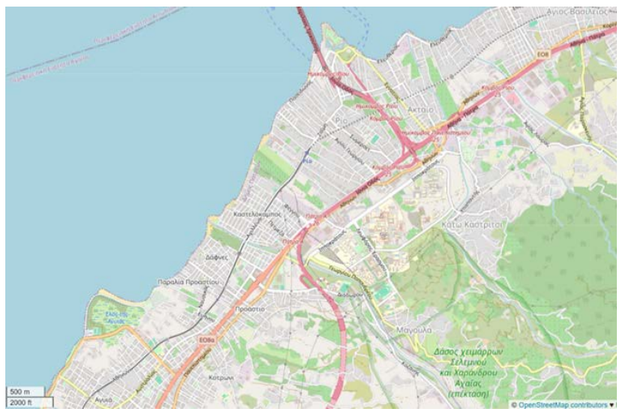
Medium-timescale impacts:
Eve and her parents are worried that if there is a big storm and the power and broadband go out, that they won't be able to communicate between Eve and her mom and her dad. They wonder what they can do to create a plan for a situation where that happens.

Long timescale impacts:
Eve's parents wonder what the school's protocol and education look like for emergency situations. Although they have discussions with Eve about what she should do, they do hope that the school has such conversations to be sure that the kids are ready for any event. They say that it's important also that schools educate kids about climate change, natural disasters, and what to do in situations where they or their neighbors might be in danger.

"I just want my cast off so I can go back to doing all the things, like playing football my friends. The wind was strong – and I had to really careful walking home, especially with my crutches"– Eva

Name: Leonidas
Key Setting**: Residential**
Event**: Extreme Wind**

Age: 4
Gender: Male
Ethnicity: Mixed -- Greek dad, Nigerian mom
Health: Without impairment
Family status: Nuclear family
Occupation: student
Dwelling type: detached home
Location: Patra, Greece



Key location issues
Flooding; Wildfires (knock-on to biodiversity, air quality); Heatwaves. Earthquakes. Disruption: potential for disruption to the running of community services; impact to social fabric.

Meet Leonidas
Leonida is four years old and lives in Patra with his parents. They live in a detached home. All of Liam's friends live nearby, they enjoy playing in each other's homes and in the local park when the weather is nice. His parents have befriended many of his friend's parents, they all say that public parks and infrastructure that is safe is critical to the wellbeing of the kids in the area and the neighborhood as a whole. Liam is enrolled in a local pre-school and will begin school in the new year. His parents are happy that he'll be able to attend the local school, as it is nearby and they are able to walk him to school on their way to work each morning.

Additional Information
Leonida's parents are both emergency responders. His dad is a firefighter in the Patra Fire Brigade and his mom is an EMT. Often, they get called into work in severe weather situations.

Wind
Event type: Extreme Wind
Date and duration: N/A, power outage for multiple days
Impact on setting: High winds downed trees and powerlines throughout Patra, but especially in Liam's neighbourhood.
Impact on people: Many homes lost power for multiple days following the storm. In some areas, people lost water as well. The scale of the damages was so severe that it took many days for crews to address all of the outages.

How Leonida was affected
Leonida's home has lost power multiple times now because of windstorms, sometimes for multiple days at a time. He recalled one time during the past winter when the power and water went out for multiple days. He said that he was very cold and had to wear his winter coat inside. He's worried that the power will go out for longer again soon and that he won't be able to go to school because the power will be out there too. He doesn't like it when the power goes out, especially at night, because it means being in the dark for a long time. His parents aren't sure what they would do if there were an emergency and school was closed. They're both emergency responders, so they often are called into the community when there are big storms to be sure that the public is safe. Liam is too young to stay home alone and they have some neighbors that they trust to mind him, but they do not want to be a burden, especially when the power is out. Leonida's grandparents live in a different part of Patra and it would be very difficult to get him to their home if public transport is delayed or stopped because of the storm.

What Leonida's family would like to see happen in the future
Short-timescale impacts:
Leonida's parents are going to talk through what they should do as a family in an emergency event.

Medium-timescale impacts:
Leonida's parents are worried about childcare should they need to work in an inclement weather situation. They decided that they are going to talk to their neighbors and some of Leonida's friends' parents that live nearby to create a plan should they need to work when school is closed. They hope that having a plan will ease both themselves and Leonida in a high stress situation.

Long timescale impacts:
They wonder what Leonida's school's protocol will be for weather situations. As emergency responders, they may not be able to leave their jobs to pick Leonida up and bring him home. They hope that there will be opportunities to discuss this with the school, other parents, and that the kids are taught about what to do in severe weather in the classroom.

"The dark is scary; my mom wouldn't let me go outside at all – I got a new ball and I just wanted to play with all my friends; not allowed "– Leonidas

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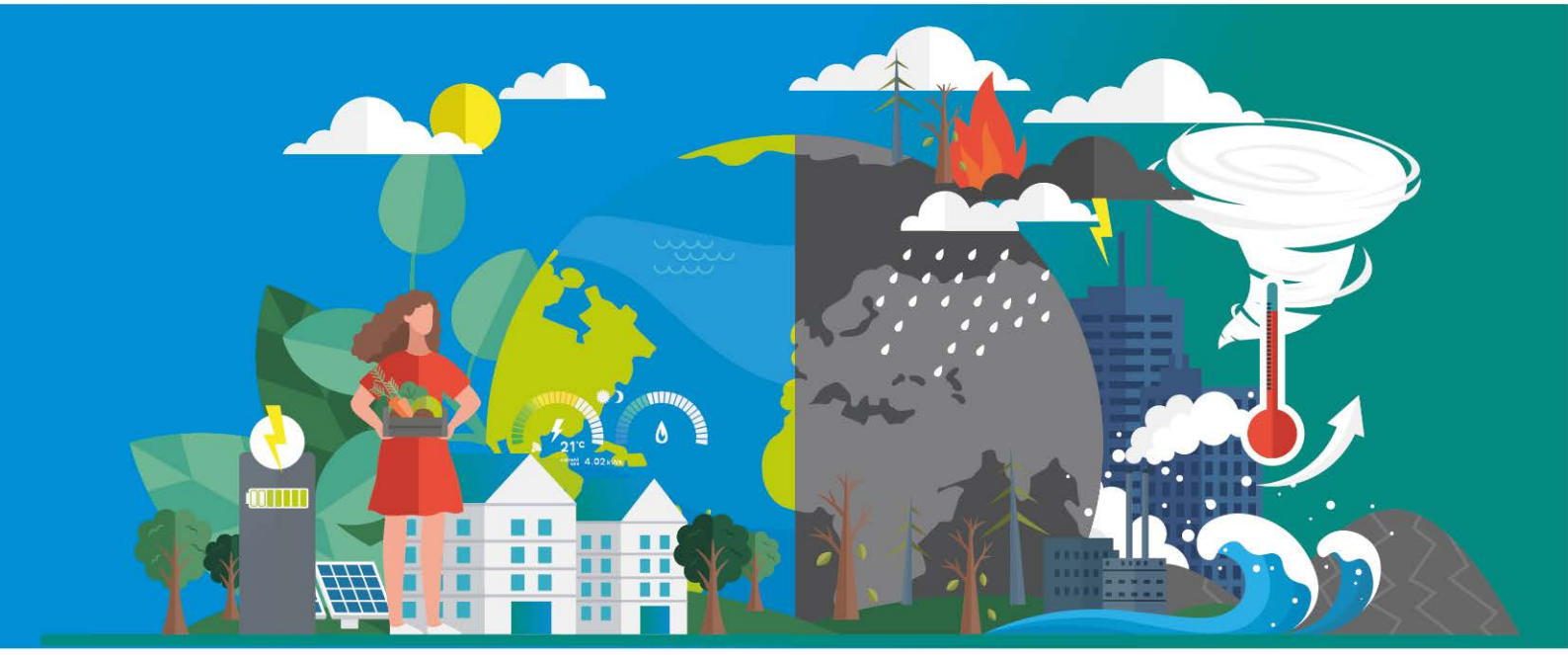

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