



THE ROLE OF THE ENVIRONMENT ON HEALTHY AGEING AND COGNITIVE HEALTH: SPACE PROJECT



The main presentations within this meeting will be recorded and made available online following the event.

Welcome

Lee Newton

Head of Consumer Operations,
Ordnance Survey

ORN Executive Committee Member



THE ROLE OF THE ENVIRONMENT ON HEALTHY AGEING AND COGNITIVE HEALTH: SPACE PROJECT



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ORN Vision

‘Support and encourage everyone to responsibly enjoy and engage with the outdoors’



ORN Academic Research Group

The ORN Academic Research Group (ARG) helps researchers share insights with each other and with those who work in more practice and policy fields. The sessions take place on a quarterly basis online and contributions are welcome on research topics related to outdoor recreation from those working in universities and colleges, research institutions, and sector organisations.



Prof Ruth Hunter

Professor of Public Health and Planetary Health, Centre for Public Health, Queen's University Belfast



Dr Shay Mullineaux

Research Fellow – SPACE and GroundsWell projects, Centre of Public Health, Queen's University Belfast



Dr Niamh O'Kane

Research Fellow and science communication/impact lead – SPACE and GroundsWell projects, Centre for Public Health, Queen's University Belfast



GEOPORTAL: INTRODUCTION AND DEMONSTRATION

SHAY MULLINEAUX

RUTH HUNTER

ON BEHALF OF THE SPACE TEAM
INCLUDING RUOYU WANG, CONOR GRAHAM,
GEMMA MCNICKLE, RICO SANTIAGO,
JENNIFER MCKINLEY

IN PARTNERSHIP WITH QUEEN'S UNIVERSITY
BELFAST AND ORDNANCE SURVEY NI

<https://www.qub.ac.uk/sites/space/>



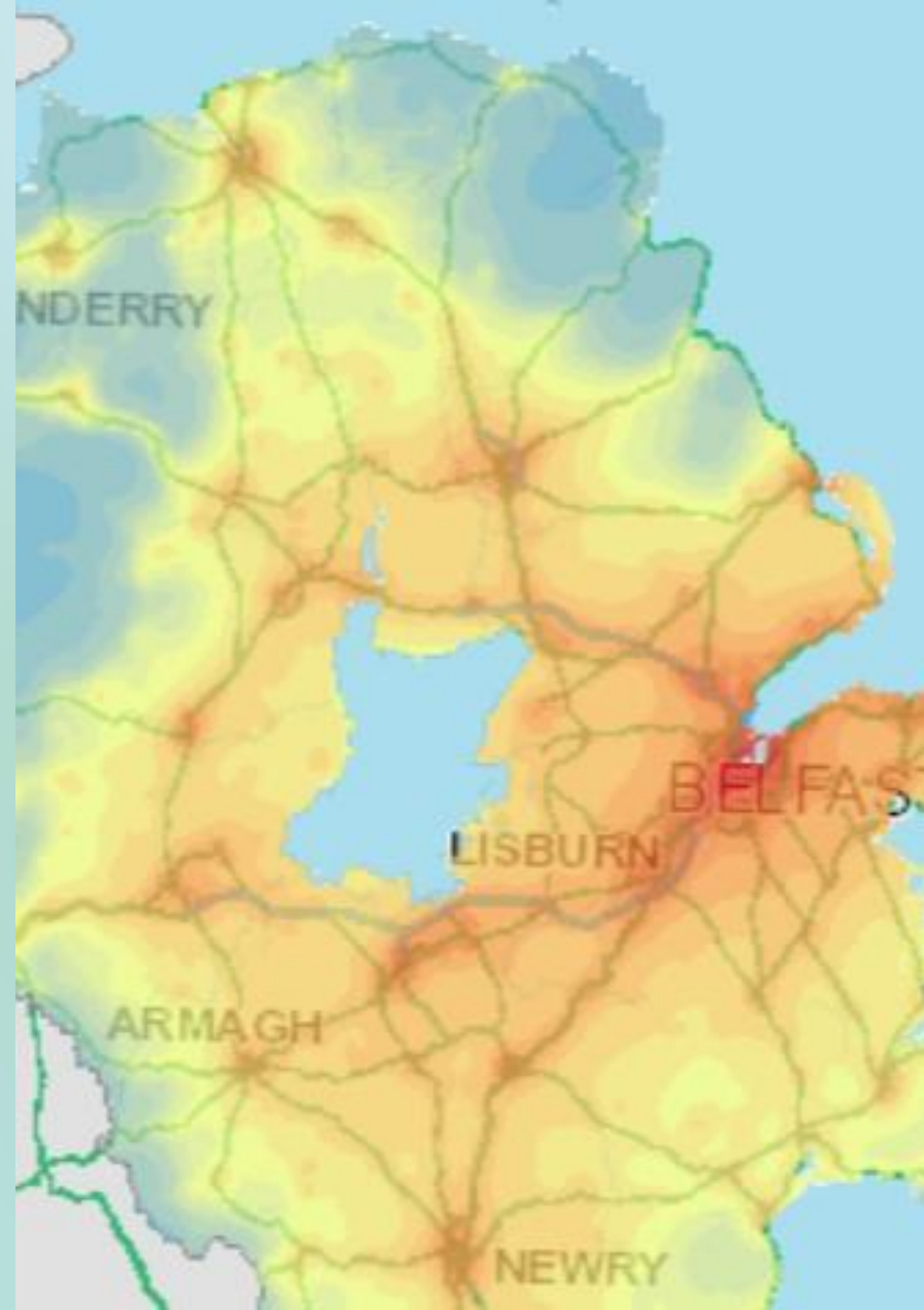
This work was supported by **UK Research and Innovation** [ES/V016075/1]





What is a Geoportal?

It is a site where users can **explore, discover, download and visualise** spatial data relating to the work in the SPACE project



Specification

- The SPACE Geoportal was built online using esri ArcGIS online software
- The Portal itself is configured using **esri Hub**
- The Map Viewer is using **Experience Builder**



Benefits:

- QUB AGOL set up allowed for ease of software access
- Cloud based data storage, no server maintenance
- Automatic Software updates will allow the site to improve with technology
- Familiar interface for GIS users

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Data sources


Data has been collected from a variety of open data sources and harmonised and organised into themes. Where data has been reprojected or processed it has been noted in the metadata


Anything downloadable is covered by Open Government Licence

The data is all authoritative to our knowledge but ultimately the responsibility for the quality lies with the data owner and contacts are referenced.


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 **SPACE Geoportal**

[About SPACE](#) [Training Resources](#) [Related Studies](#) [Urban Environment and Health](#) [More](#)

 [New](#) 1 [Gemma](#)

SPACE Geoportal


For Health and Environment Research, Policy and Action

[Browse](#)


The SPACE project is investigating factors in the environment that may influence health as we age. This hub is a platform for exploring and downloading Geographic Information Systems (GIS) data relating to that research. In this portal, you can search the catalogue of available data, visualise it and download it.

Explore the Data


The categories below relate to environmental variables which influence health and healthy ageing in our environment. These factors include, for example, light pollution, noise pollution, air pollution and soil pollution, as well as built infrastructure and availability of 'green space' and 'blue space'.




Land Cover




Climate



Air and Emissions



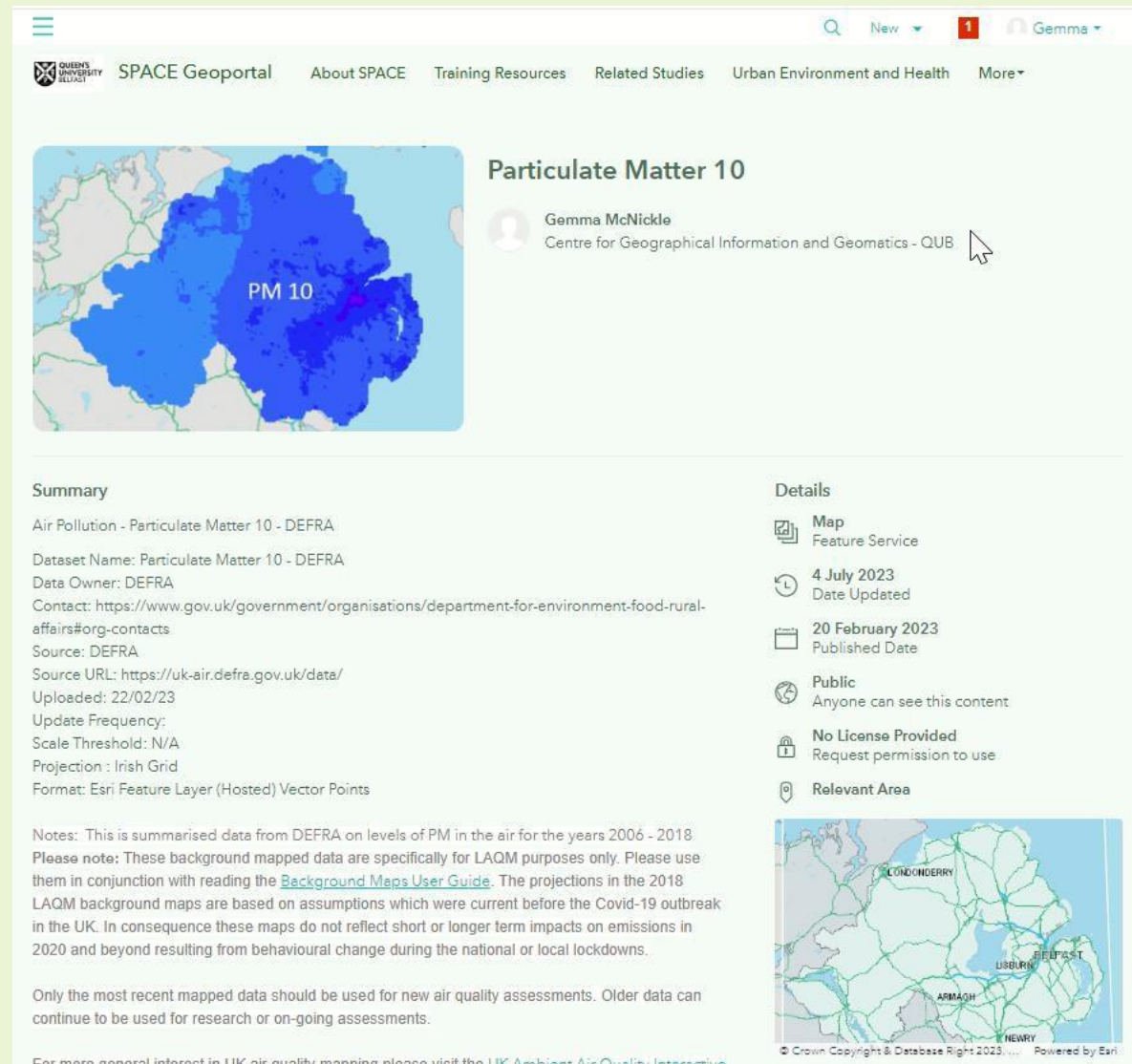
Noise and Light



Geology

Metadata/ More information

If there is more than one layer in a dataset this page showing all the information, select the year/layer below



The screenshot shows the SPACE Geoportal interface. At the top, there's a navigation bar with the Queen's University Belfast logo and links to 'About SPACE', 'Training Resources', 'Related Studies', 'Urban Environment and Health', and 'More'. The main title is 'Particulate Matter 10'. Below it, a map shows a blue-shaded area representing PM 10 levels. To the right of the map, the user 'Gemma McNickle' is listed, along with their affiliation 'Centre for Geographical Information and Geomatics - QUB'. The page is divided into two main sections: 'Summary' and 'Details'. The 'Summary' section provides metadata for the dataset, including its name, owner, contact information, source URL, upload date, update frequency, scale threshold, projection, and format. The 'Details' section includes a 'Map' feature service, the date it was updated (4 July 2023), the published date (20 February 2023), and access permissions (Public, No License Provided). A small inset map at the bottom right shows the location of the dataset within Northern Ireland, with labels for Londonderry, Lisburn, Belfast, Armagh, and Newry.

Particulate Matter 10

Gemma McNickle
Centre for Geographical Information and Geomatics - QUB

Summary

Air Pollution - Particulate Matter 10 - DEFRA

Dataset Name: Particulate Matter 10 - DEFRA

Data Owner: DEFRA

Contact: <https://www.gov.uk/government/organisations/department-for-environment-food-rural-affairs#org-contacts>

Source: DEFRA

Source URL: <https://uk-air.defra.gov.uk/data/>

Uploaded: 22/02/23

Update Frequency:

Scale Threshold: N/A

Projection: Irish Grid

Format: Esri Feature Layer (Hosted) Vector Points

Details

Map
Feature Service

4 July 2023
Date Updated

20 February 2023
Published Date

Public
Anyone can see this content

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Relevant Area

Notes: This is summarised data from DEFRA on levels of PM in the air for the years 2006 - 2018. Please note: These background mapped data are specifically for LAQM purposes only. Please use them in conjunction with reading the [Background Maps User Guide](#). The projections in the 2018 LAQM background maps are based on assumptions which were current before the Covid-19 outbreak in the UK. In consequence these maps do not reflect short or longer term impacts on emissions in 2020 and beyond resulting from behavioural change during the national or local lockdowns.

Only the most recent mapped data should be used for new air quality assessments. Older data can continue to be used for research or on-going assessments.

For more general interest in UK air quality mapping please visit the [UK Ambient Air Quality Interactive](#)

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Street Lighting



Gemma McNickle
Centre for Geographical Information and
Geomatics - QUB

Summary

Street Lights Data for all of NI

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[Download](#)

Details



Dataset
Feature Layer



5 July 2023
Info Updated



22 May 2023
Data Updated



23 September 2022
Published Date



Records: 302,146
[View data table](#)



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Metrics

Only showing data for the last 30 days

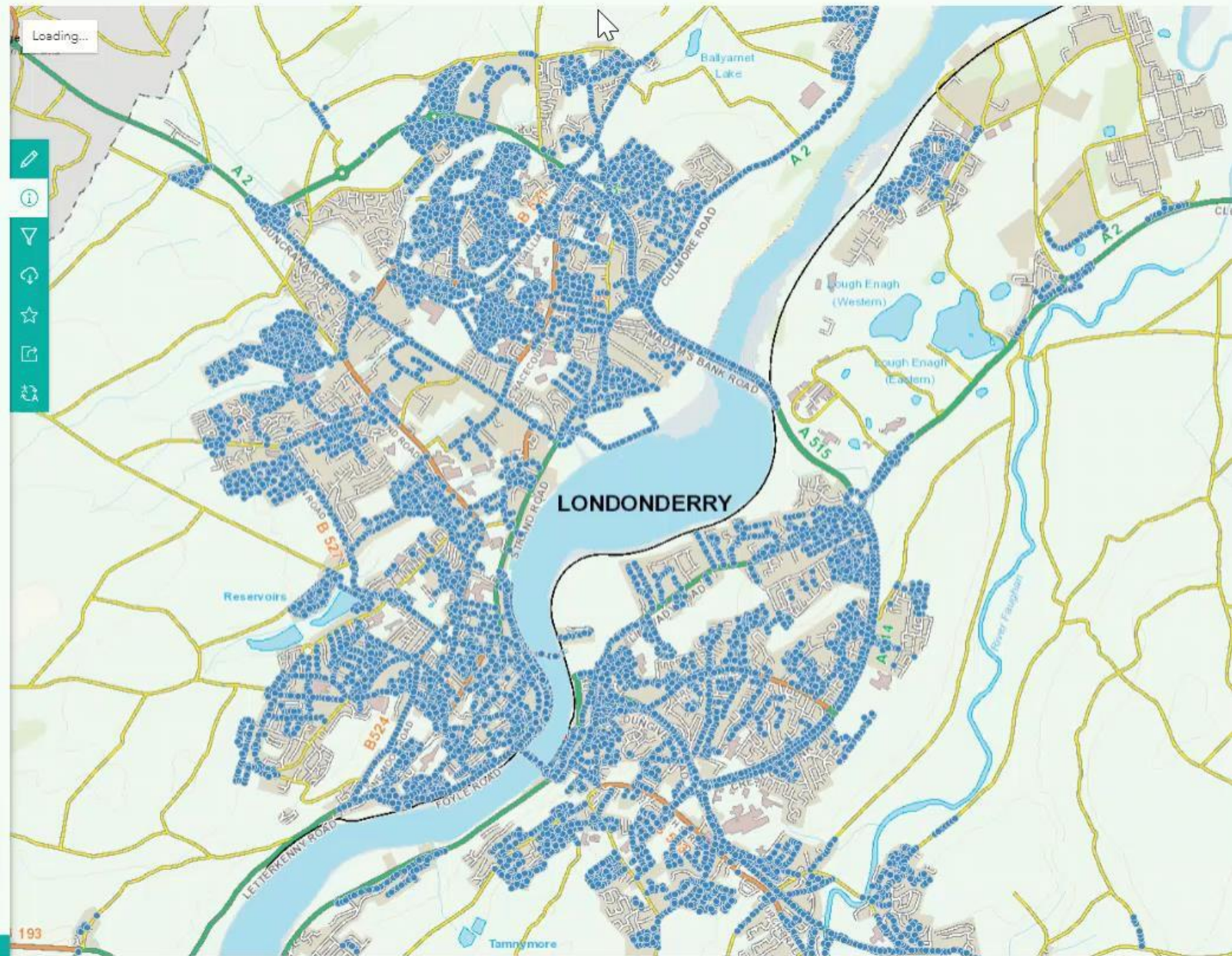


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Page Views

Limited Visibility

Only content managers can see these metrics.

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challenge
ral and

SPACE Map Viewer – Layer list for comparing data

SPACE Map Layers

- ▷ ☒ Boundaries ...
- ▷ ☒ Statistics ...
- ▷ ☒ NISRA Health Data ...
- ▷ ☒ Geology & Soil ...
- ▷ ☒ Climate ...
- ▷ ☒ Air Quality ...
- ▷ ☒ Land Cover - Green and Blue Space ...
- ▷ ☒ Noise and Light ...
- ▷ ☒ Infrastructure ...

Basemap ... Search Draw Print Bookmark Help

Home

Scene (BETA)

No legend

Map labels: LONDONDERRY, LISBURN, BELFAST, ARMAGH, NEWRY

This work was supported by **UK Research and Innovation** [ES/V016075/1]

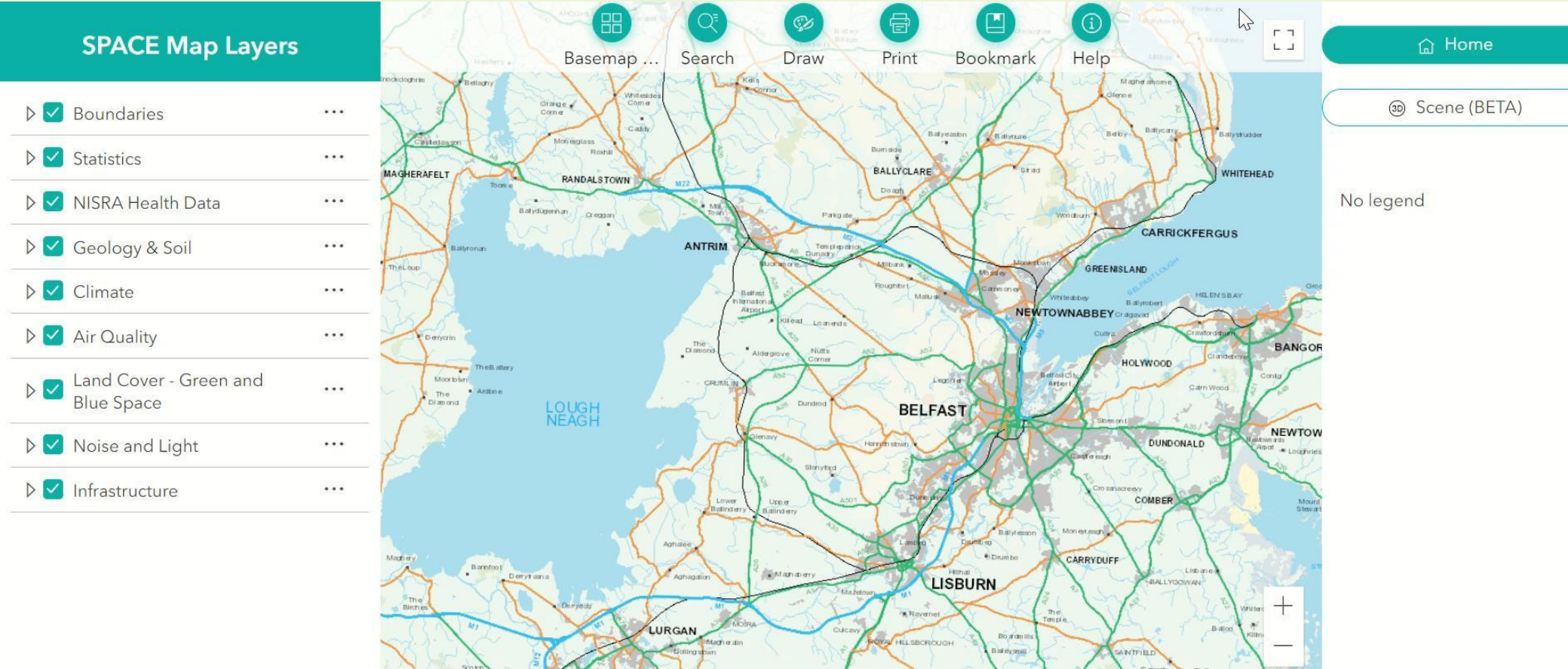


Economic
and Social
Research Council



Healthy Ageing Challenge
Social, Behavioural and
Design Research

Comparing layers using Transparency



This work was supported by **UK Research and Innovation** [ES/V016075/1]



Using Pop-ups for more information

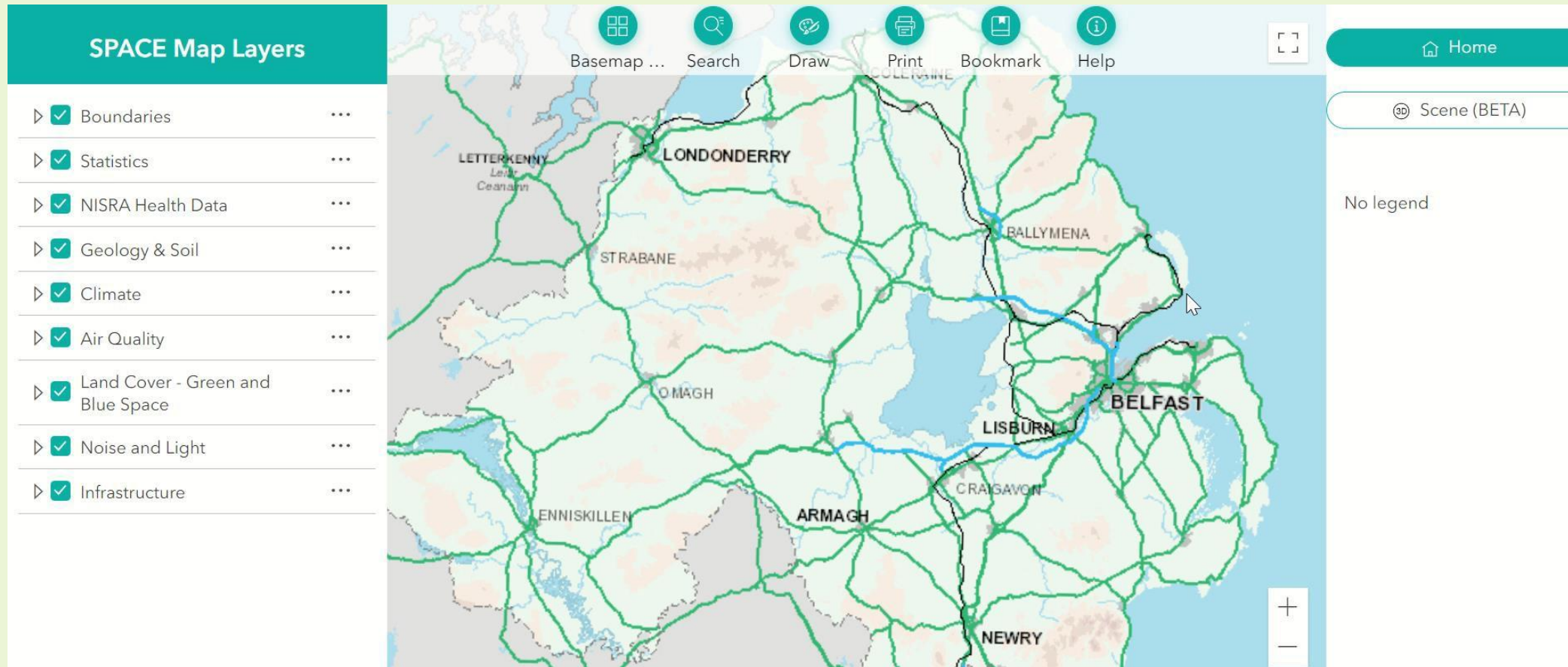
The screenshot displays the 'SPACE Map Layers' interface. On the left, a teal sidebar lists map layers with checkboxes and expand/collapse icons:

- ▶ ☒ Boundaries ...
- ▶ ☒ Statistics ...
- ▶ ☒ NISRA Health Data ...
- ▶ ☒ Geology & Soil ...
- ▶ ☒ Climate ...
- ▶ ☒ Air Quality ...
- ▶ ☒ Land Cover - Green and Blue Space ...
- ▶ ☒ Noise and Light ...
- ▶ ☒ Infrastructure ...

The main map area shows Northern Ireland with labels for cities like LONDON DERRY, STRABANE, OMAGH, ENNISKILLEN, ARMAGH, LISBURN, BELFAST, CRAINAVON, NEWRY, and RALLYMENA. A blue line highlights a route. The top navigation bar includes icons for Basemap, Search, Draw, Print, Bookmark, and Help. The right sidebar shows a 'Home' button, a 'Scene (BETA)' button, and a 'No legend' message. Map controls like zoom in (+) and zoom out (-) are at the bottom right.

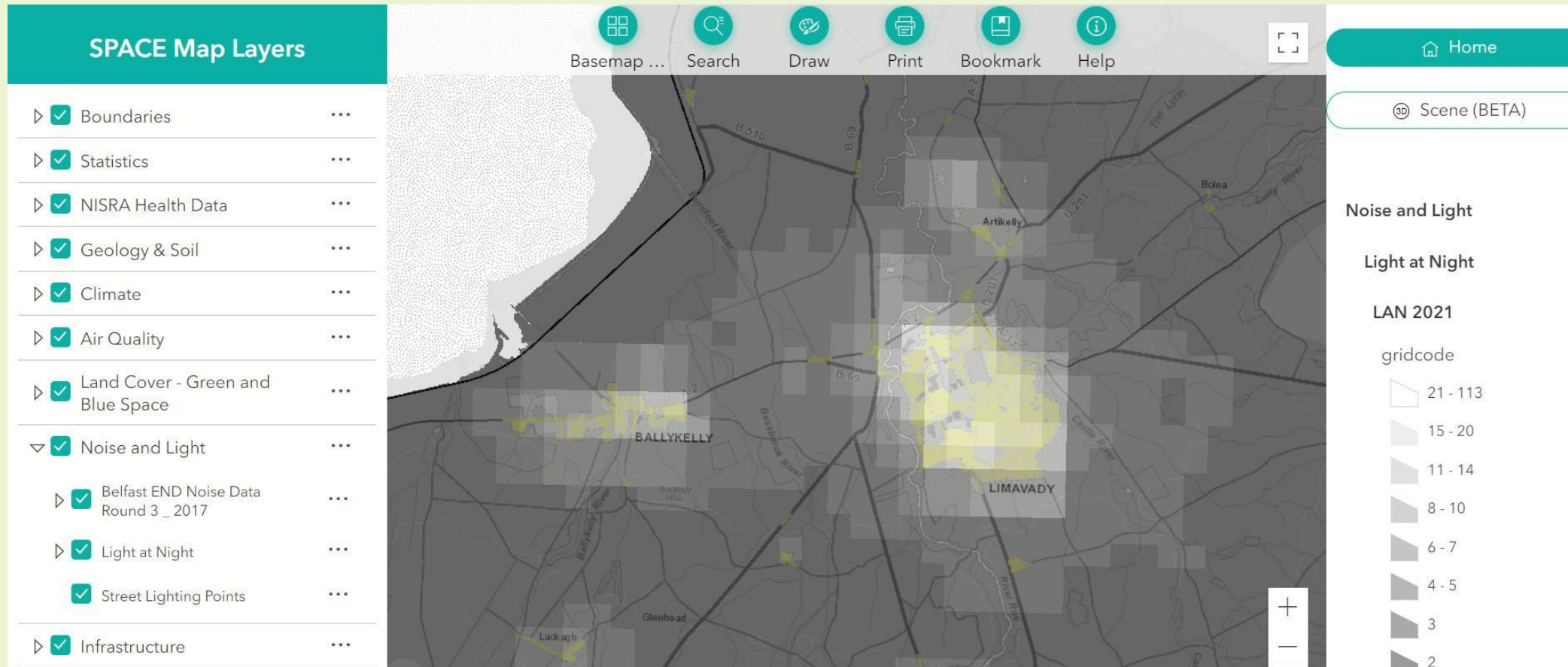
This work was supported by **UK Research and Innovation** [ES/V016075/1]

Using Basemaps



This work was supported by **UK Research and Innovation** [ES/V016075/1]

Print



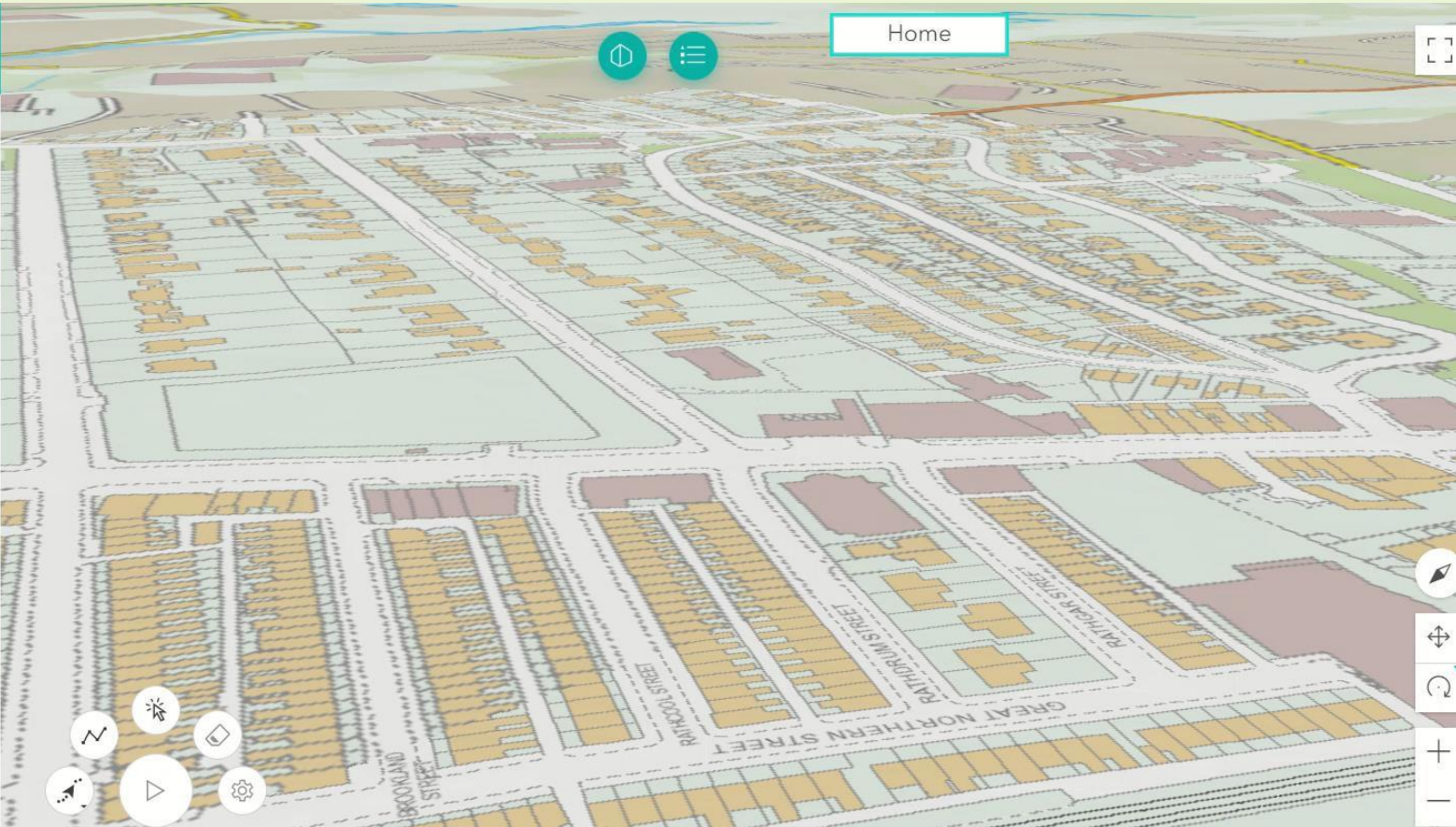
This work was supported by **UK Research and Innovation** [ES/V016075/1]

3D Viewer (BETA)

3D Layers

- ▷ ☐ Greenspace NI
- ▷ ☐ Belfast Cycle Map
- ▷ ☒ Infrastructure
- ☐ Belfast Trees Open Data
- ▷ ☐ NI Traffic Count Data

Please note: Turning on many layers in a 3D Scene can overload the browser and cause it to crash. To avoid this, zoom into your area of interest before turning layers on and allow for loading times



The 3D Viewer interface displays a 3D map of a residential area. The map shows buildings, streets, and green spaces. A sidebar on the left lists the 3D Layers, with 'Infrastructure' selected. The main map area includes a 'Home' button and navigation controls. A warning message is displayed in the bottom left corner.

This work was supported by **UK Research and Innovation** [ES/V016075/1]



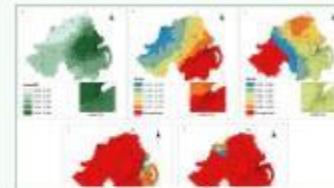
Training Resources contains introductions to some of the areas the team are investigating and the techniques being used in the research

Training Resources



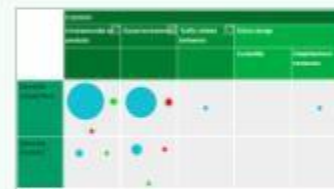
Using GIS in the SPACE Project

Examples of how the GIS data are being used to link environmental variables with health outcomes



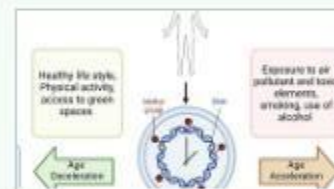
Geographically Weighted Regression (GWR)

How the Environmental data in this study has been analysed using 'Geographically Weighted Regression' (GWR)



Evidence Gap Map (EGM)

This EGM shows the distribution of studies that investigate the link between urban green and blue spaces and each of the United Nation's Sustainable Development Goals.



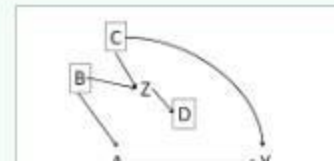
Epigenetics in SPACE

How do factors in our external environment get 'under the skin' to change our biology and affect health outcomes?



Causal Loop Diagram

In December 2021, we carried a 2-day workshop in which experts from different disciplines identified multiple factors and their interconnections contributing to mild cognitive impairment and dementia in urban populations.



Directed Acyclic Graphs

Find out more about how DAGs are used in the SPACE programme



Environment and health factsheets and videos

SPACE Geoportal About SPACE Training Resources Related Studies Urban Environment and Health More

Environment and Health

Explore some of the fact sheets and videos produced by the SPACE team relating to environment and health

Air and Soil Pollution

[Air and Soil Pollution Video](#)

[Air Pollution Fact Sheet](#)
[Soil Pollution Fact Sheet](#)

Planetary Health and Climate Change

[Planetary Health and Climate Change Video](#)

[Planetary Health and Climate Change Fact Sheet](#)

Green and Blue Spaces

[Green and Blue Space Video](#)

[Green and Blue Space Fact Sheet](#)

Noise and Light Pollution

[Noise and Light Pollution Video](#)

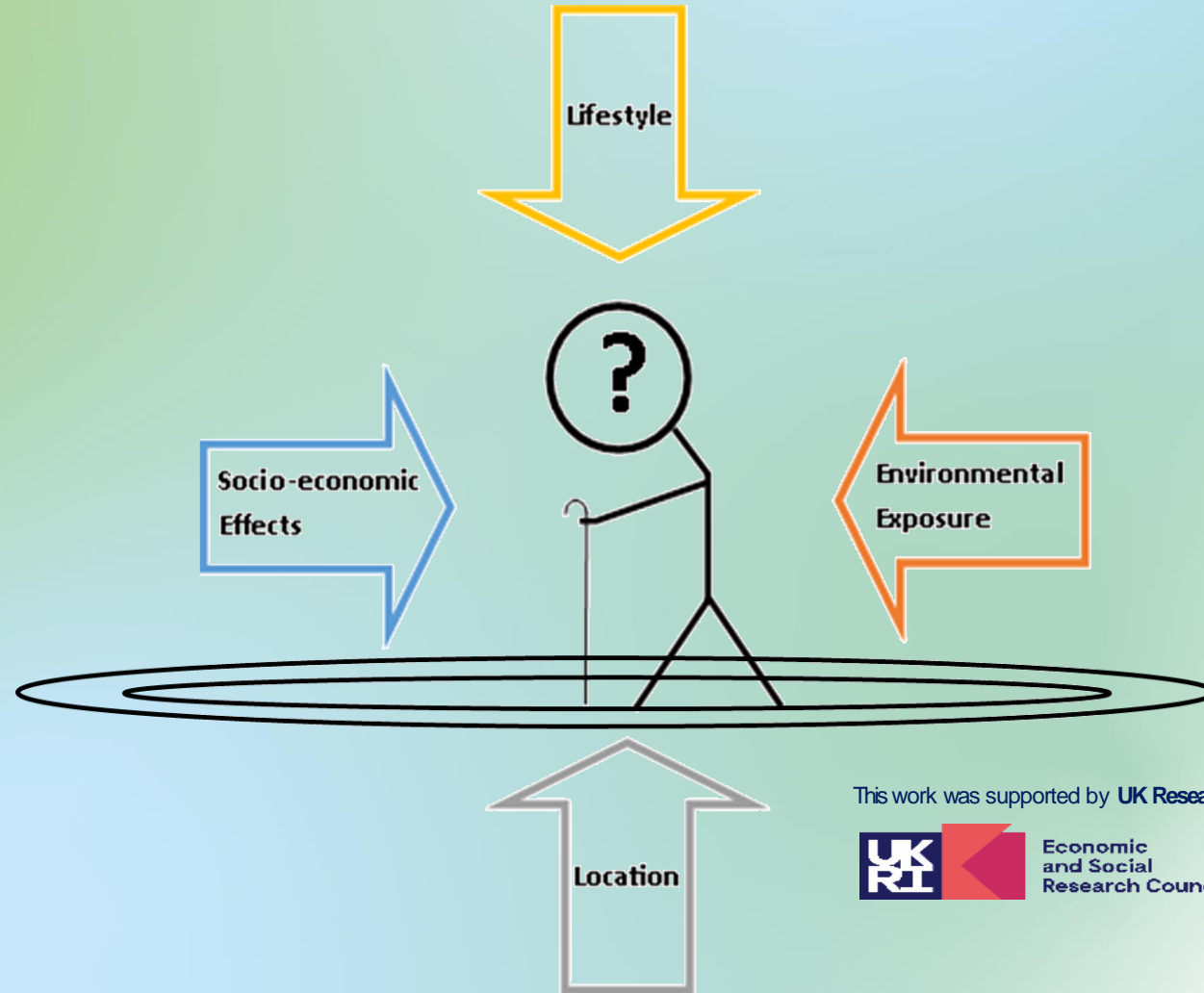
[Noise Pollution Fact Sheet](#)
[Light Pollution Fact Sheet](#)

Urban Planning

[Urban Planning Video](#)

[Urban Planning Fact Sheet](#)

SPACE RESEARCH PROJECT APPROACH



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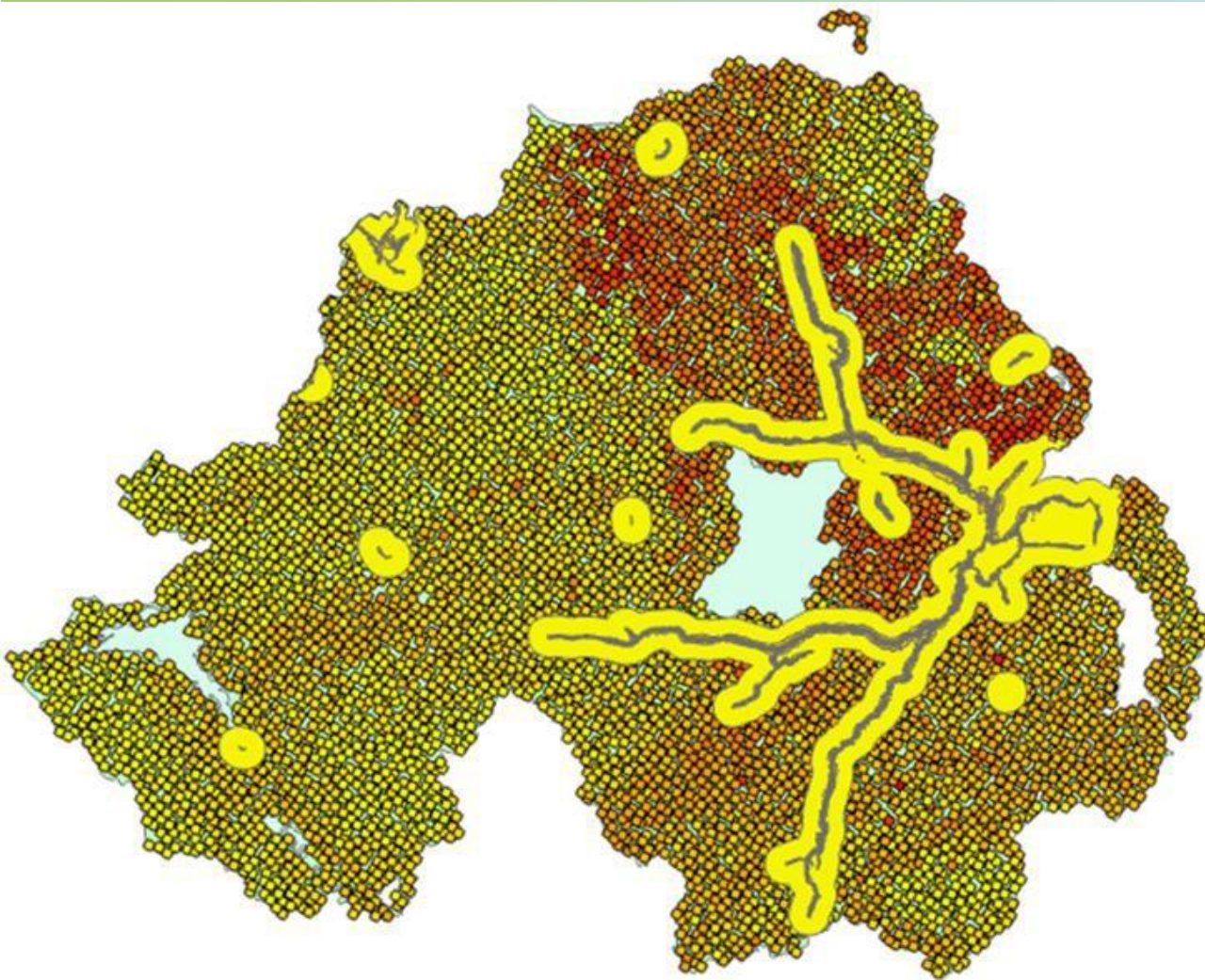
Economic
and Social
Research Council



Healthy Ageing Challenge
Social, Behavioural and
Design Research



An Integrated Approach to Environmental Exposures



CHROMIUM IN SOILS AND THE NOISE ROAD NETWORK MAP

This work was supported by **UK Research and Innovation** [ES/V016075/1]



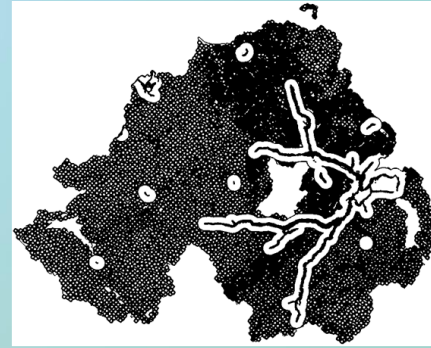
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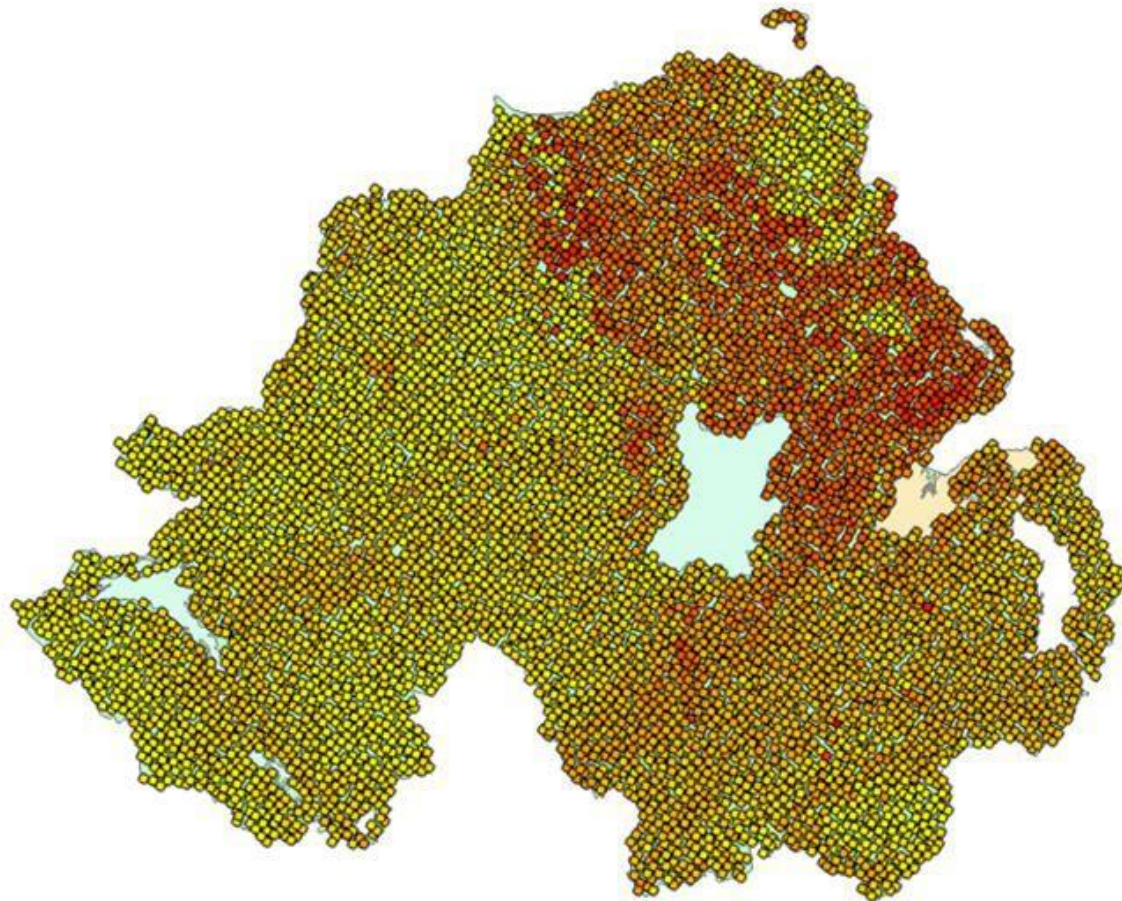
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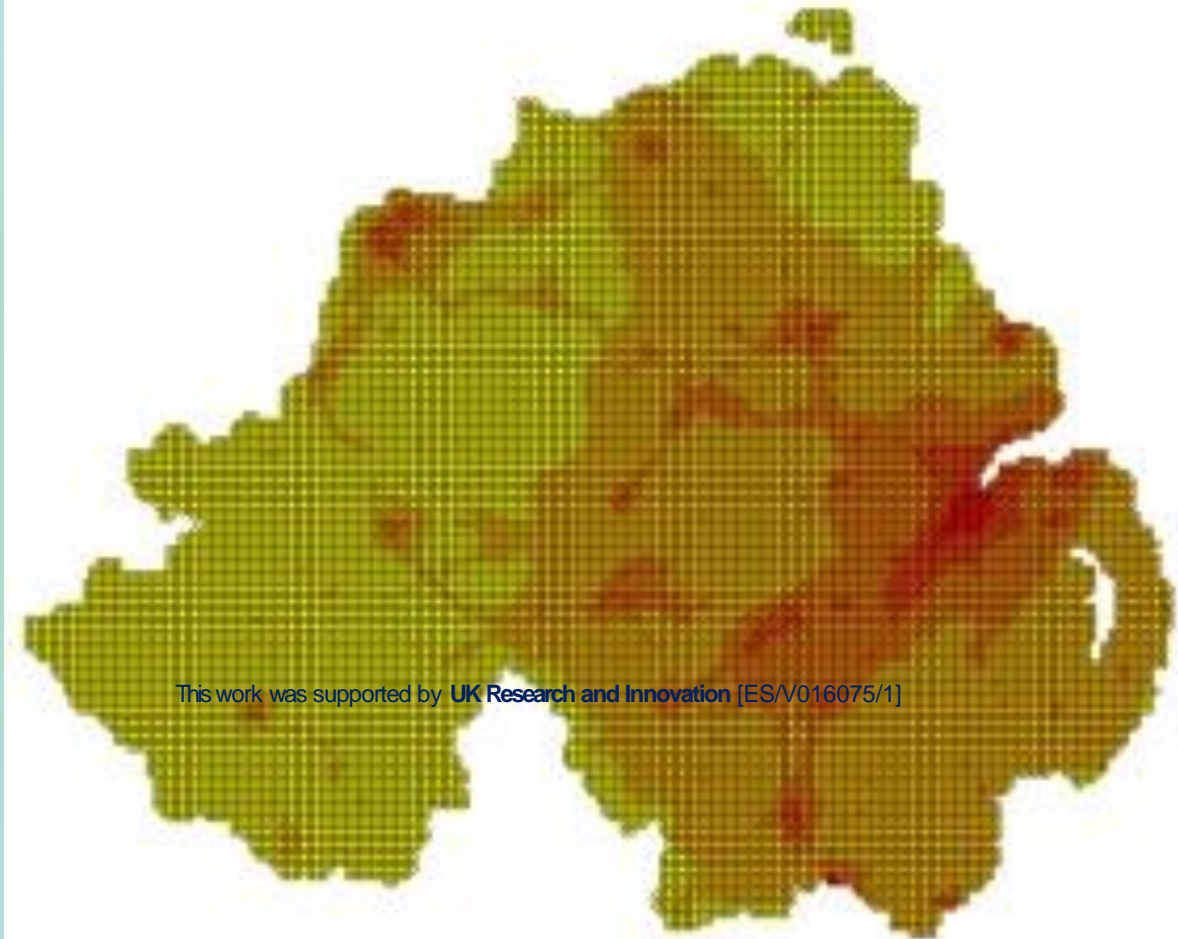
Synergisms around Roads



Cr mg/kg



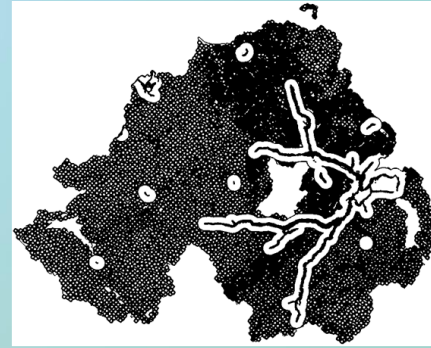
NO₂ ug.m-3



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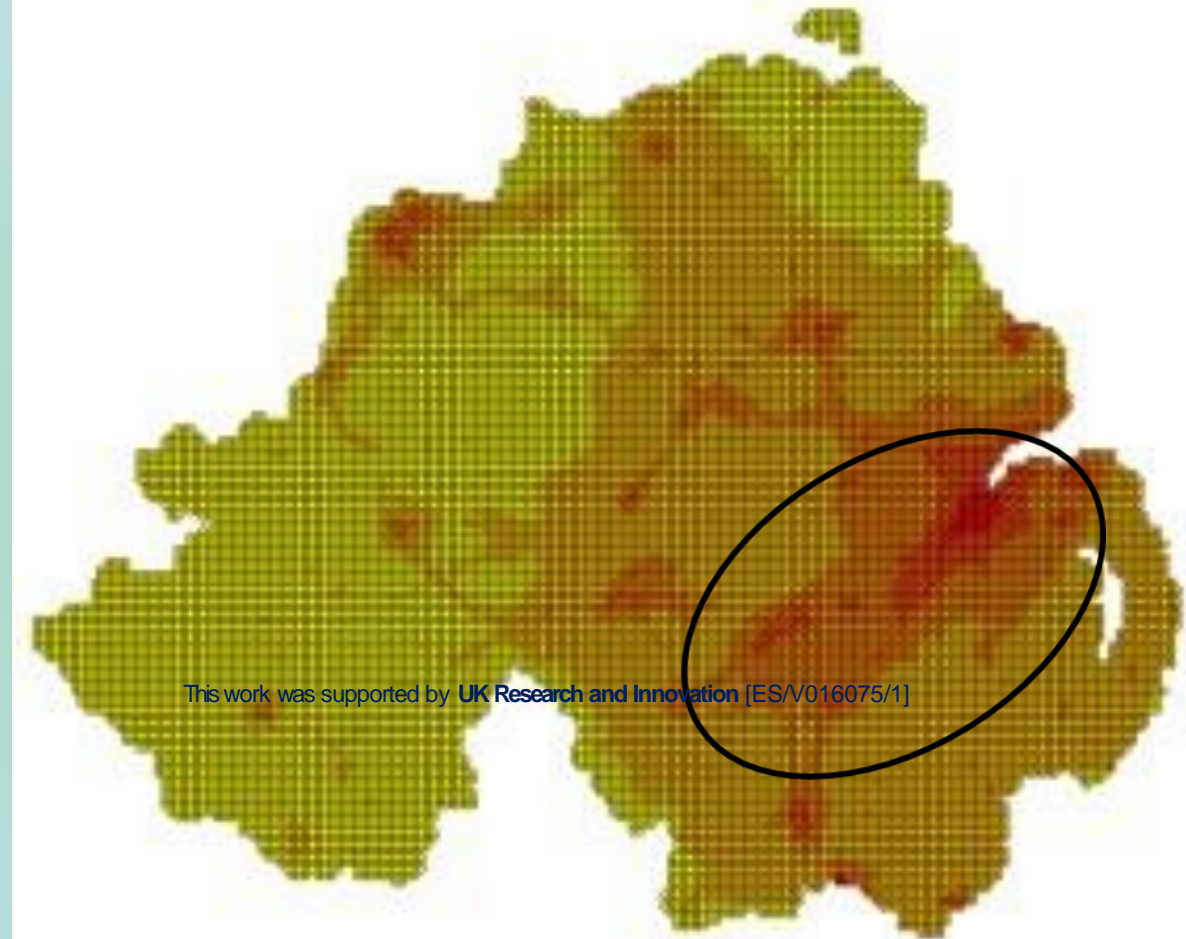
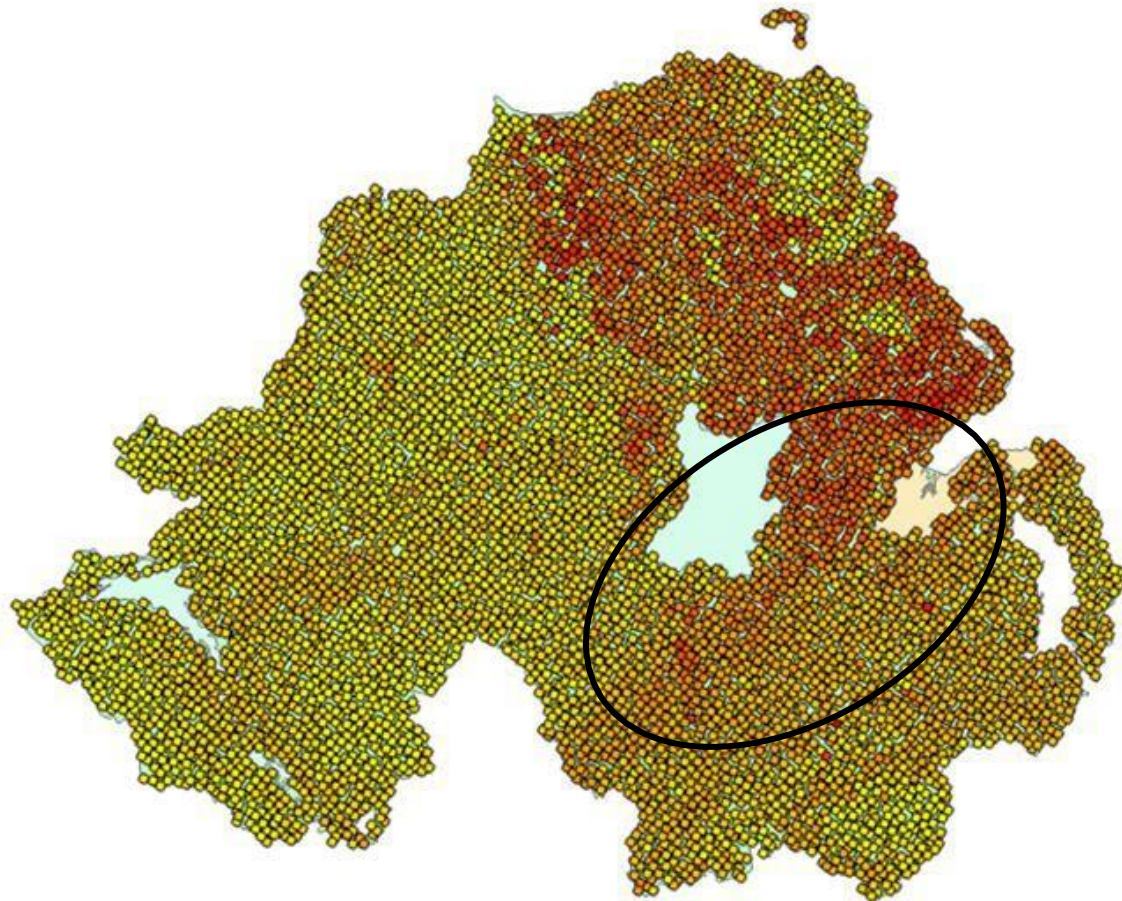


Synergisms around Roads



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Thank you

Access the SPACE
website: <https://www.qub.ac.uk/sites/space/>

Access the SPACE geoportal: [SPACE Geoportal
\(arcgis.com\)](#)

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Policy and impact tools from the SPACE project

Dr Niamh O’Kane

*Shaping Outdoor Environments to
Promote Healthy Ageing*
Wed 4th Dec 2024



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SPACE The SPACE approach to policy and impact

- Engaging with a range of stakeholders
- Understanding how people want to receive information
- Responding to challenges and opportunities
- Co-creation of resources and outputs
- In-person and online events and activities
- Simple and 'sustainable' outputs



Green and blue space

Green space is any natural space that contains trees, grass or any other green vegetation. Blue space is any natural space that contains water, like rivers, lakes, and the sea.

Exposure has multiple benefits, specifically **improving mental and cognitive health** and **increasing physical activity**, but also environmental benefits like **reducing air pollution, noise and city temperature** (1).

AGEING IN SPACE



Planetary Health and Climate Change



The importance of urban green and blue space and nature based solutions...

Downloaded from <http://ajph.org/> on October 12, 2015. © 2015 American Medical Association. All rights reserved.



Urban environment exposures and cognitive health: an evidence gap map of systematic reviews

© 2016 The Author
Journal compilation © 2016 Blackwell Publishing Ltd



Types of outputs and activities from SPACE

- Journal articles
 - Training materials
 - Events
 - Social media
 - Children's books
 - Geoportal
- Evidence Gap Map
 - Reports
 - Video series
 - Factsheets
 - Webinars
 - Podcast



SPACE Evidence gap map




Original Scholarship - Evidence Review

Urban environment exposures and cognitive health: an evidence gap map of systematic reviews

Mike Trott , Claire L. Cleland, Selin Akaraci, Joanna S Valson, Niamh O'Kane, Frank Kee, ...show all

Received 13 Feb 2024, Accepted 18 Aug 2024, Published online: 16 Sep 2024

 Cite this article

 <https://doi.org/10.1080/23748834.2024.2395141>



<https://bit.ly/4fXUvfV>

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Land Cover




Climate



Air and Emissions



Noise and Light



Geology

Metadata/ More information

If there is more than one layer in a dataset this page showing all the information, select the year/layer below

Particulate Matter 10

Gemma McNickle
Centre for Geographical Information and Geomatics - QUB

Summary

Air Pollution - Particulate Matter 10 - DEFRA

Dataset Name: Particulate Matter 10 - DEFRA

Data Owner: DEFRA

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Source: DEFRA

Source URL: <https://uk-air.defra.gov.uk/data/>

Uploaded: 22/02/23

Update Frequency:

Scale Threshold: N/A

Projection : Irish Grid

Format: Esri Feature Layer (Hosted) Vector Points

Notes: This is summarised data from DEFRA on levels of PM in the air for the years 2006 - 2018

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Details

Map
Feature Service

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Relevant Area

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Street Lighting



Gemma McNickle
Centre for Geographical Information and
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Summary

Street Lights Data for all of NI

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Details



Dataset
Feature Layer



5 July 2023
Info Updated



22 May 2023
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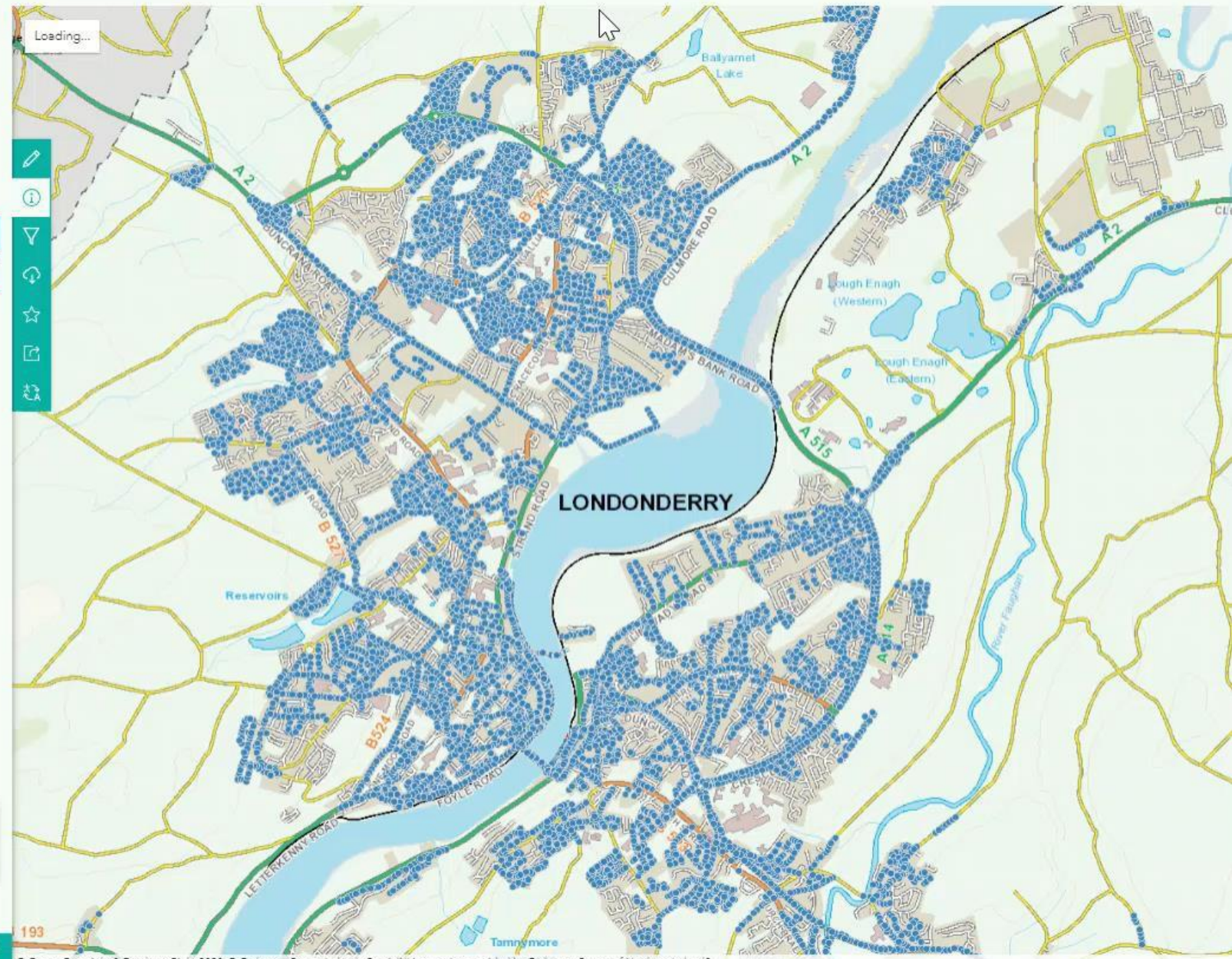


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SPACE Map Viewer – Layer list for comparing data

SPACE Map Layers

- ▷ ☒ Boundaries ...
- ▷ ☒ Statistics ...
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- ▷ ☒ Air Quality ...
- ▷ ☒ Land Cover - Green and Blue Space ...
- ▷ ☒ Noise and Light ...
- ▷ ☒ Infrastructure ...

Basemap ...

Search

Draw

Print

Bookmark

Help

+

-

Home

Scene (BETA)

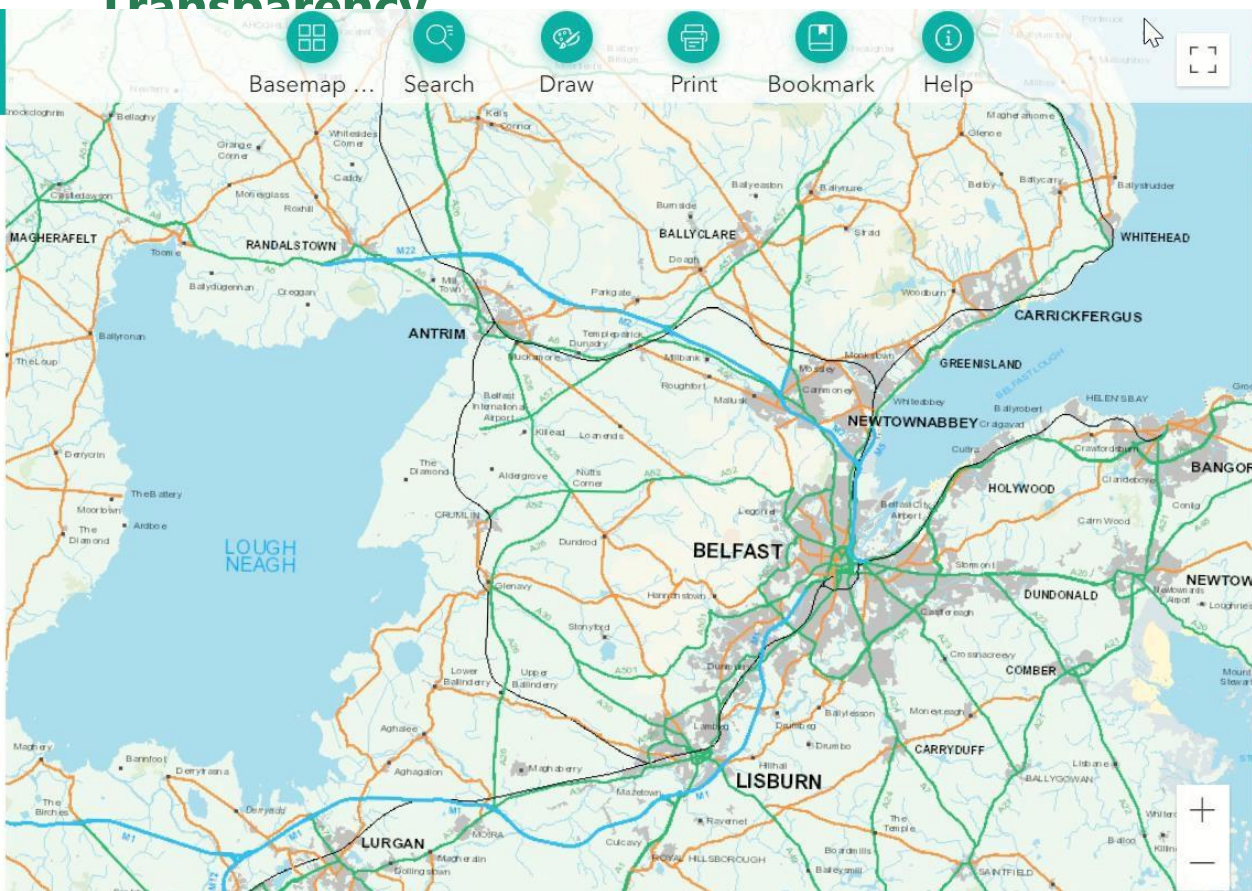
No legend

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Comparing layers using Transparency

SPACE Map Layers

- ▷ ☒ Boundaries ...
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Basemap ... Search Draw Print Bookmark Help

Home

Scene (BETA)

No legend

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Using Pop-ups for more

SPACE Map Layers

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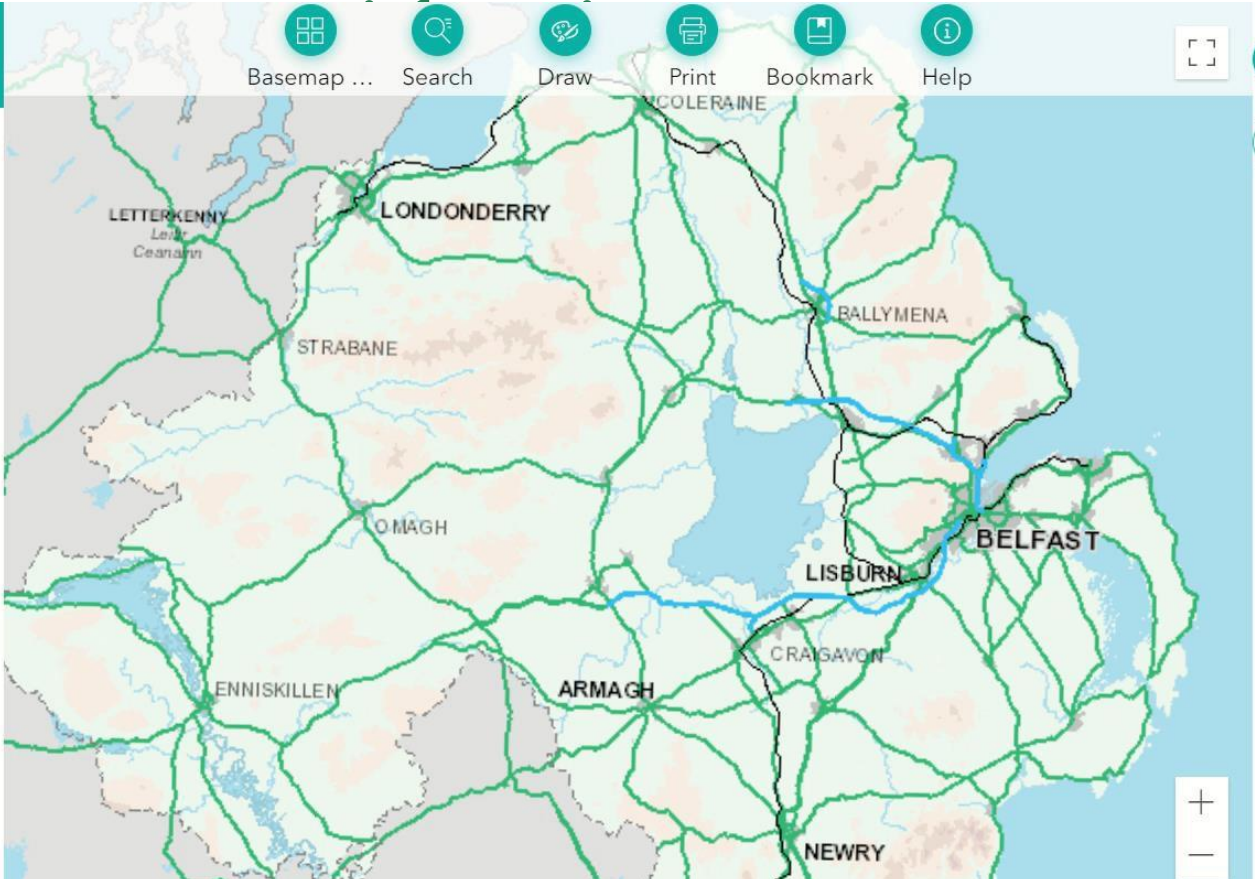
Search

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Help



Home

Scene (BETA)

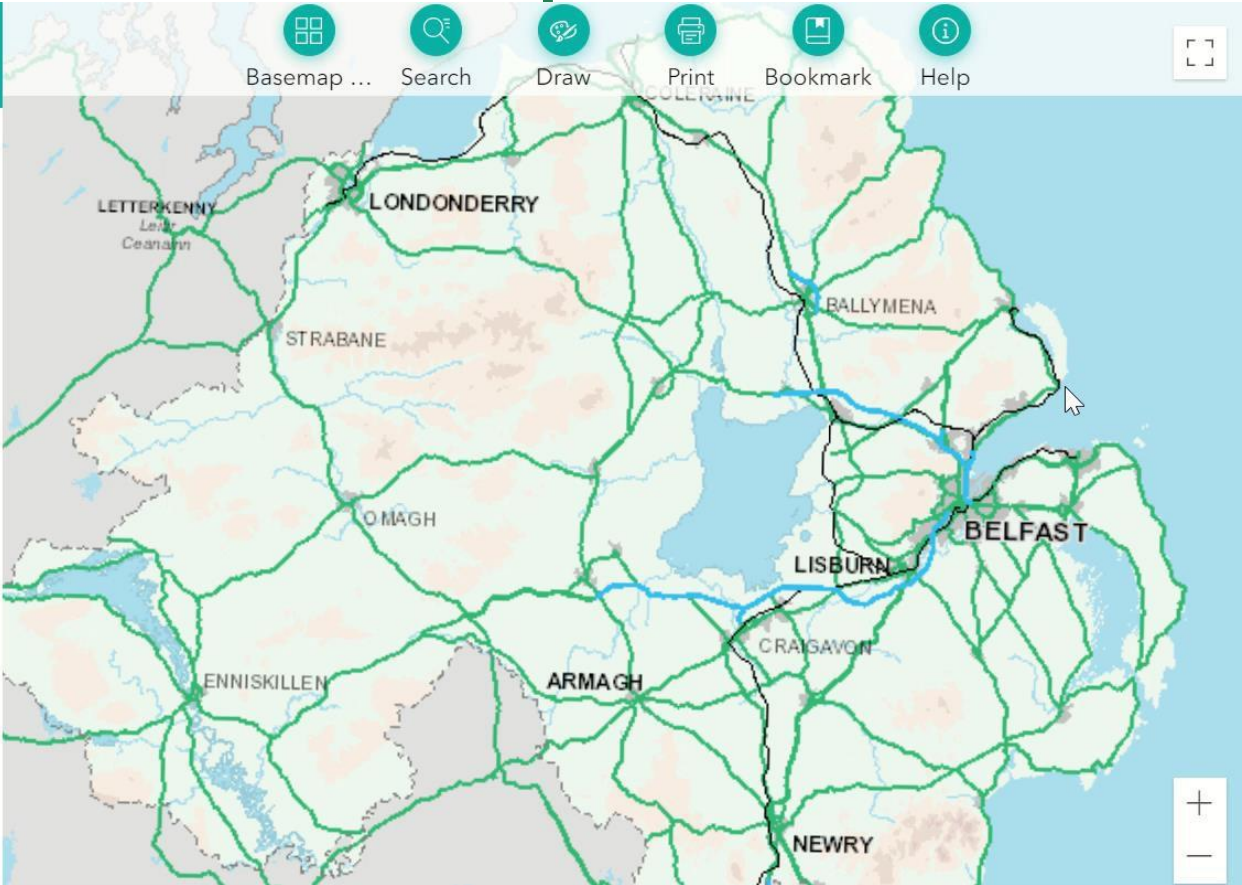
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Using Basemaps

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Basemap ...

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Print

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- ▼ ☒ Noise and Light ...
 - ▷ ☒ Belfast END Noise Data Round 3 _ 2017 ...
 - ▷ ☒ Light at Night ...
 - ☒ Street Lighting Points ...
- ▷ ☒ Infrastructure ...

Basemap ...

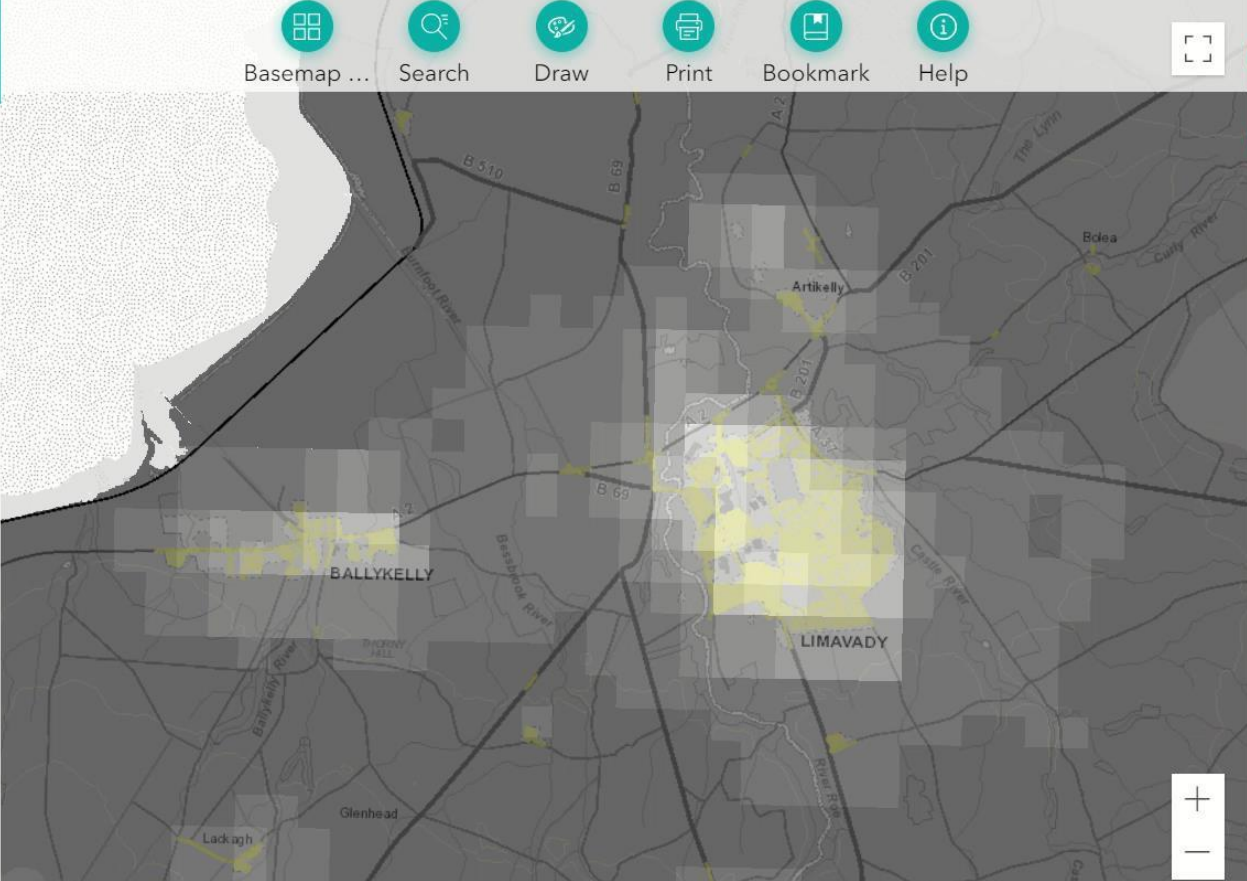
Search

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Home

Scene (BETA)

Noise and Light

Light at Night

LAN 2021

gridcode

- 21 - 113
- 15 - 20
- 11 - 14
- 8 - 10
- 6 - 7
- 4 - 5
- 3
- 2

This work was supported by **UK Research and Innovation** [ES/V016075/1]

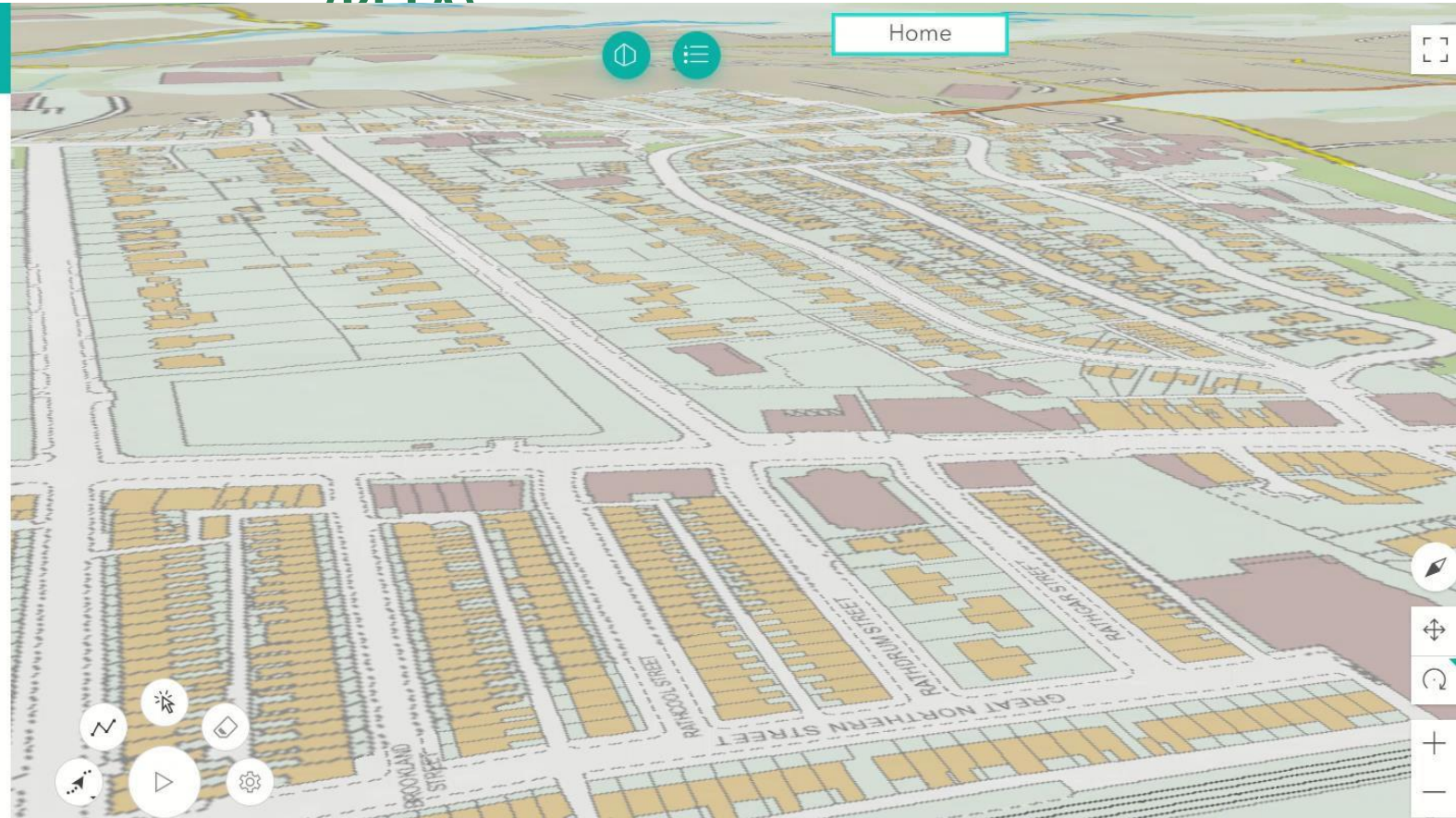


3D Viewer (BETA)

3D Layers

- ▷ ☐ Greenspace NI
- ▷ ☐ Belfast Cycle Map
- ▷ ☒ Infrastructure
- ☐ Belfast Trees Open Data
- ▷ ☐ NI Traffic Count Data

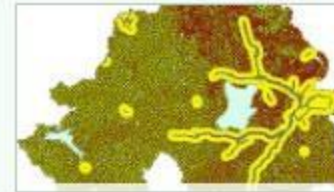
Please note: Turning on many layers in a 3D Scene can overload the browser and cause it to crash. To avoid this, zoom into your area of interest before turning layers on and allow for loading times



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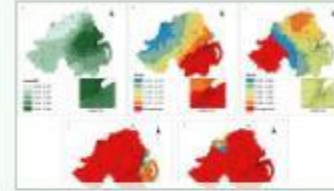
Training Resources contains introductions to some of the areas the team are investigating and the techniques being used in the research

Training Resources



[Using GIS in the SPACE Project](#)

Examples of how the GIS data are being used to link environmental variables with health outcomes



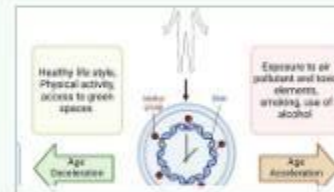
[Geographically Weighted Regression \(GWR\)](#)

How the Environmental data in this study has been analysed using Geographically Weighted Regression (GWR)



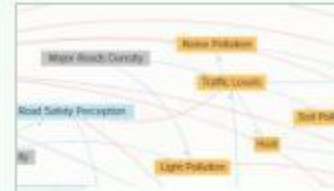
[Evidence Gap Map \(EGM\)](#)

This EGM shows the distribution of studies that investigate the link between urban green and blue spaces and each of the United Nation's Sustainable Development Goals.



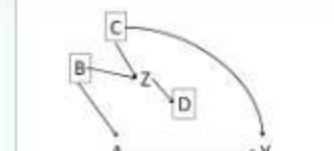
[Epigenetics in SPACE](#)

How do factors in our external environment get 'under the skin' to change our biology and affect health outcomes?



[Causal Loop Diagram](#)

In December 2021, we carried a 2-day workshop in which experts from different disciplines identified multiple factors and their interconnections contributing to mild cognitive impairment and dementia in urban populations.



[Directed Acyclic Graphs](#)

Find out more about how DAGs are used in the SPACE programme

Environment and health factsheets and videos

SPACE Geportal About SPACE Training Resources Related Studies Urban Environment and Health More

Environment and Health

Explore some of the fact sheets and videos produced by the SPACE team relating to environment and health



Air and Soil Pollution

Air and Soil Pollution Video



Planetary Health and Climate Change

Planetary Health and Climate Change Video

[Air Pollution Fact Sheet](#)

[Soil Pollution Fact Sheet](#)



Green and Blue Spaces

Green and Blue Space Video



Noise and Light Pollution

Noise and Light Pollution Video

[Green and Blue Space Fact Sheet](#)

[Noise Pollution Fact Sheet](#)

[Light Pollution Fact Sheet](#)



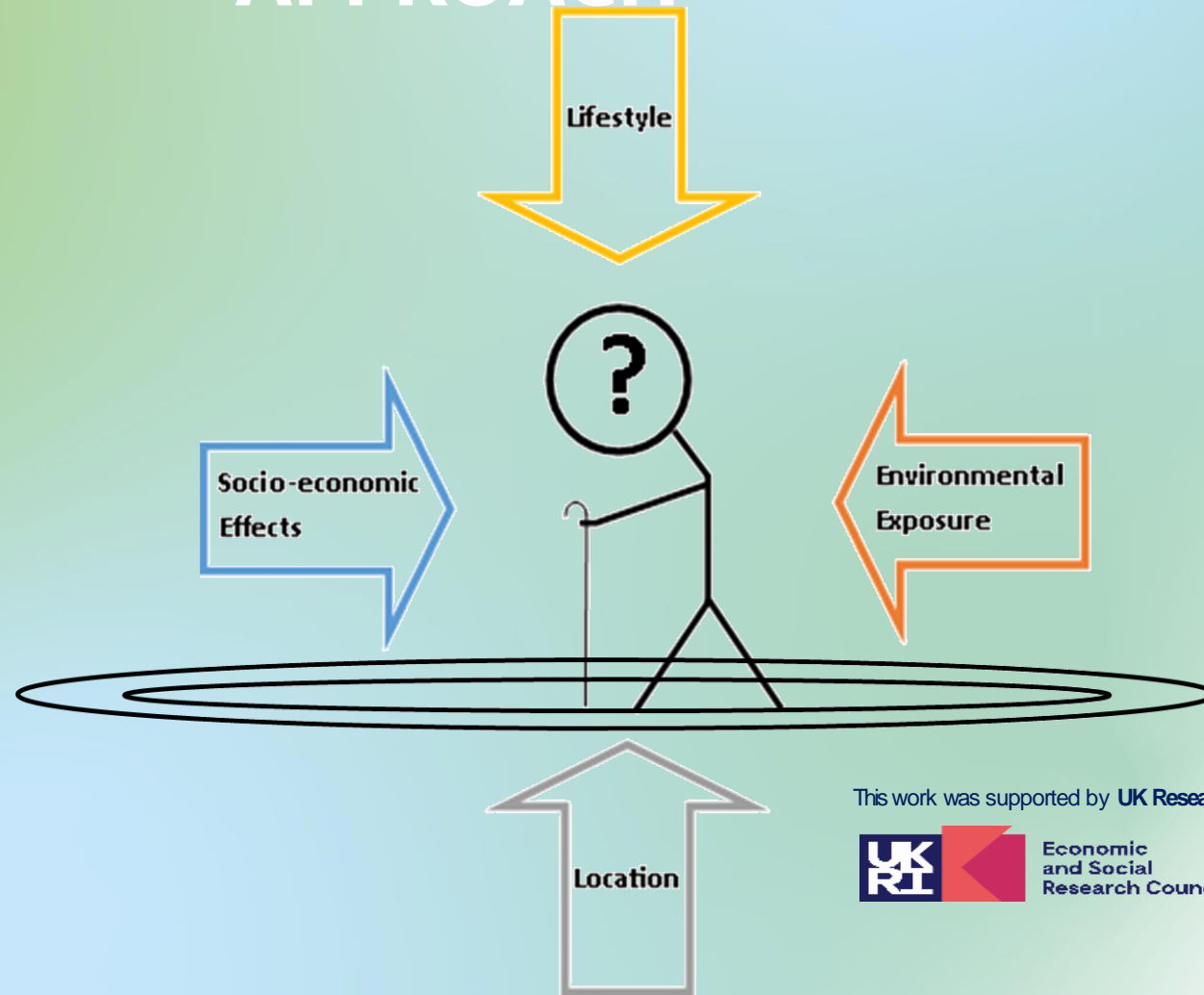
Urban Planning

Urban Planning Video

[Urban Planning Fact Sheet](#)



SPACE RESEARCH PROJECT APPROACH



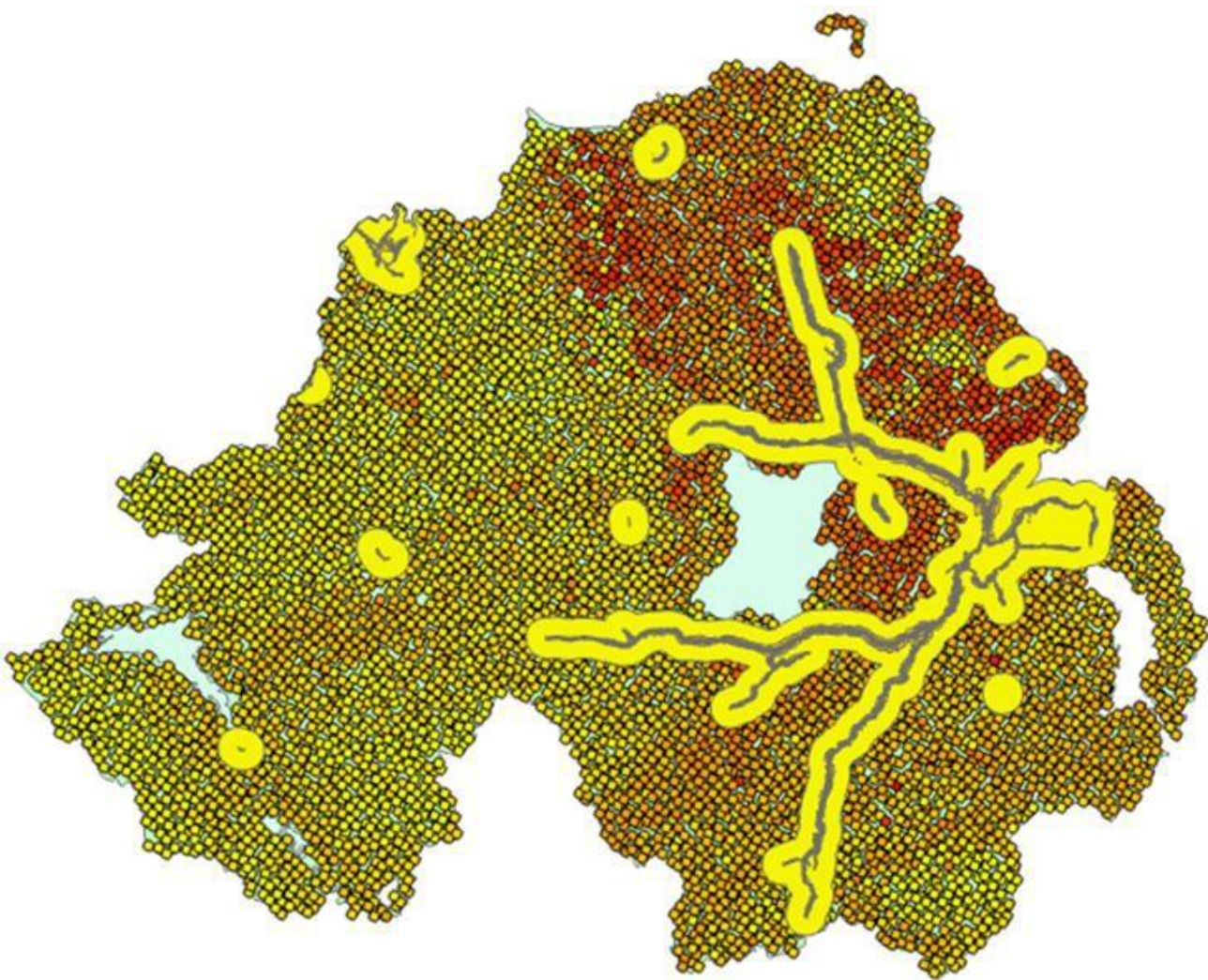
This work was supported by **UK Research and Innovation** [ES/V016075/1]



Economic
and Social
Research Council



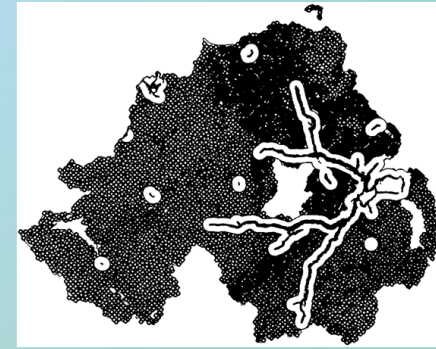
Healthy Ageing Challenge
Social, Behavioural and
Design Research



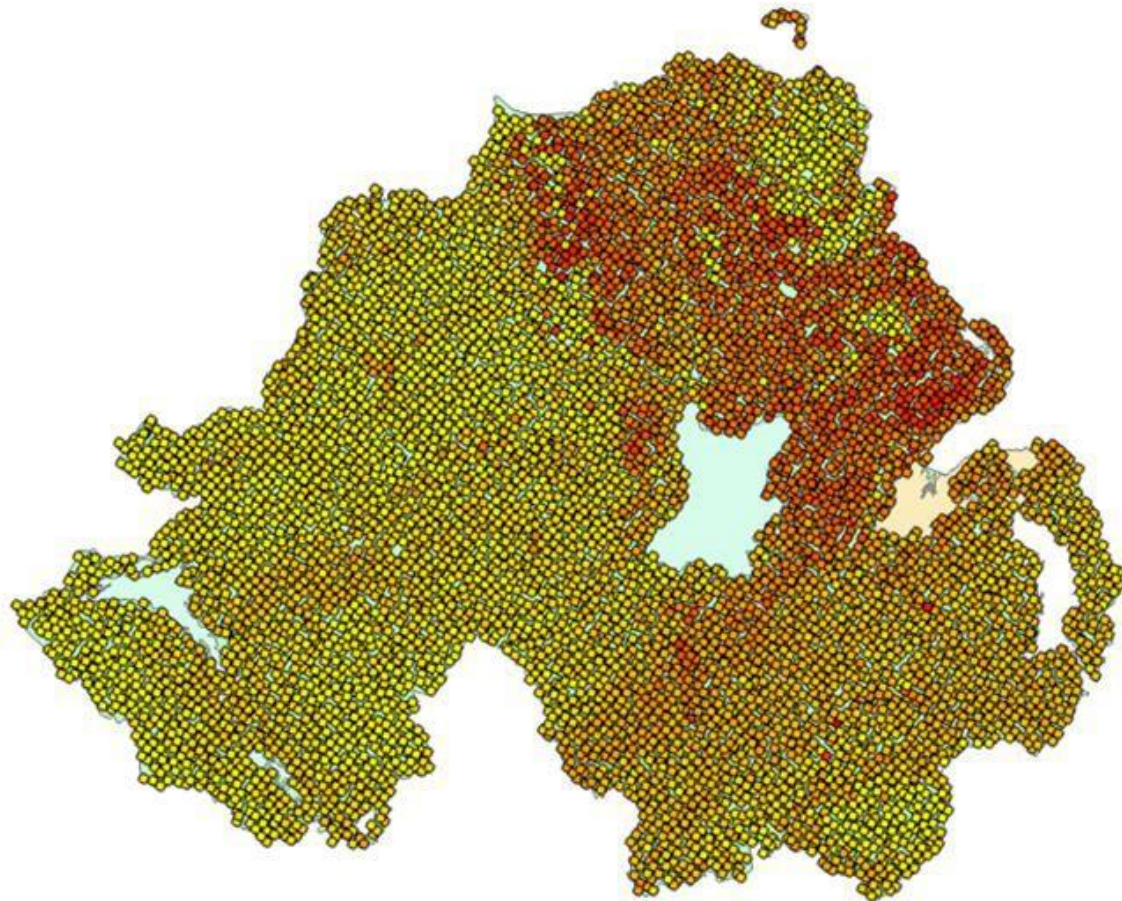
This work was supported by **UK Research and Innovation** [ES/V016075/1]



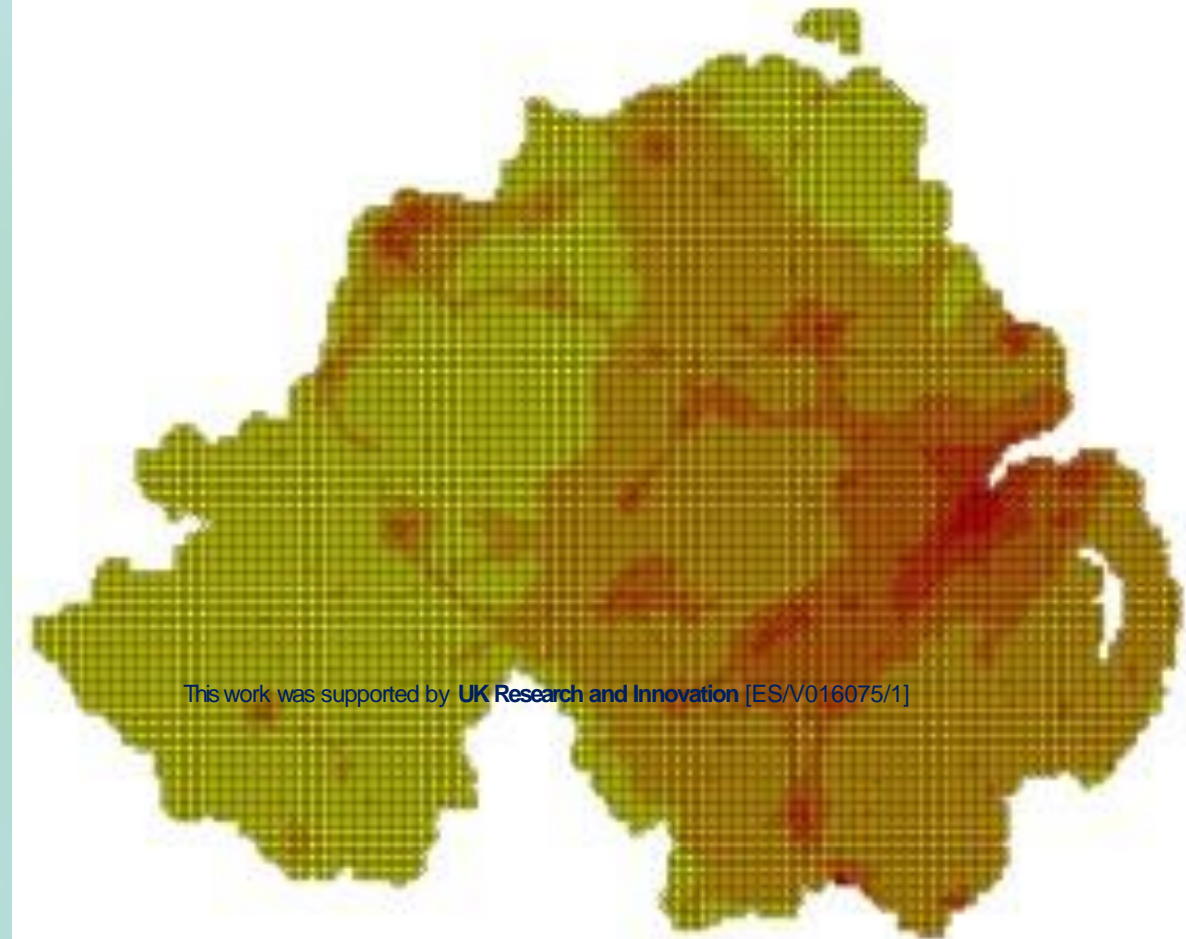
Synergisms around Roads



Cr mg/kg



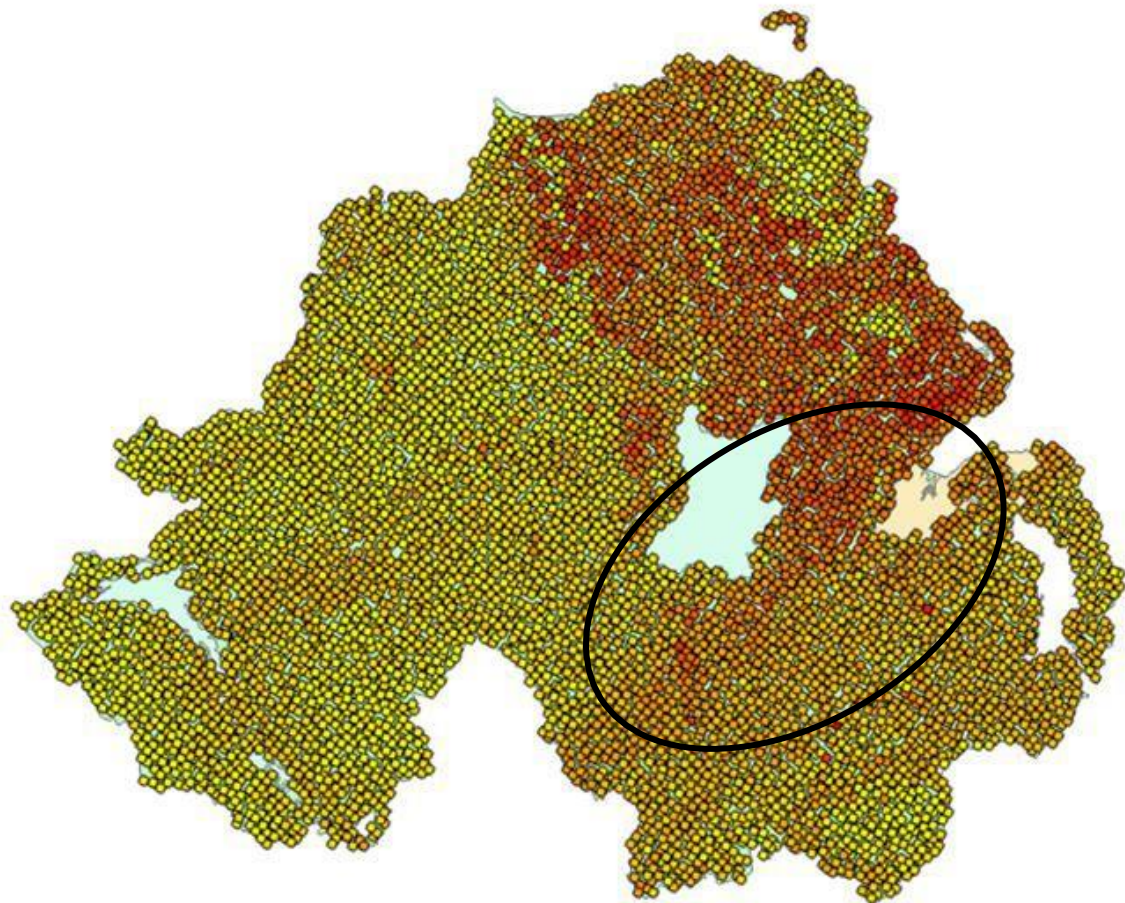
NO₂ ug.m-3



This work was supported by [UK Research and Innovation](#) [ES/V016075/1]

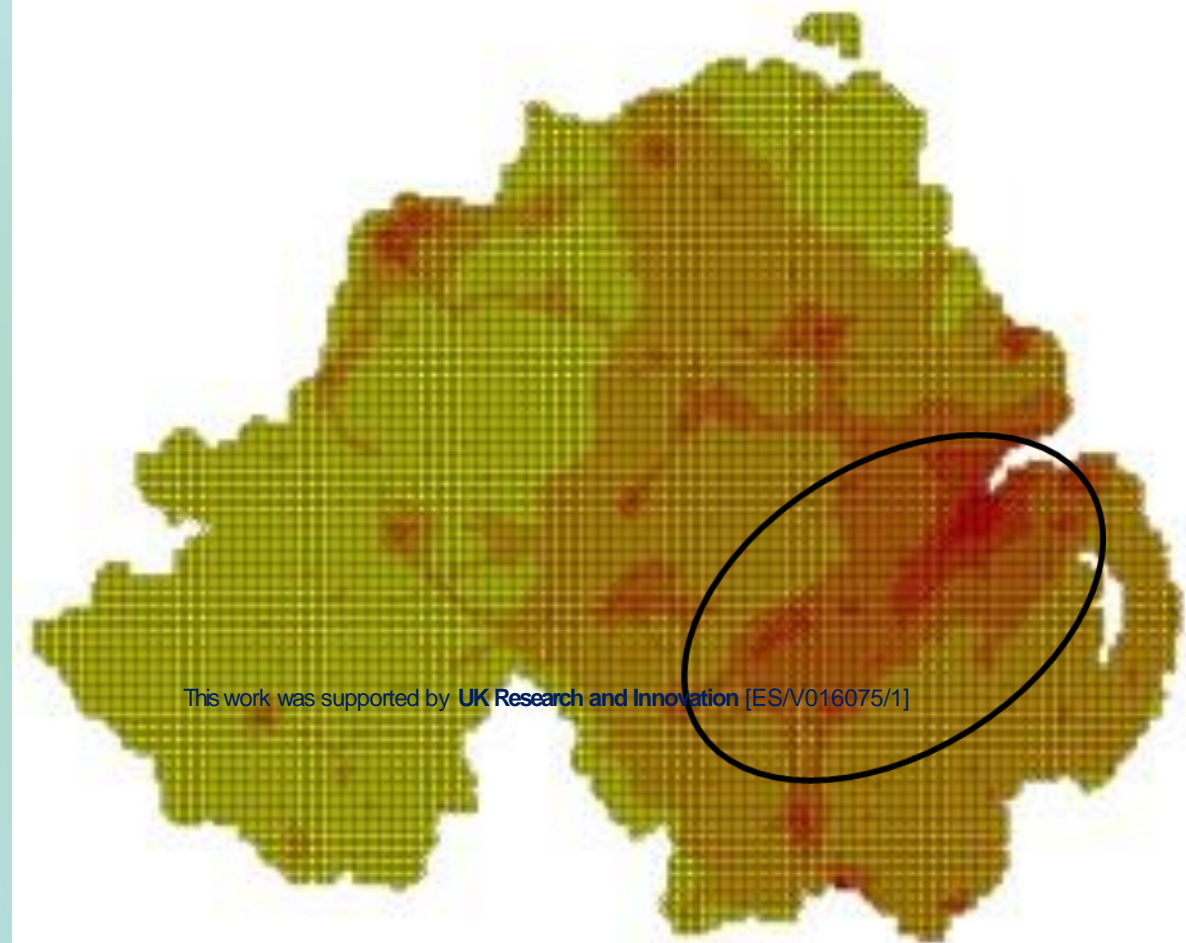
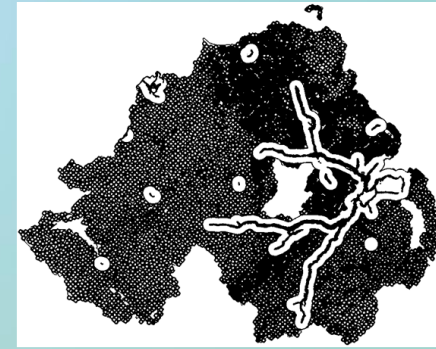


Cr mg/kg



Synergisms around Roads

NO₂ ug.m-3



This work was supported by UK Research and Innovation [ES/V016075/1]

Thank you

Access the SPACE

website: <https://www.qub.ac.uk/sites/space/>

Access the SPACE geoportal: [SPACE Geoportal \(arcgis.com\)](#)

This work was supported by **UK Research and Innovation** [ES/V016075/1]





A review of epidemiological research on stroke and dementia and exposure to air pollution

Background Outdoor air pollution is now a well-known risk factor for morbidity and mortality, and is increasingly being identified as a major risk factor for stroke. **Methods** A narrative literature review of the effects of short and long-term exposure to air pollution on stroke and dementia risk and cognitive functioning. **Results** Ten papers on stroke and 17 on dementia were selected. Air pollution, and in particular small particulate matter, contributes to about one-third of the global stroke burden and about one-fifth of the global burden of dementia. It particularly affects vulnerable patients with other vascular risk factors or a prior history of stroke in low- and medium-income countries. New pathophysiological mechanisms of the cause-effect associations are suggested. **Conclusion** Air pollution should be considered



SPACE SPACE policy workshops report

- In collaboration with Involve NI
- Three consecutive workshops
- **Leadership for healthy people and planet: an invitation to accelerate integrated policy and action on health and environment**
- Bring together diverse perspectives to share knowledge and experiences
- What does a shared policy agenda addressing systemic relationships between health and environment look like?

Perspectives represented were

Researchers

Policy Makers

Local Government

Community Voices

Practitioners

The Public



SPACE SPACE policy workshops report

Leadership for healthy people and planet

An invitation to accelerate integrated policy and action on health and environment



REPORT



<https://bit.ly/3Vk39NP>

WEBINAR

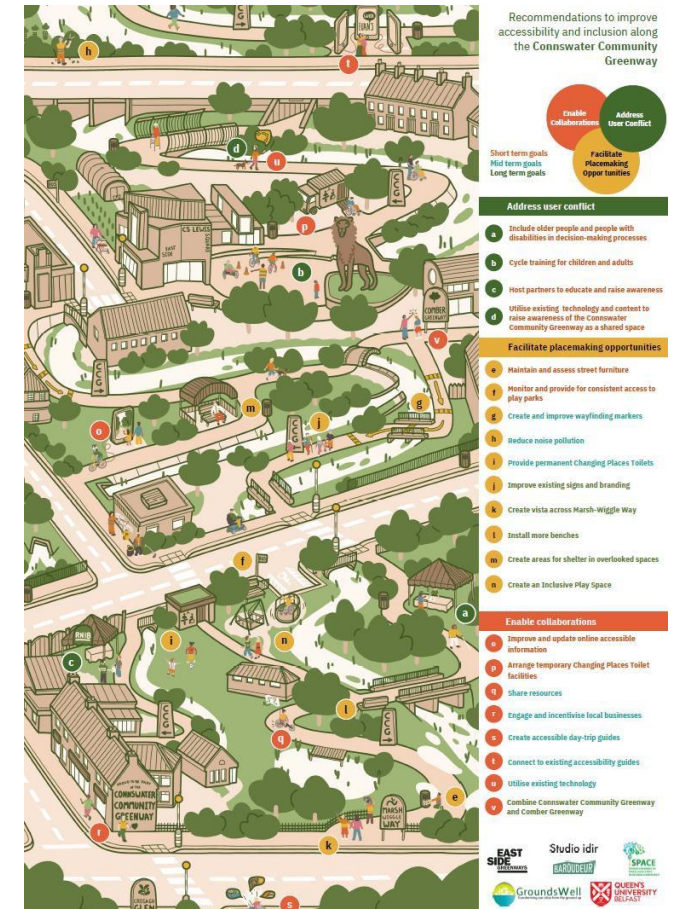


<https://bit.ly/3ZjFvlo>



Accessibility and Inclusion on the Connswater Community Greenway (CCG)

- EastSide Greenways, Studio idir, Baroudeur Consultancy
- Stakeholder and community engagement process
- Look at CCG through lens of accessibility and inclusion
- Emphasis on engaging with older people and people with disabilities
- Recommendations that can be actioned in short/medium/long term





Accessibility and Inclusion on the Connswater Community Greenway



REPORT



<https://bit.ly/3CP3UYA>

WEBINAR

Available on
website soon



Healthy Ageing in Rural and Coastal Areas of Northern Ireland

- Age NI, The Paul Hogarth Company
- Understand challenges to healthy ageing in rural and coastal environments
- In response to Chief Medical Officer for England's 2023 annual report about health in an ageing society - highlighted that rural and coastal areas will see faster growing numbers of older people
- Community and stakeholder engagement
- Suggested solutions and recommendations to address challenges and barriers to ageing healthily in rural/coastal areas



Healthy Ageing in Rural and Coastal Areas of Northern Ireland

REPORT

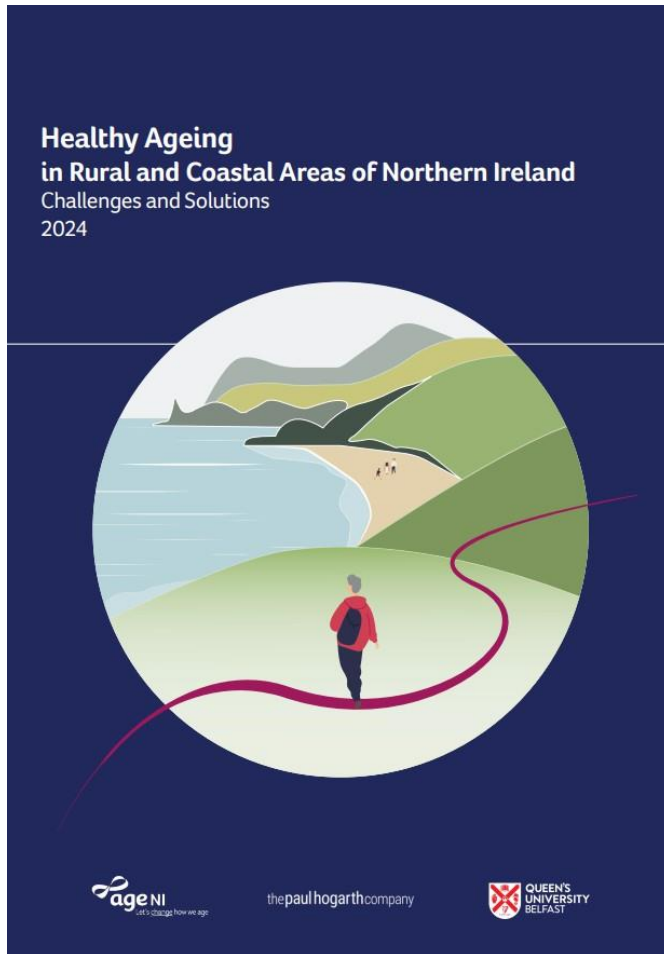


<https://bit.ly/3OyeR3o>

VIDEO



<https://bit.ly/3ViTGpK>





SPACE Factsheets

Green and blue space

Green space is any natural space that contains trees, grass or any other green vegetation. Blue space is any natural space that contains water, like rivers, lakes, and the sea.

Exposure has multiple benefits, specifically improving mental and cognitive health and increasing physical activity, but also environmental benefits like reducing air pollution, noise and city temperature (1).

We asked members of our Healthy Ageing Advisory Group what they thought...

"When you're out there walking, you feel a sense of freedom"

"Outdoors is free, that's the best part of it"

Our stakeholders said...

Access to green and blue space is fundamental for people being able to grow and age well

A better understanding of how noise pollution affects our health can aid planners in making evidence-based solutions, and help citizens demand and build healthier communities

SPACE
SUSTAINABLE PROMOTERS OF HEALTHY AGING AND WELLBEING
HEALTHY AGING CHALLENGE
SOCIAL, BEHAVIOURAL AND DESIGN RESEARCH

quib.ac.uk/sites/space

Noise pollution

1 in 5 people in Europe are exposed to high noise levels considered harmful to their health

Sources of noise include road traffic, rail, and aircraft.

We asked members of our Healthy Ageing Advisory Group what they thought...

"People in cities don't notice the noise anymore"

"Places are so built up and noise reflects from building to building, you don't have peace or quiet"

Our stakeholders said...

How we design our cities can reduce risks and mitigate impacts from noise pollution:

- pedestrianisation
- reducing car dependency
- green space buffers

A better understanding of how noise pollution affects our health can aid planners in making evidence-based solutions, and help citizens demand and build healthier communities

Noise pollution is the second most harmful environmental stressor in Europe, tackling it may help us live and age better

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Social, Behavioural and Design Research

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Light pollution

Over 80% of the world's population is living under light-polluted night skies

This can cause disruption to our sleep cycle and mental health disorders that can lead to cognitive decline in the long-term

We asked members of our Healthy Ageing Advisory Group what they thought...

"Recently, I haven't been able to see as many stars"

"I always sleep better when I'm somewhere that doesn't have light pollution"

Our stakeholders said...

How we design our cities can reduce risks and mitigate impacts from light pollution:

- urban light sources
- legislation
- pedestrianisation of spaces

A better understanding of how light pollution affects our health can aid planners in making evidence-based solutions, and help citizens demand and build healthier communities

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Soil pollution

Soil pollutants play a role in the built environment and can impact how we live and age. Inputs from some potentially toxic elements in soils can impact cognitive health, such as mercury and lead.

Soils contain a wide range of chemicals and the wider environment is dictated by the soils compositional relationships

We asked members of our Healthy Ageing Advisory Group what they thought...

"I notice if there's something different with smells in the air or if the soil has been contaminated, especially living along the coast you can see the dirt coming in and the scum on the water"

Our stakeholders said...

Knowledge about the chemical agents active in specific soils can inform mitigation strategies. Largely around: planting, building, housing, and sanitation

Understanding the relationship between soil pollution and health can aid planners in making evidence-based decisions, and help citizens demand and build healthier communities

How we manage soils and soil health will be key to creating sustainable health outcomes for current and future generations

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Air pollution

Air pollution is the biggest environmental health crisis we face:

99% of global population breathe air that contains high levels of pollutants

and is estimated to cause 6.7 million premature deaths each year (1)

We asked members of our Healthy Ageing Advisory Group what they thought...

"When traffic does build up, you feel the fumes from the cars affecting you, particularly when walking along a country road"

"I don't feel that I can breathe easily when I'm in the city"

Our stakeholders said...

How we design our cities can reduce risks and mitigate impacts from air pollution – pedestrianisation, reducing car dependency, greener modes of transport, active travel

Understanding the link between air pollution and health can help planners make evidence-based decisions and help citizens demand and build healthier communities

Air pollutants are present in any urban setting, and can severely damage our health

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Urban planning

Urban design has been historically one of the main promoters of public health. Cities with a compact and complex design, which means higher diversity of services available in shorter distances, good infrastructure for public transport, walking and cycling and more green space, can have lower levels of air pollution, noise, higher levels of physical activity and better health outcomes like better mental health and lower cardiovascular diseases prevalence.

We asked members of our Healthy Ageing Advisory Group what they thought...

"Sometimes we don't think about it, we all hop in our cars and go"

"Traffic has gotten a lot more noticeable, even in the outskirts"

Our stakeholders said...

The population is ageing and by 2050, nearly 70% of the world's population will be living in cities. We want older people who live in cities to have access to the environments that meets their needs

National level: how we can shift from cars to walking, cycling, public transport.

City level: how we access services by walking and cycling (compact and complex cities).

Neighbourhood level: involve citizens in the decision-making process for urban design and transport planning measures.

Cities should be designed for all, prioritising the needs of the most vulnerable

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Planetary health and climate change

Human health depends on flourishing natural systems. By harming our natural systems, we harm ourselves and future generations.

Climate change is a context that creates unprecedented situations.

We asked members of our Healthy Ageing Advisory Group what they thought...

"I did notice this year has been warmer, and it can be a bit uncomfortable at times"

"We should think about it - what are we doing to our lovely planet?"

Our stakeholders said...

Bringing together a range of bodies in partnership from across the public, private and third sector to raise awareness, guide good policymaking, and create actions is crucial.

Understanding how all planetary, environmental and health factors interact can help inform planners and citizens of the many components affecting how we live and age

The health of citizens and the planet is central to create conditions where everyone can live and age well

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Epigenetics

Our genes carry information that is passed from one generation to the next. Environmental factors (e.g. pollution) can get under our skin and affect our underlying biology.

Epigenetics is the study of how our behaviours (e.g. physical activity) and the environment impact how our genes work.

For example, in two people with the same type of asthma, only one may be affected by air pollution due to their underlying biology

We asked members of our Healthy Ageing Advisory Group what they thought...

"It's so interesting that we could be carrying a gene for disease and through interacting with our environment, we could be switching something on/off"

"There are so many factors at play which could determine how we approach behaviour change, prevention and education"

Our stakeholders said...

Epigenetics adds a new dimension to urban planning and the important role our environment plays in creating the conditions for good health

If we can better understand what in our environment causes changes to our underlying biology, we can better help individuals who are impacted

The environment in which we live can impact how our underlying biology works

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Topic overview

Input from
stakeholders and
Healthy Ageing
Advisory Group

What next?

Take home message

Light pollution

Over **80%** of the world's population is living under light-polluted night skies

This can cause disruption to our sleep cycle and mental health disorders that can lead to cognitive decline in the long-term

We asked members of our Healthy Ageing Advisory Group* what they thought...

"Recently, I haven't been able to see as many stars"

"I always sleep better when I'm somewhere that doesn't have light pollution"

Our stakeholders said...

How we design our cities can reduce risks and mitigate impacts from light pollution:

- urban light sources
- legislation
- pedestrianisation of spaces

A better understanding of how light pollution affects our health can aid planners in making evidence-based solutions, and help citizens demand and build healthier communities

Light pollution is increasing and we can't underestimate its impact on our health

1) Falchi et al., The new world atlas of artificial night sky brightness. Sci Adv. 2 (2016)
*Members of the public representing older persons who helped shape our research and ensured we considered their lived experiences, insights and opinions.

This work was supported by UK Research and Innovation [ES/V016075/1]

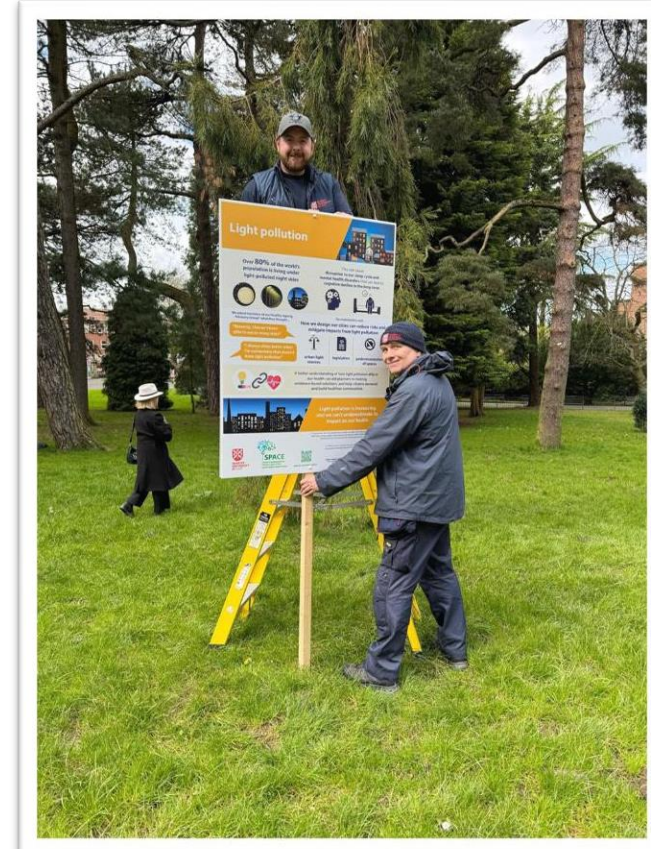
SPACE
SUPPORTIVE ENVIRONMENTS FOR PHYSICAL & SOCIAL ACTIVITY
HEALTHY AGEING & COGNITIVE HEALTH
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Healthy Ageing Challenge
Social, Behavioural and Design Research

Economic and Social Research Council



<https://bit.ly/4iiE6UY>





Noise and Light Pollution

[Noise Pollution Factsheet](#)

[Light Pollution Factsheet](#)



Green and Blue Space

[Green and Blue Space Factsheet](#)



Urban Planning

[Urban Planning Factsheet](#)



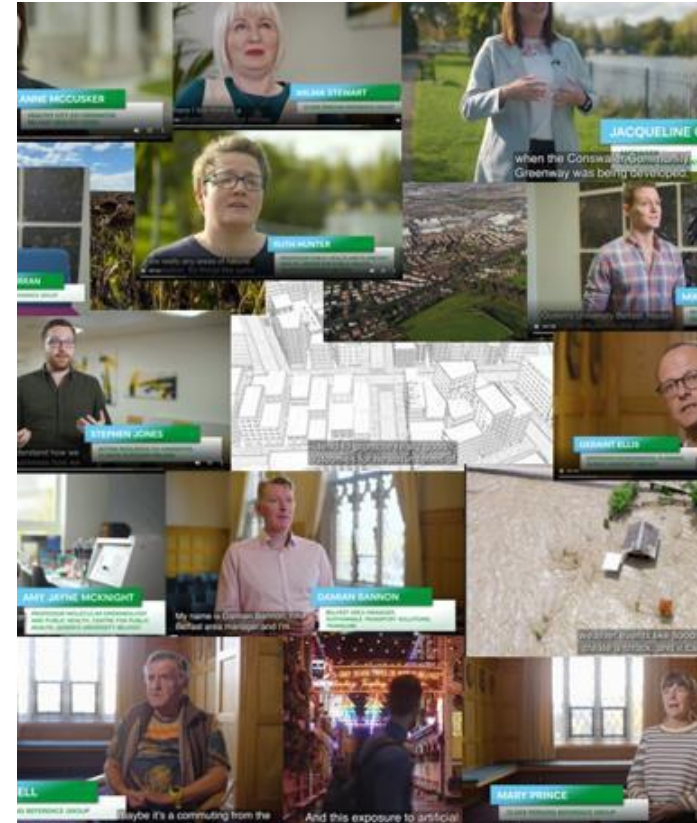
Air and Soil Pollution

[Air Pollution Factsheet](#)



Planetary Health and Climate Change

[Planetary Health and Climate Change Factsheet](#)



<https://bit.ly/4iiE6UY>



SPACE Webinars



WEBINAR: The impact of microplastics and other novel environmental exposures on public health

Tues 28th Nov
10.00–11.30am

The SPACE project examines the link between **where we live** and its effect on **dementia and brain health as we age**. This webinar will explore the **next wave of environmental exposures** and their potential impact on public health, including **exposure to pollutants within the home** and **by-products of the transition to net zero**.

Speakers include:
Prof Frank Kelly
Dr Dan Middleton
Prof Juliana Early



Register now and join us on Zoom



WEBINAR: The History of Our City and its Influence on Public Health

Wed 4th Oct 2023
12.30pm–2.00pm

The SPACE project has uniquely brought together elements which inform and challenge the health of our city and its population. During this webinar speakers will explore the impact of **family history and epigenetics, Belfast's industrial past, and urban design** on the **public health** of our population today.

Speakers include:
Prof Jennifer McKinley
Prof Brendan Murtagh
Prof Amy Jayne McKnight



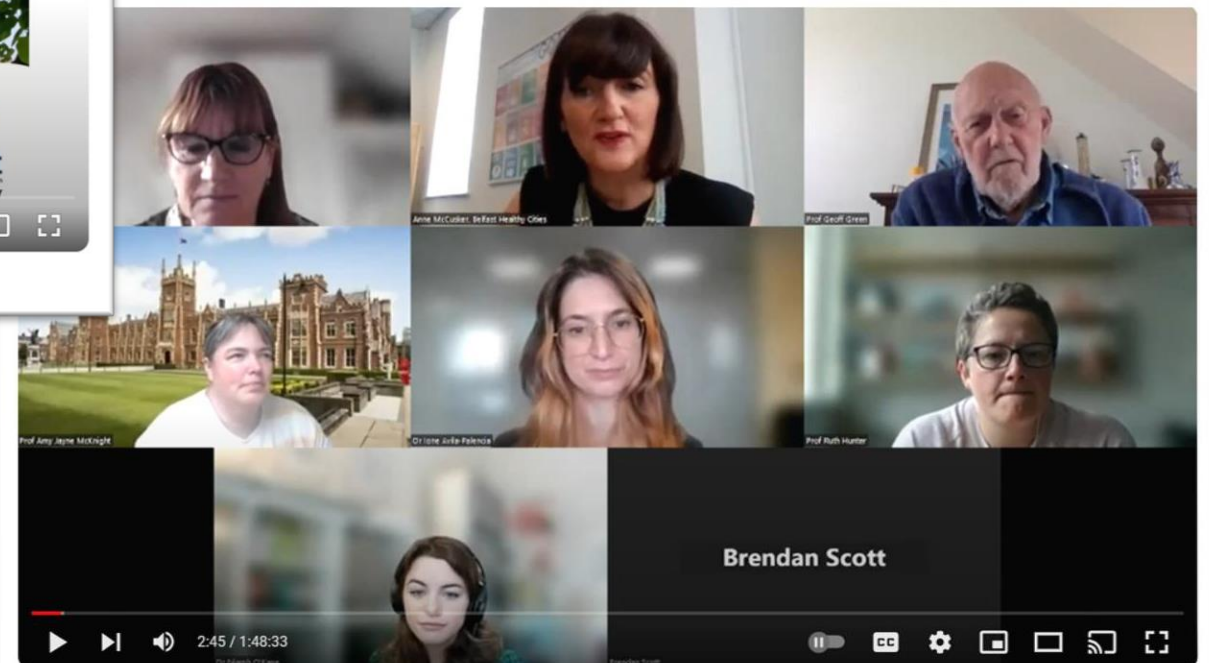
Register now and join us on Zoom



The History of Our City and its Influence on Public Health




<https://bit.ly/3OC3dEC>



Co-design of the urban environment for future generations






Episode 3 - Future of Ageing Research
Queen's University Belfast - The Science of Ageing Well

What does the future of ageing research look like? In this episode, we will hear from two experts: Jinkook Lee (University of Southern California) and Bernadette...

26 Jun • 21 min 40 sec

⊕

▶




Episode 2 - Epigenetics & Ageing
Queen's University Belfast - The Science of Ageing Well

Hosted by Ruth Hunter (Professor of Public Health and Planetary Health, Queens University Belfast) and Ollie Graham (Thought-TV) - Our behaviours and our...

19 Jun • 23 min 16 sec

⊕

▶



Episode 1 - Environmental Impact
Queen's University Belfast - The Science of Ageing Well

Hosted by Ruth Hunter (Professor of Public Health and Planetary Health, Queens University Belfast) and Ollie Graham (Thought-TV) - The environment we live in, work i...

6 Jun • 26 min 12 sec

⊕

▶



<https://bit.ly/4geO2Nk>



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