



Belfast
City
Council

The Lagan Towpath: health & wellbeing in a blue-way?

SUR811 Research
Design & Regeneration
Project

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Executive Summary

This research document has been produced for the attention of Belfast City Council (BCC) by Lauren Coulter. BCC commissioned this research paper to investigate how blue spaces, particularly rivers can be better managed and assessed in order to improve health and wellbeing. A desk-based literature review and policy analysis critically analysed relevant benefits and challenges of blue infrastructure projects. In addition, a case study on the Lagan Towpath, a survey and interviews were conducted to gain local and professional perspectives. These research methods presented a comprehensive investigation of the Lagan Towpath whilst also highlighting future challenges and recommendations which can be applied by BCC.

The literature review includes two themes: the benefits of blue spaces; and the challenges with blue spaces. Numerous findings support that blue spaces provide health and wellbeing benefits, however, recognise that this is dependent on the quality and access to the space. A large challenge to achieve quality and access is the lack of research and assessment tools being used. Each of the findings are supported with a good practice example, such as a towpath regeneration in Welshpool, England saw a 62% in users believing that their physical and mental health had improved as a result.

The planning policy review assessed from a regional to a BCC level, how planning values blue spaces. The policy included the RDS, SPPS, Belfast Agenda, Belfast LDP, Belfast Green and Blue Infrastructure Plan, and the Lagan Valley Regional Park Five Year Plan. This review concluded that current policy is increasing its appreciation of blue spaces, however, NI is still very much behind the other UK jurisdictions with potential for planning to play a bigger role in how blue spaces are managed.

The case study analysis investigated the historical and cultural significance of the Lagan Towpath. Findings stated that parts of the towpath were built over with a motorway, which further emphasised the need for greater appreciation of blue spaces in Northern Ireland. This led onto carrying out a survey called the BlueHealth Community Level Survey which assessed the quality, accessibility, user health and wellbeing and living conditions. Based off the key findings a typical user of the Lagan Towpath was produced highlighting that users typically live within 1-3 miles, they walk to the towpath, have a private garden, have good health, visited on their own, spent more than 1 hour at the towpath, are aged between 41-56, and are in paid employment. All of this was significant as it provided evidence and supported literature review findings that people who live closer to these kinds of spaces tend to have good health.

The interviews were conducted with a range of professional stakeholders, and findings revealed that NI has huge opportunities to improve its blue spaces. However, there are many challenges which exist such as property rights, accessibility, and lack of appreciation. For example, property rights findings stated that typically people have been allowed to build right up to the edge of the river, which has caused issues for the future regeneration of riverside walkways, specifically the Connswater Community Greenway.

Overall, this research proved that blue spaces have the ability to provide health and wellbeing benefits, however, significant challenges and opportunities for future planning and management exist. Therefore, six recommendations were produced based off the triangulation of data from each of the research methods. These included: the development of permissive paths across NI, the use of the health impact assessment for all future developments, encouraging greater public appreciation of river walkways, increased research into blue space benefits, co-design with the community for future riverside walkways, and greater council appreciation and use of the BlueHealth community level survey.



1.0 Introduction

'Blue spaces' constitute not just coastal areas such as harbours, ports, beaches and cliffs, but also inland lakes, canals, rivers, fountains, and pools. Globally, around 773,000 km² of the Earth's surface is composed of rivers and streams (Williams, 2018). This is significant, as rivers form one of Earth's most important systems. For example, providing fertile floodplains for agriculture, and providing habitats for many of Earth's organisms (National Geographic, 2021). In addition, health and wellbeing impacts of river walkways are increasingly recognised, not least in the context of COVID-19.

This research seeks to generate a deeper understanding into the health benefits from river walkways. There is evidence to suggest that having access to blue spaces such as river walkways help to improve a user's general health (Wheaton *et al.*, 2019). However, key authors such as Gascon *et al.* (2017), and White *et al.* (2020) have emphasised the need for a more synthesised research approach to undertaking future research due to the high levels of heterogenous results. Additional motivation for carrying out this research is due to the increased demand for river walkways during COVID-19 whereby people are recognising the importance of using and accessing these spaces (Vert, 2020). Therefore, researching this topic during these unprecedented times will become of increasing value for future planning practice of river regeneration schemes.

In Northern Ireland (NI) there is increased recognition of the role of planning in securing positive health and wellbeing benefits from blue spaces. This is demonstrated in the creation of NI's first Green Infrastructure (GI) Plan by Derry City and Strabane District Council (DCSDC) which aims to improve sustainability through good design and planning of GI. This plan is focused on GI, and in comparison, there is little focus on blue spaces throughout, despite the large number of designated sites consisting of blue spaces in the council area, such as the River Foyle, River Faughan, and Lough Corr (DCSDC, 2018). In comparison, Belfast City Council's (BCC) 'Belfast Green and Blue Infrastructure Plan 2020' is more inclusive of both green and blue spaces and has a dedicated section on greenway routes, including the Lagan Towpath. BCC recognises their responsibility for land-use planning in improving the network and quality of greenways along rivers to improve health and wellbeing through improved fitness and air quality (BCC, 2019). The development of these plans has led to a £2.8 million package for greenway projects in NI which will be used to improve the quality of these spaces (DfI, 2020). This funding is to be used for six greenway projects including the Lagan Towpath Gateway.

Critically, there are several barriers planning faces in improving the quality of blue spaces. For example, 'Exercise – Explore – Enjoy: A Strategic Plan for Greenways 2016' was developed to complement the design and construction of 1,000km of river greenway across NI. However, four years later and there has been little or no progress for the greenways specific to this plan. This is due to the lack of prioritisation of resources from the NI Assembly and Department for Infrastructure, resulting in delays for planning to improve the quality of these blue spaces (NI Greenways, 2020).

Overall, despite increasing public and political support, funding, and a growing recognition of the importance and significance of blue spaces for health and wellbeing, NI has been slow to acknowledge the potential offered through riverside walkways. This presents concerns regarding the future planning, management, and regeneration of these areas.

1.1 Aims and Objectives.

The overarching aim of this research is:

“to critically explore how the accessibility and quality of river walkways in Northern Ireland impact health and wellbeing, with a case study of the Lagan Towpath”.

To achieve this overarching aim, the following objectives are put forward:

1. To explore the relationship between blue spaces, and health and well-being.
2. To examine international assessment tools in determining the quality of blue spaces.
3. To understand the perspectives and needs of the Lagan Towpath.
4. To critically examine professional perspectives of the planning and management of river walkways in NI.
5. To construct recommendations that inform planning practice for the future regeneration of river walkways.

1.2 Overview of Content

In order to meet these aims and objectives the report starts with a literature review, exploring benefits and challenges associated with blue spaces and health and well-being. This is followed by a critical analysis of assessment tools, identifying how blue spaces can be measured. In addition, planning policy analysis will recognise relevant policy documents in place to support blue spaces. The methodology section outlines each of the additional data analysis methods used; case study, interview, and survey. Each of these methods are analysed individually after the methodology, with the findings of each method supporting recommendations and conclusion.



2.0 Blue Spaces: a literature Review

This section provides a synopsis of a desk-based literature review of the key benefits and barriers that users of blue spaces experience with the provision of good practice examples. In particular, there are two key strands to this section:

- Benefits of Blue Spaces,
- Challenges experienced with Blue Spaces.

2.1 Benefits of Blue Spaces

Various studies around the world have found that access to natural blue spaces cause people to care more about nature which helps promotes physical activity, in turn improving general health (see for example, Choe *et al.*, 2020; Wheaton *et al.*, 2019; Garrett *et al.*, 2016; Perchoux *et al.*, 2015). This has become increasingly apparent due to COVID-19, as more people have become aware about their health and wellbeing which has emphasised the need for blue space interventions such as urban riverside regeneration schemes (Vert, 2020).

Contrastingly, studies have stated the difficulties in distinguishing whether blue spaces encourage physical activity, or if healthier and more active people live near natural blue spaces, particularly riversides (Pasanen *et al.*, 2019). With further studies stating that there are minimal findings linking blue spaces and physical activity (Keijzer *et al.*, 2019). A reason for this could be that there is no single tool in determining how blue space impacts physical activity levels (Grellier *et al.*, 2020). Therefore, the majority of studies apply different study techniques focusing on various blue space types (inland or coastal), or focusing on specific outcomes (physical activity, general health, or mental health) and age groups, ultimately providing heterogenous results (White *et al.*, 2020). This has been supported by Gascon *et al.*, (2017, p.1) who carried out the first systematic review of 35 studies on blue spaces and health and well-being. They found a need for “methodological improvements” and standardised “outcome measures” in order to enable easier comparison across studies, to reduce heterogenous results.

Despite this limitation, there is still evidence that suggest access to blue space increases physical activity levels (see Figure 1).

Good Practice Example 1: Gilford Riverside Trail regeneration scheme NI, transformed an underutilised river corridor into a space where people are walking and cycling, overall improving the local health and wellbeing (WalkNI, 2019).



Figure 1: Good Practice Example 1 on Gilford Riverside Trail (Compiled from WalkNI, 2019; and Image source: WalkNI, 2020)

There are many aesthetical and sensory aspects of water and its surrounding nature, with studies stating that the activities in riverside walkways and other blue spaces can promote benefits such as social interactions which improve human's mental health (Vert *et al.*, 2019; Bell *et al.*, 2015; Finlay *et al.*, 2015). Further, White *et al.* (2020) and Nutsford *et al.* (2016) state that having a view of blue spaces is one of the leading reasons for improved mental health. However, there are many challenges surrounding this including, environmental injustices whereby properties that have a view of blue spaces tend to be higher priced, for example a riverside apartment (Qiang *et al.*, 2019; Volker and Kistemann, 2011). This creates health inequalities, significantly impacting deprived areas. Therefore, more deprived individuals who tend to have more mental health problems to begin with, do not have the same levels of accessibility to blue spaces than more wealthy individuals. This is concerning as evidence suggests deprived people benefit more from access to blue spaces than more affluent people (Keijzer *et al.*, 2019; and Choe *et al.*, 2020).

Overall, the link between mental health benefits and blue space has been recognised (Figure 2). However, there are still lessons to be learnt in terms of improving accessibility of blue spaces to ensure everyone of all backgrounds can reap the benefits of this natural space.

Good Practice Example 2: Welshpool, England canal towpath regeneration: 62% of users believed that it led to increased mental health and levels of physical activity, providing numerous health benefits (Peacock *et al.*, 2005).



(Image Source: Montgomery Canal, 2020)

Figure 2: Good Practice Example 2 on Welshpool, England (Compiled from Peakcock *et al.*, 2005; and Montgomery Canal, 2020)

2.2 Challenges experienced with Blue Spaces

One of the main challenges associated with rivers is flooding and air pollution which are becoming increasing risks to human health and well-being around the world (Gov.uk, 2020).

Nieuwenhuijsen *et al.* (2018) found that air pollution from ship and port related emissions and other chemicals caused urban rivers to increase the risk of all-cause premature mortality. Moreover, Haeffner *et al.* (2017) found that poorly managed and unmonitored rivers can lead to flood risk, pollution, and waste disposal. As a result of flooding, Warsini *et al.* (2014) found that people experience a loss of identity, belonging and control due to environmental change of rivers causing solastalgia. This is significant as it highlights the importance of continued monitoring, protection, and improvement of the quality of natural blue spaces so that humans can receive health and well-being benefits (Rydin *et al.*, 2012). For example, Belfast is the top area in NI as a potential flood risk with almost 10,000 properties most at risk (BCC, 2016). However, the lack of methods to ascertain the

quality of blue spaces creates challenges in determining how urban riverside regeneration schemes benefit people, and therefore, how to improve these blue spaces to meet local needs remains largely under researched (Mishra *et al.*, 2020).

Despite this Vert *et al.* (2019a) determined through asking residents who use their river walkway, that they felt the quality of a rivers water and walkway post regeneration had improved, enabling them to take part in more physical activity. This supports that there are correlations between good quality rivers providing health benefits. However, an evaluation report for Connswater Greenway was carried out assessing aspects including general health. The Connswater Community Greenway (2017) report found that self-reported general health in the area had fallen from 72.6% before construction, to 62.1% after construction. Yet, this same project has achieved its goal of protecting 1,700 properties from flooding. Generally, through reducing the risk of flooding in an area, it reduces stress from fear of flooding, as well as improving quality of life which enhances health and well-being (Public Health England, 2014). Therefore, these findings produce many queries as to what questions were asked to local residents who reported worse health after construction, how soon after completion this report was carried out, and how close those people live to the project. These are important aspects to be considered to reduce the risk of heterogeneity (Gascon *et al.*, 2017).

Overall, it is evident that river flooding/erosion hugely impact on people's health and well-being, but to what degree regeneration projects improve this is still yet to be consistently found.

Good Practice Example 3: Cheonggyecheon Stream, South Korea restoration involved demolishing a motorway which covered the river. Uncovering this river has improved walkability, enhancing a healthy lifestyle and social interaction, and reducing congestion (Shafaray and Kim, 2017).



Figure 3: Good Practice Example 3 on Cheonggyecheon Stream, South Korea (Compiled from Shafaray and Kim, 2017; and Image source Kim and Jung, 2019)

Another challenge is the lack of blue space research to determine the living distance and accessibility factors to allow people to gain the greatest health and wellbeing benefits (Hooyberg *et al.*, 2020; Grellier *et al.*, 2017) (Figure 3).

Accessibility to the natural environment such as rivers has been a huge concern for people during COVID-19 (Gray and Kellas, 2020). Therefore, not having this access during lockdown can lead to issues of isolation and lack of exercise. In addition, the living distance from blue spaces to reap the largest benefits is uncertain. For example, White *et al.* (2013) found that living within 5km of the coast can

improve health and wellbeing, which is countered by Pearson *et al.* (2019) who found that living closer to an inland lake was associated with higher hospitalisations. Similarly, Gascon *et al.* (2015) found no health benefits of living within 1-3km of the coast. These findings suggest numerous inconsistent studies on blue spaces. For example, studies have looked into the living distances from the coast however, there is little evidence to consider that these blue spaces are similar quality, and accessibility. This is supported by Haeffner *et al.* (2017) who recognised that blue space literature is sparse, with rivers particularly remaining understudied.

This sparse blue space literature is further experienced, with difficulty in ascertaining if the benefits from blue or green infrastructure is different. Pasanen *et al.* (2015) expressed concern over whether individuals are benefitting from the GI that blue spaces are surrounded by or if it is indeed the blue infrastructure that improves people's health and well-being.

Overall, there are an emerging amount of blue space studies, however, the different research characteristics presents issues with heterogenous results, making future research comparison challenging.

Good Practice Example 4: Regents Canal, London has been regenerated, with new homes and arts venues built along the canal path to promote community living through a community garden which runs along the canal. The improved accessibility of this canal has resulted in an increased number of people to the area, either as visitors or residents (White, 2019).



Figure 4: Good Practice Example 4 on Regents Canal, London (Compiled from White, 2019)

Lastly, limited access to quality blue spaces is a key barrier (Figure 4). Within NI this is exacerbated through a highly privatised property rights regime whereby the public are restricted to areas of public spaces (NetRegs, 2021). Critically, NI has a very limited number of public walkways. This further enhances the importance of providing these spaces particularly with COVID-19 (Macauley, 2020). The restricted public access to natural spaces in NI is largely due to a large proportion of the population still having close connections to farming (Harris, 2019). However, it is promising in NI that some of the largest landowners are environmental organisations consisting of The Forestry Commission, National Trust, Royal Society for the Protection of Birds and NI Water. Although, many of these organisations require people to pay for access onto their land. Haeffner *et al.* (2017), stated that public access to restored waterways contributes to an aesthetically pleasing experience, with river restorations one of

the more increasingly advocated strategies for reducing environmental injustices through access rights, emphasising the importance of it being a free resource. More recently in NI the law on public access to the countryside is under review to assess whether modifications can be made (Macauley, 2021). This is significant as it presents a greater appreciation of public health to allow greater physical activity, particularly since NI has the most restricted number of public spaces within the UK (Figure 5).

Overall, within NI there is a clear gap in public access to privately owned land, to allow for the public to reap the benefits that blue spaces provide. This provides further challenges for planners to continue to provide natural spaces for people to carry out physical activity and social interaction.

Point of Comparison: The Land Reform (Scotland) Act 2003 allows everyone access to most land and inland water in Scotland, also known as the 'right to roam'.

Figure 5: Point of Comparison consisting of the Land Reform Act 2003 (Compiled from: Scottish Government, 2005)

2.3 Concluding Summary

The literature reviewed in this section has identified many benefits attributed to good quality, accessible blue space, but there are also many challenges. One of the key challenges is that many of the benefits are intangible, with difficulties in assessing them. The following section outlines several existing assessment tools.



3.0 Assessment Tools

This section provides an evaluation of five assessment tools produced by BlueHealth¹. The tools are created for planners, designers, and researchers to make comparable assessments of blue spaces before and after proposed changes. These tools are significant for enhancing urban planning, as together they assess people's health and wellbeing, quality of blue environments, and how people use blue spaces (Grellier *et al.*, 2020).

Tool 1: Environmental Assessment Tool (BEAT)

What is it?

Designed to provide objective measures of the environmental character of blue spaces including the terrestrial and aquatic systems within the site. It consists of a desk-based study and evaluation collecting data on the location and character of the area; a survey scoring the social, aesthetic, and physical characteristics such as visual quality and safety and security; and finishes with an aquatic ecosystem evaluation.

A recent study has been carried out by Mishra *et al.* (2020) into the development of this tool for assessing the qualities of blue spaces.

Advantages

- It is the only tool which comprehensively assesses the environment of blue spaces.
- Improves understanding of the factors that can maximise the health and wellbeing benefits of blue spaces, including where people interact with the water directly (in, on or around) or indirectly (by viewing or sensing it).
- Relates to riverside regenerations as it assesses blue spaces both before and after design changes are made, such as the Lagan Towpath regeneration.
- Has been used to evaluate a variety of blue infrastructure regeneration projects, such as the Besos River (Spain) involving access to an urban riverside path.

Disadvantages

- There is no "standard" site to compare the validity of the BEAT tool, as all sites have different characteristics with different effects.
- The BEAT tool requires the completion of numerous different surveys with technical questions which the community would not know the answers to, making it unviable for this research.

(BlueHealth, 2020; BlueHealth, 2020a; and Mishra *et al.*, 2020)

¹ BlueHealth is a European research initiative which explores linkages between blue spaces, health and wellbeing, and climate. It has merged interdisciplinary methodologies to investigate how wellbeing is possibly fostered through developing blue infrastructure.

Tool 2: Decision Support Tool

What is it?

This tool is used to identify the key health-related risks and benefits of a given blue space through observation.

Advantages

- Not only does it identify threats, but it identifies ways of mitigating them.
- Provides risks and benefits specific to the type of blue space such as the coast or a river, which is useful for this study which specifically looks at rivers.
- One of the goals is to identify human health benefits, such as opportunities for physical activity or improvements in mental and social wellbeing – which is the direction in which this study is intending to go.
- It is the first tool designed to help users assess blue spaces with a focus on health and wellbeing.
- Can be used to support planning designs.
- It will help to inform urban planning policy in the face of climate and other environmental change with both the health promotion and the management of potential health risks in mind.
- During its testing it was successfully used by Plymouth City Council and local planners for the regeneration of their urban beach in Teats Hill. They found that the guidance and discussion prompts were useful for justifying new planning bids.

Disadvantages

- The tool has not yet been made available for use as it is in the final review stage.

(Grellier *et al.*, 2020; BlueHealth, 2020b; and WHO, 2020).

Tool 3: Community Level Survey (BCLS)

What is it?

This tool is a pre-made survey designed to find out how communities engage with blue spaces, their perceptions (of safety, quality etc.) and how blue spaces/interventions might affect the wellbeing of individuals and communities.

Advantages

- Specific to local communities which can be useful for overcoming specific issues faced in the community, such as flooding – one of the barriers expressed in this report.
- Has been used in a variety of regeneration projects such as the Besos River, Spain riverside regeneration.
- This method can enable researchers to gain detailed insights into the behaviours and perceptions of a local community in relation to blue space.

Disadvantages

- Due to COVID-19 much of the survey will be required to be via post, phone or online which makes it harder to get a fair reflection of the local population, as well as it being harder to identify specific people in the targeted areas.
- Can be difficult to get responses from a wide enough range of users.
- The pre-made survey consists of up to 30 questions which can deter a lot of people from undertaking it.

(Grellier *et al.*, 2020; Bell *et al.*, 2020; and BlueHealth, 2020d)

Tool 4: Soft GIS (BSGIS)

What is it?

This tool uses participatory mapping to understand how local residents use blue spaces in the area of study. It is the linkage of 'soft' subjective data with 'hard' objective GIS data.

Advantages

- Allows residents to comment on the local environment and their experiences with it, which provides the relevance of changes at the specific blue space sites and helps planners inform planning priorities of local areas.
- This tool could be useful in helping to inform how people view the Lagan Towpath in relation to other nearby blue spaces.
- Has been used in a variety of regeneration projects such as Marazion Dune Cycle Path, Cornwall.

Disadvantages

- This tool does not focus on the health and wellbeing impacts of blue spaces for its users.
- This tool is not site specific as it focuses on all blue spaces in a city/town. Therefore, for this study it will not be useful to understanding the site-specific impacts of the Lagan Towpath regeneration.

(Grellier *et al.*, 2020; BlueHealth, 2020e)

Tool 5: Behavioural Assessment Tool (BBAT)

What is it?

This tool determines the different activities that people use blue space for, as it considers the weather and water conditions that affect who is doing what and where. It uses geographical information system (GIS) which visualise the geographical and statistical results of the observation of the diverse human behaviours and interactions which have taken place.

Advantages

- This tool considers a wide variety of human characteristics such as gender, age group, social interaction, primary activities, and secondary activities, which is more specific to human impacts compared to other tools such as the BEAT tool.
- There are repeated observations before and after changes are made to a site, which enables monitoring of changes in usage, allowing assessment of design success and potential to estimate the return on investment.
- Has been used in a two regeneration projects, including the regeneration of and improved access to a beach in Plymouth, and Amsterdam.

Disadvantages

- This tool considers seasons/weather – therefore, since this study is only taking place over a short amount of time (approx. February-March) there is a disadvantage of not being able to compare it with the better weathered summer months which would potentially change the outcome of the study results.
- To use the BBAT you are required to have the QGIS software which can make this tool more challenging to use compared to other tools.
- During the current COVID-19 climate, there have been a variety of lockdowns which impacts on users of blue space such as the Lagan Towpath. Therefore, using observation as a tool could present difficulties in obtaining accurate results.

(Grellier *et al.*, 2020; and BlueHealth, 2020c)

3.1 Concluding Summary

Findings above show that there are a range of tools, all which have advantages and disadvantages, with some yet to be tested, demonstrating how novel/new this area of study is. The most appropriate tool for this research study is the BCLS, as it will help explore the relationship between blue spaces and health and wellbeing (Objective 1) and help understand the perspectives of users of the Lagan Towpath (Objective 3). Despite challenges being raised with gaining enough responses, there are many platforms that can be used to make people aware of it, for example, Twitter. In addition, further questions will be added to the BCLS which the researcher feels are appropriate for the study, providing a contribution to knowledge. The following section explores the methodology.



4.0 Methodology

This critically outlines the research design and key research methods used to gather, compare, and evaluate data for this study. Ethical considerations are also detailed.

4.1 Research design

Research design helps to provide a plan of study which makes it easier to have an accurate assessment of the research methods and data collected (Jang, 1980). Cooper and Schindler (2006, p.125) further emphasis this, stating that research design is the proposal for the “collection, measurement and analysis of data”.

A fundamental aspect to a successful research design, is the use of a Critical Path Method (CPM) which produces a sequential schedule of the research (Figure 6).

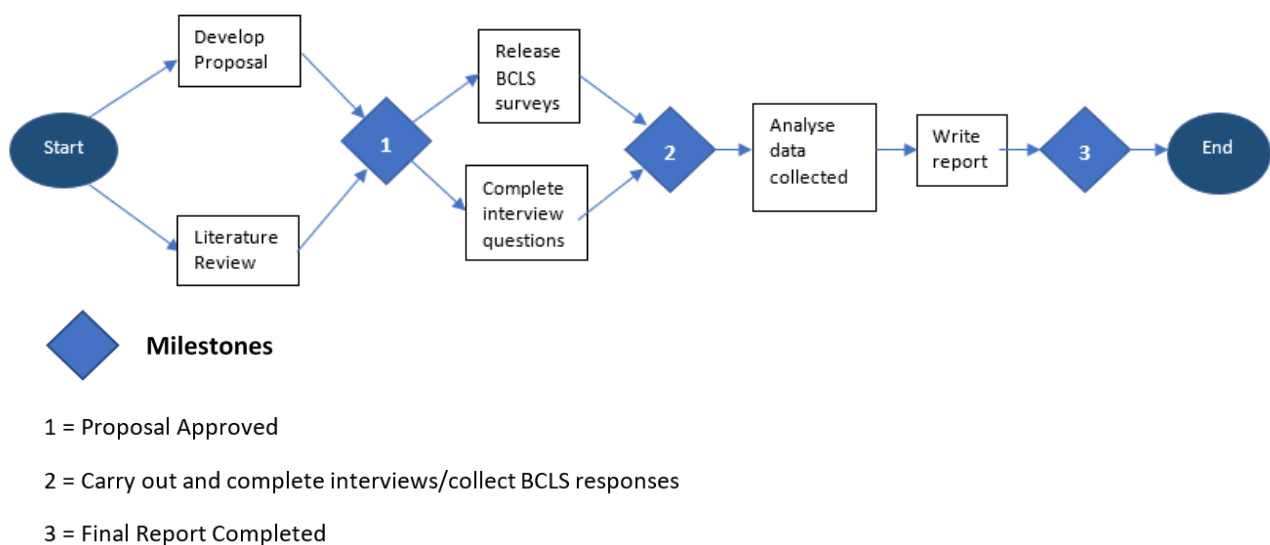


Figure 6: Critical Path Method for schedule of research with key (Authors own, 2021)

Saunders *et al.* (2019) ‘Research Onion’ (Table 1) provides an overview of the methodological approach undertaken for this study.

Saunders <i>et al</i> , (2006) Research Onion Stages	Chosen Stage for this Research	Justification
Research Philosophy	Interpretivist	This approach is important as it helped to gain a more personal perspective of how different people have different experiences in regard to the Lagan Towpath, as opposed to taking a positivist approach whereby society is viewed as generalising how social classes react to experiences. Therefore, the interpretivist approach allowed the research to gain a more in-depth understanding into the lives of respondents, to gain an empathetic appreciation of why they act and feel the way they do (Thompson, 2015; and Ryan, 2018) – which has been significant for overcoming the rationale that there is currently insufficient research in this specific area. This philosophy has been used to meet Objective 3.
Research Approach	Inductive Approach	This approach helped to meet Objective 4 by collecting data and then developing a theory/recommendation based on the results (Zefeiti and Mohammad, 2015).
Research Strategies	Survey	The overall main approach to this research process is the BCLS survey tool, as outlined in the objectives. Additional strategies have been used throughout the research study including, policy research, semi-structured interviews/ethnography, and a literature review – all of which is justified in the next section of the methodology.
Research Choice	Mixed Methods	It was important for this research study to utilise a mixed method approach as, evidence supports that researchers should call attention to the research problem and use all methodologies available to understand this problem (Creswell, 2009). For this research topic, the problem was the lack of consistent research in the field which produced varying results. Therefore, the use of both qualitative (semi-structured interviews/ethnography) and quantitative (survey) methods was implemented.
Research Time Horizon	Cross-sectional	It was determined that a cross-sectional study would take place as the survey would involve analysing data from the case study population at a specific point in time – that being February 2021 to April 2021. However, it has been recognised that due to the time constraints of this study, this method cannot be used to analyse data over a period of time, such as summer,

Table 1: Methodological approach taken for research (Authors own, 2021)

Considering the risk of researcher bias it was concluded that a mixed methods approach would be undertaken (Figure 7). The methods selected included semi-structured interviews, the utilisation of the BlueHealth BCLS survey, and a desk-based study comprising a literature review and planning policy analysis.

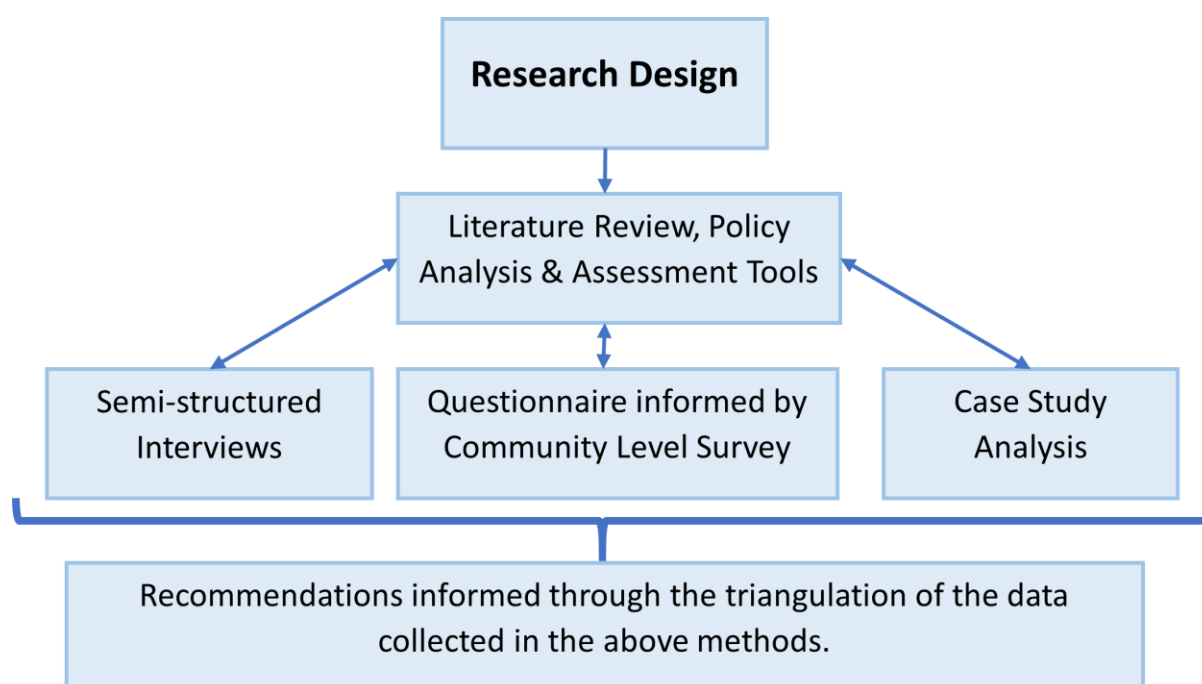


Figure 7: Methodology of research methods (Authors own, 2021)

4.2 Literature Review and Policy Analysis

A literature review and policy analysis were used to produce knowledge and research, explored through relevant references, literature, rhetoric, synthesis, and significance (Nakano and Muniz, 2018). The aim was to carry out exploratory work, appreciating different arguments and delivering methodical and unbiased evaluative analysis (Hart, 1998), shown in Table 2.

Advantages	Disadvantages
Collection from a broad range of sources	Could limit creativity and intuition
Aids interdisciplinary as it highlights cross disciplinary themes	Could overlook important “grey literature” e.g., reports
Increase transparency of review	Restricted to the accessibility of sources
Increase replicability of the review	Keyword search strings need to be identifiable
Being “systematic” offers a sense of rigor	Relies on databases that support “keyword” search
Aids the process of synthesis through the increased scope possible	Relies on the quality of the abstract (often limited to 100 words)

Table 2: Advantages and Disadvantages of Literature Review Method (Compiled from: Easterby-Smith et al., 2012, p.109)

Throughout the literature review, a variety of desk-based sources were used to find key authors and articles (Table 3). In order to find the sources, the following combination of keywords and string expressions were used:

((riverside OR river OR river regeneration OR river walkway OR towpath OR riverside regeneration) AND (blue space OR blue infrastructure OR blue way) AND (health and well-being OR general well-being OR physical health OR physical activity OR social interactions OR psychological well-being) AND (planning OR policy OR regeneration OR planning tools OR development OR sustainability)).

Online Databases Used	SCOPUS, Google Scholar, Science Direct, SpringerLink, Research Gate, and SAGE Journals. This range of databases was used to ensure relevant articles were discovered and not omitted. However, some papers were not accessible on these databases such as Research Gate because of copyright issues. Therefore, other sources have been used.
Ulster University Resources	The following Ulster University resources were used: USearch Electronic Journals Library Catalogue (e-books)
Other Sources of Information	To generate further evidence and critical evaluation, policy documents, news articles, books and profes-

Table 3: Variety of sources used in Literature Review (Authors own, 2021)

4.3 Case Study Research

Qualitative case study research is valuable as it “investigates a contemporary phenomenon in depth” as stated by Yin (2014, cited by Hollweck, 2016, p.16), through capturing the complexity and contextual conditions of the case study location.

Advantages	Disadvantages
High internal validity – can obtain detailed and relevant data, which will not be taken out of context.	Case studies relate to a single location, and therefore not all the results can be related to other locations – therefore, lacking external validity.
Can find information, which was not anticipated to find at the start, which is important for helping in creating hypotheses, to overall advance the knowledge base for the field.	The case study is most useful for generating hypotheses, whereas other methods are more suitable for hypotheses testing and theory building.
Ability to handle and combine multiple kinds of data collection methods.	The case study contains a bias toward verification.

Table 4: Advantages and Disadvantages of Case Study Research (Compiled from Krusenivik, 2017)

Three possible case studies were explored: Connswater Community Greenway, Forth Meadow Community Greenway and the Lagan Towpath (see Appendix 1). For the purposes of this study the Lagan Towpath was selected because of its size, current status of regeneration, and popularity. Therefore, the research would more likely be able to get a wider range of responses and perspectives, in order to provide more robust evidence to support recommendations.

Overall, this method is important for the research findings to determine the characteristics which impact people’s health and wellbeing.

4.4 BlueHealth Community Level Survey (BCLS)

In order to get direct perspectives from users of the Lagan Towpath a survey was developed based on the BCLS (see Section 3.0).

The structured survey involves a number of closed-ended questions with multiple choice, dichotomous and ranking answer options (Dudovskiy, 2020; and Phellas *et al.*, 2011) (see Appendix 2). Close-ended questions were used as they can help overcome hard to record answers and that open-ended questions lend themselves better to interviews (Hyman and Sierra, 2016). In particular, the survey was used to enhance understandings of:

- The different types of people who use the Lagan Towpath.
- How people perceive the Lagan Towpath.
- The reasons why people visit the Lagan Towpath.

Table 5 highlights some key points to be made.

Due to COVID-19, the research had to entirely rely on the survey being produced via online platform: Jisc. This research recognises that COVID-19 will have caused many people to have changed their answers to some of the questions, however, this just further stresses the importance of understanding how blue spaces impact on individual's health and wellbeing. The survey was released on 20th February 2021 until 5th March 2021. Within this time there were 204 responses.

Are the questions sequenced?	✓
Has the purpose and importance been explained on the survey?	✓
Have the respondents been assured about confidentiality?	✓
Has the survey been piloted?	✓

Table 5: key considerations that were considered during the production of the survey (Authors own, 2021)

The advantages and disadvantages of this research method are explored in Table 6.

Advantages	Disadvantages
No cost to distribution of the survey	Due to the survey being online – a large group of the older population could possibly not be able to take part due to difficulties in using technology
Access to unique populations – provides access to groups and individuals who would be difficult, if not impossible, to reach through other channels	Sampling issues – there is no guarantee that respondents provide accurate demographic or characteristics information
Saves time, allowing the ability to collect data while working on other tasks	For quality data, a quality sample in terms of size and in its representation of the local population needs to be collected – however, there is no guarantee to the number of respondents
The data can be used to compare and contrast other methods of research used and therefore the survey and be used to measure change	Online surveys make it harder to identify specific people in targeted areas – which is what is required for this survey

Table 6: Advantages and Disadvantages of Surveys (Compiled from: Wright, 2017; Granello and Wheaton, 2004; and Coughlan *et al.*, 2008)

4.5 Interviews

The use of interviews “allows us to enter the other person’s perspective”, which is important for overcoming researcher bias as “we cannot observe feelings, thoughts and intentions” (Patton, 2015, p.426). The interviews were semi-structured as this allowed for a “deeper understanding” of the interviewee’s perspectives rather than solely relying on more structured survey style interviews (Silverman, 2000, p.8) (Table 7).

Advantages	Disadvantages
The interview can be recorded.	Reduction of social cues – harder to see the interviewees body language
Little to no expenses from online interviews, as opposed to face to face	Semi-structured interviews are unlikely to encompass a large enough sample
Greater flexibility - having a live interview can lead to the interviewee being more spontaneous in their responses and does not deliberate too long	A large amount of analysis of the responses is required for semi-structured interviews – particularly the depth of knowing what is/is not relevant to analyse
Wide geographical access – can interview people who are not in the same country/area – which would not have been possible over face to face	Semi-structured interviews are time-consuming, labour intensive and require the interviewer to be knowledgeable about the relevant substantive issues – therefore, lots of preparation is required
Useful for asking probing, open-ended questions that the respondent might not be candid about if sitting in a group	The interviewee has to take time out of their busy schedule to take part
Can be used to address questions that cannot be effectively asked through the survey – going more in depth	Personal nature of interview may make findings difficult to generalise (respondents may be effectively answering different questions)

Table 7: Advantages and Disadvantages of Interviews (Compiled from: Opdenakker, 2006; and Adams, 2015)

The following themes have been discovered throughout the literature review and policy analysis research which helped inform the interview questions (Figure 8).

Understanding how the impact of rivers differs from other blue spaces.
The importance/benefits of blue spaces, specifically rivers on people’s health and wellbeing.
The challenges associated with rivers which lead to difficulties in delivering the regeneration of riversides.
Improvements to be implemented to lead to further regeneration of riverside walkways.

Figure 8: Key themes discovered throughout literature review and policy analysis, informing interview questions (Authors own, 2021)

In total six interviews were conducted with a range of stakeholders which allowed different, multi-disciplinary, perspectives to be explored (Table 8). Interviewees were contacted via email and the ‘snowballing’ technique. A level of saturation was achieved (Guest *et al.*, 2006).

Interviewee	Interviewee Perspective
Interviewee 1	Department of Infrastructure 1
Interviewee 2	Department of Infrastructure 2
Interviewee 3	QUB Lecturer
Interviewee 4	RTPI Policy Officer
Interviewee 5	Eastside Partnership
Interviewee 6	Previous Sustrans Director

Table 8: Interviewee Perspectives (Authors own, 2021)

4.6 Ethical Considerations

Ethical Approval for this study was granted by the Ethics Committee at Ulster University, Jordanstown. For the interviews, ethical consent was obtained prior to the interviews taking place.

All interviews took place online via Zoom and permission was sought at the beginning of each interview to record. The recordings and interview transcripts were stored on a password secure laptop.

For the survey, the anonymous data was initially stored on the website (Jisc Online Surveys) which required a log in of an email address and password. A second copy of the data was saved to the interviewer’s password secured laptop which was used to commence the data analysis.

4.7 Data Analysis

Following Braun *et al.*, (2016) (Figure 9) thematic analysis was applied to the findings of the semi-structured interviews to “identify patterns of themes in the interview data”, which is particularly significant for this explorative study (Mortensen, 2020).



Figure 9: Thematic Analysis Process (Authors own, 2021)

4.8 Concluding Summary

This section highlights each of the research methods used throughout this report. It is clear in this section that a range of methods have been used which will contribute to achieving the aim and objectives and facilitated triangulation of the data. The following section details the contextualisation and findings of the Lagan Towpath case study.



5.0 Case Study Contextualisation

The Lagan Towpath brings users off-road along the river and canal system through numerous wetlands, riverside meadows, and woodlands. It is an Area of Outstanding Natural Beauty, with numerous access points. Just some of the public parks which the Lagan Towpath leads to is the Lagan Meadows, Belvoir Park Forest, and Clement Wilson Park. Due to its many access points which connects it to many of Belfast's public parks, the Lagan Towpath has been named as one of the most popular outdoor assets in NI, reaching 1.4million users each year (Lagan Valley, 2021). This section outlines the location of the Lagan Towpath, whilst also considering the history of its evolution.

5.1 Location

The Lagan Towpath runs for 16km from Union Locks, Lisburn to Belfast.

It passes through the Castlereagh Hills and is part of the National Cycle Network, helping to keep people active and enjoying the eco-corridor.

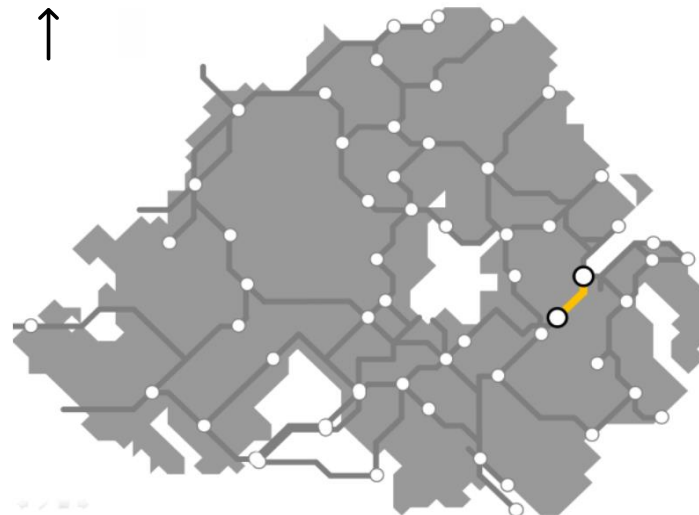


Figure 10: Map of Lagan Towpath in relation to NI (NI Greenways, 2021)

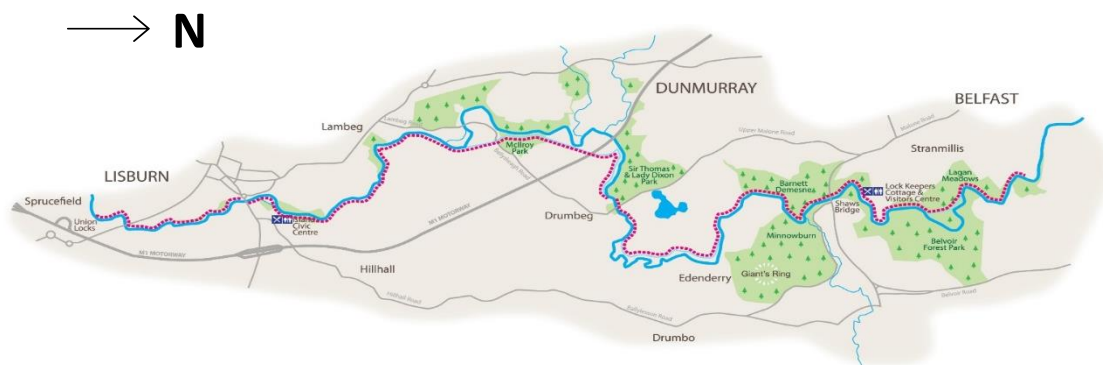


Figure 11: Map of the Lagan Towpath from Lisburn to Belfast (Laganscape, 2011)

5.2 History of the Lagan Towpath

The Lagan Canal dates back to the mid-18th century as part of a project to link Belfast and Lough Neagh, to allow the towing of barges along the canal and its 17 locks (NI Greenways, 2021). However, after 1947 there was no canal traffic, and has since remained closed, resulting in the rapid deterioration. However, in 1967 when the Lagan Valley Regional Park was set up, the restoration of the towpath was evident (Lagan Valley, 2021).

Unfortunately, some areas of the Towpath have never experienced any restoration, and instead were destroyed to accommodate the development of the M1 motorway. The M1 now travels over the canal which previously connected Lisburn and Lough Neagh, indicating the lack of appreciation for blue infrastructure during the mid-20th century.

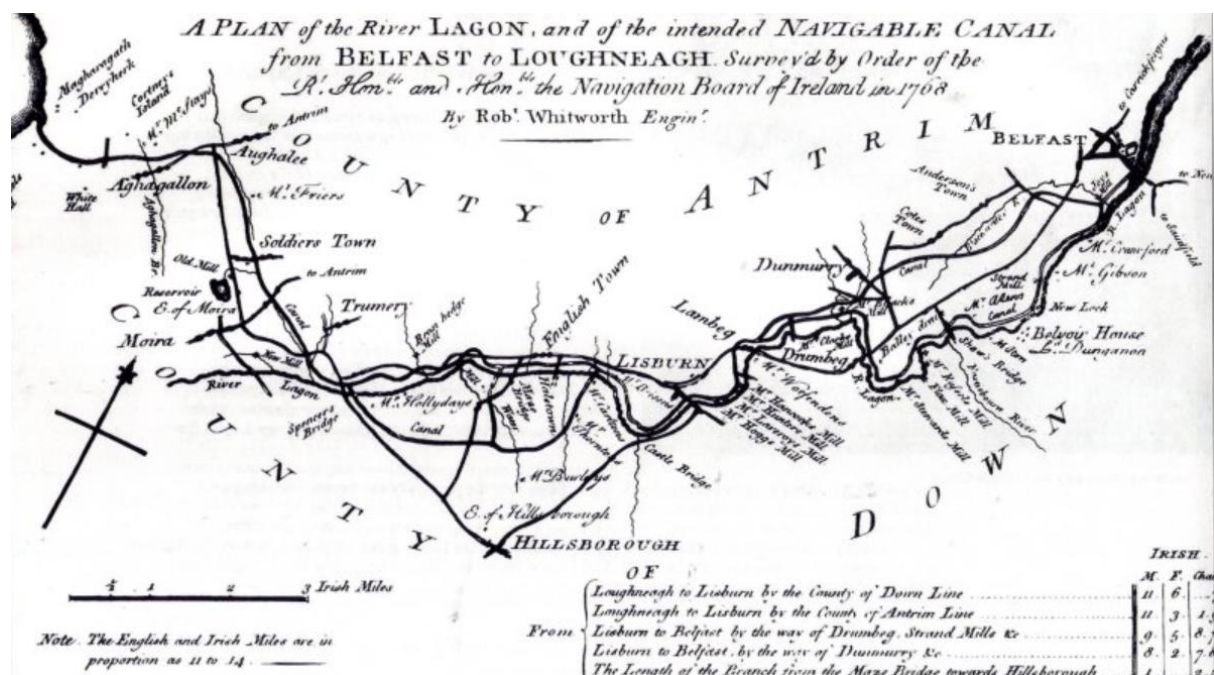


Figure 12: Historical Map of Lagan Towpath from Lough Neagh to Belfast (Lisburn, 2009)

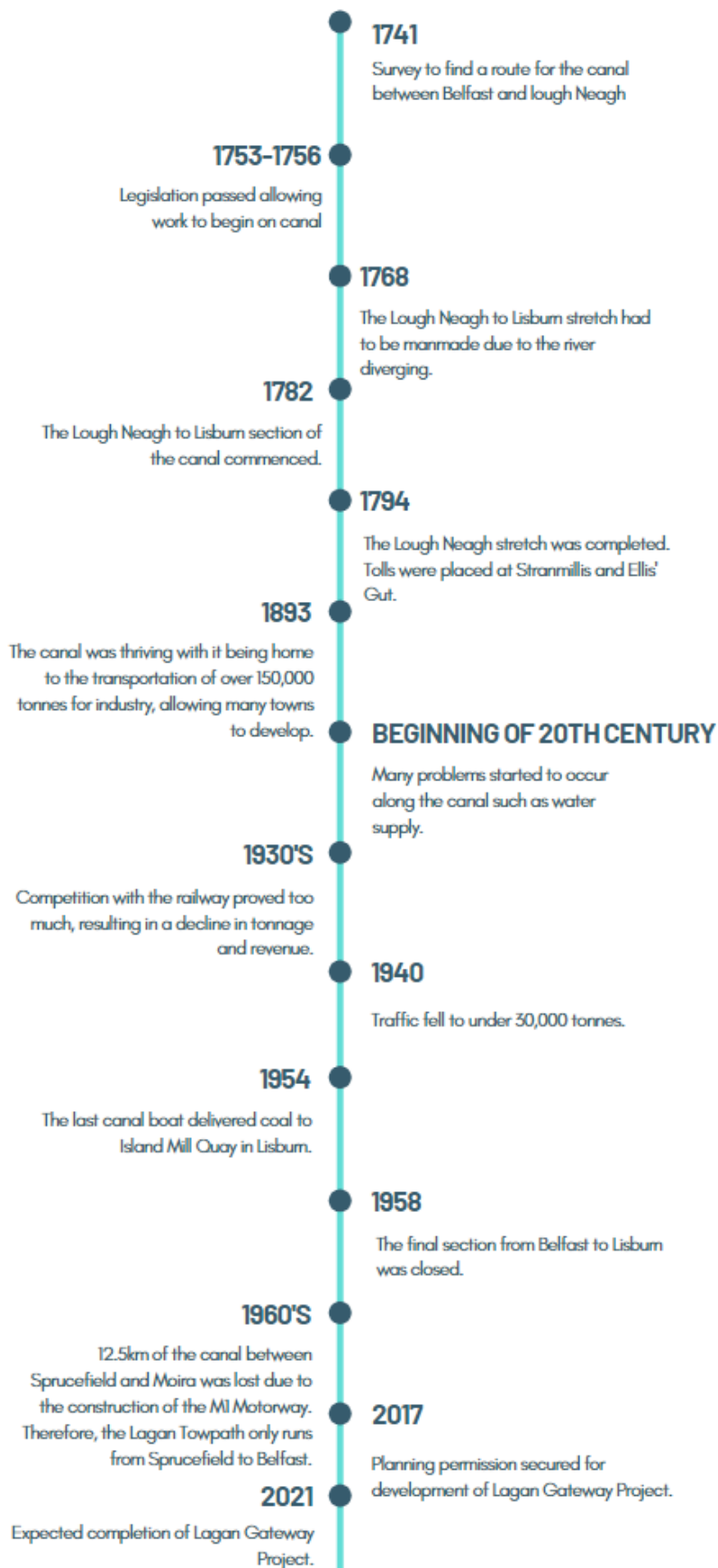


Figure 16: Timeline of Lagan Towpath (Compiled from Lagan Valley, 2021a)



Figure 13: Historical Image of Lagan Towpath towing barges (Lagan Navigation Trust, 2019)



Figure 14: Historical Image of Lagan Towpath towing barges (Lagan Navigation Trust, 2019)



Figure 15: Image of Lagan Towpath in present use (Authors own, 2021)

5.3 Concluding Summary

This section highlights the history and relevant information about The Lagan Towpath. It is clear that in this section the significant history has been a catalyst in the Towpath being the quality public walkway that it is, however, for many years it was unmanaged and underappreciated. The following section outlines the planning policy analysis.



6.0 Planning Policy Analysis

The policy landscape across NI has experienced significant change over the last decade, with the publishing of the most recent Local Development Plans, community plans, and green and blue infrastructure plans. Therefore, an analysis of planning policy documents from a regional to a local Belfast level was carried out to assess how blue spaces are recognised within the planning sector. This section provides an overview of the key findings of this analysis.

Regional Development Strategy 2010 (RDS)

In the RDS, there is reference to blue infrastructure developments highlighting that these areas need to be protected.

“New developments or plans should make provision for adequate green and blue infrastructure” (DRD, 2010, P.41).

“Protect and encourage green and blue infrastructure” (DRD, 2010, P.51).

However, throughout the RDS there is a continuous reference to greenspaces for improving wellbeing, however, blue infrastructure is only mentioned a few times – further highlighting the lack of recognition for blue spaces over greenspaces.

Strategic Planning Policy Statement 2015 (SPPS)

Throughout this document there is continued reference to the importance of blue spaces particularly for health and wellbeing, which supports Objective 1 of this report, in regard to the relationship between people using river walkways and their health and wellbeing, for example:

“facilitating the protection and provision of green and blue infrastructure” (DoE, 2015, p.15).

However, there is reference to how networks of greenspaces create,

“opportunities for social interaction serving as a focal point for recreation and community activities” (DoE, 2015, P.16).

Although, this is recognised as correct and equally important, there is no recognition of how blue spaces can create networks to encourage social interaction – which is one of the benefits stated in earlier in the literature review of this report.

Belfast Agenda 2017

As Belfast’s community plan, this document is significant as it focuses on how to improve the community of Belfast setting realistic goals and providing action plans.

“Ensure that we maximise the benefit of our open and green spaces, our river and hills to achieve better health and wellbeing outcomes. We will work with our partners to deliver an Open Spaces Strategy” (BCC, 2017, p.33).

This statement is promising, as it is referencing their future plans and **how** to achieve improved health and wellbeing from blue infrastructure, as opposed to just stating the problem.

Belfast Local Development Plan 2018 (LDP)

Belfast LDP has highlighted the importance of existing and future blue infrastructure. The two quotes below are important as they emphasise the relationship with blue infrastructure and improving health and wellbeing (meeting aim one of this report).

“The blue infrastructure network connecting neighbourhoods, employment areas and the city centre would encourage an active lifestyle that would help to reduce obesity and improve health” (BCC, 2018, p.34).

“This policy recognises the opportunity to plan for a green and blue infrastructure network across the plan area, to address the significant challenges of poor health due to an inactive lifestyle, poor connectivity, air pollution and climate change” (BCC, 2018, p.42-43).

In addition, the LDP states that the River Lagan is an important asset to enhancing the waterside character through new access points and cross river connections. This is important as it helps to overcome the barriers of ensuring easy access, which was stated in the literature review of this report.

Belfast Green and Blue Infrastructure Plan 2020

This is the first blue/green plan in Belfast. Throughout this plan, there is continued reference to the importance of blue infrastructure, particularly rivers since there are many rivers which connect different areas of Belfast.

One of the main sections ensuring the blue infrastructure is well designed and managed. Therefore, the quotes below emphasise the opportunities that river walkways can provide such as improved health and wellbeing, and different activities to do. Hence, carrying out this study will provide a guide for how to best consider this infrastructure.

“The value of the river [Lagan] is underplayed...rejuvenating that waterfront could provide more recreational space and enhance connectivity across the city” (BCC, 2020, p.26).

“Rivers have not traditionally been considered to be critical infrastructure” (BCC, 2020, p.8).

Lagan Valley Regional Park Five Year Plan 2017-2022

This plan is significant as it provides information specific to the Lagan Towpath. This plan provides the evidence that there is continued management and improvements being made to the Lagan Towpath. Therefore, comparing the survey responses with the projects and management within this plan, will be fundamental to discovering how successful this plan has been so far, and what new management/design techniques need to be implemented to improve this and other blue spaces.

“Put walking and cycling at the heart of local transport arrangements, encouraging healthier, less stressful alternatives to the car” (Gerry Darby Consultancy, 2017, p.11).

“To promote the benefits... for health and wellbeing” (Gerry Darby Consultancy, 2017, p.40).

“Wellbeing programmes based on encouraging access and increased use of the park” (Gerry Darby Consultancy, 2017, p.34).

6.1 Concluding Summary

Overall, both the RDS and SPPS recognise blue spaces but the emphasis is more on green spaces. At a city level, the Belfast Agenda contains ambitions to maximise the benefit of the rivers, and the LDP highlights the importance of the River Lagan. They all recognise the importance of blue spaces, but some do so explicitly and some implicitly, and some support but do not back it up with actions.

As time has gone on, it is apparent that the policy documents are getting much stronger in terms of their recognition of blue spaces as being distinct from green spaces. This has accumulated into the Green and Blue Infrastructure Plans but both BCC and DCSDC. It acknowledges a growing policy area with responsibility to manage and protect these spaces. However, there are still many councils which have not adopted such a plan with inadequate policy coverage on green and blue spaces. A significant point of comparison is the London Plan: Blue Ribbon Network (Figure 17).

Point of Comparison: The London Plan: Blue Ribbon Network (BRN). This policy contributes to the quality and sustainability of London by prioritising the blue spaces and the land alongside it. The BRN is multi-functional as it provides things such as flood management and green/blue infrastructure, whereby regard must be given to how the blue space can be used, maintained, and improved (London Assembly, 2011).

Figure 17: Point of Comparison on the London Plan: Blue Ribbon Network (Compiled from London Assembly, 2011)

However, the policy context is not the same throughout the UK. The four jurisdictions have very different policy arrangements in place, for example Wales (Figure 18).

Point of Comparison: Wellbeing of Future Generations (Wales) Act 2015. This act means that all public bodies must consider sustainability of future generations into everything they do, which is significant as NI has nothing similar of comparison.

Figure 18: Point of Comparison on the Wellbeing of Future Generations Act 2015 (Compiled from: Future Generations Commissioner for Wales, 2015)

Therefore, NI has made significant progress in producing plans to protect and manage green and blue spaces. However, it is still behind other UK jurisdictions, suggesting policy improvements to be made, such as making it a statutory requirement for each council to produce a Green and Blue Infrastructure Plan. The following section explores the survey analysis.



7.0 Survey Analysis

This section of the report provides critical analysis of the survey findings. Of the 204 respondents, 185 responses stated they have used the Lagan Towpath in the last 4 weeks. Therefore, the 19 respondents who completed the survey but have not used the Lagan Towpath were removed. See Appendix 2 for the full survey. Each question and the responses are split into five themes:

1. Living conditions/Quality of Life,
2. Access,
3. Activities,
4. Perception of the quality of the area,
5. Respondents' health and wellbeing.

7.1 Living Conditions/Quality of life

The survey required respondents the answer questions based on their current living conditions/quality of life.

Do you have a dog?

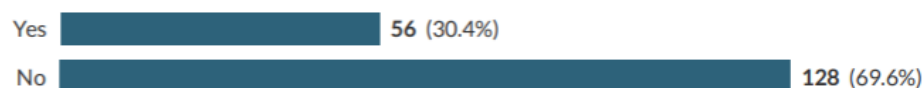


Figure 19: Survey question 'Do you have a dog?' (Authors own, 2021)

What is your age range?



Figure 20: Survey Question 'What is your age range?' (Authors own, 2021)

Which of the following best applies to you?

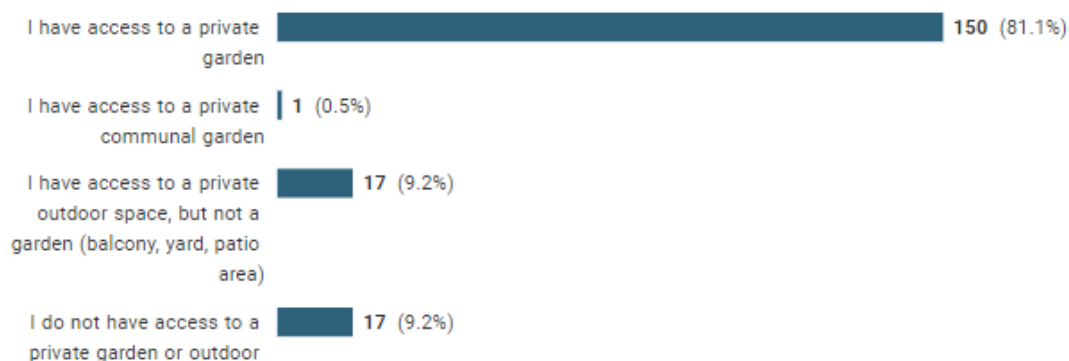


Figure 21: Survey question 'Which of the following best applies to you?' (Authors own, 2021)

How many of these are children aged under 16?

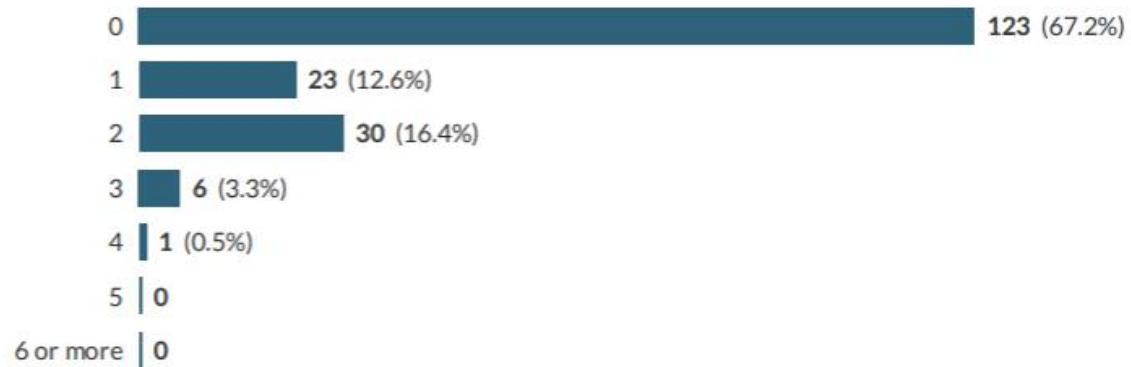


Figure 22: Survey question 'How many of these are children aged under 16?' (Authors own, 2021)

Which of these descriptions best describes your situation (in the last 7 days)?

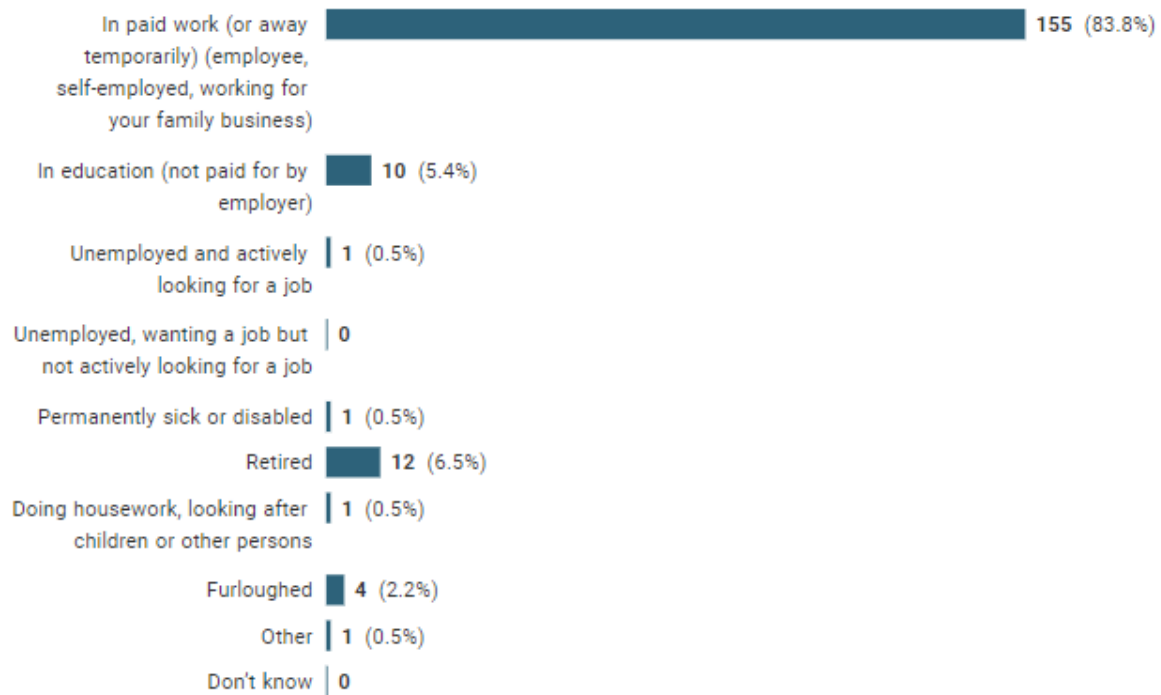


Figure 23: Survey question 'Which of these descriptions best describes your situation?' (Authors own, 2021)

Do you belong to a minority ethnic group in Northern Ireland?



Figure 24: Survey question 'Do you belong to a minority ethnic group in NI?' (Authors own, 2021)

Which of the following best describes your marital status?

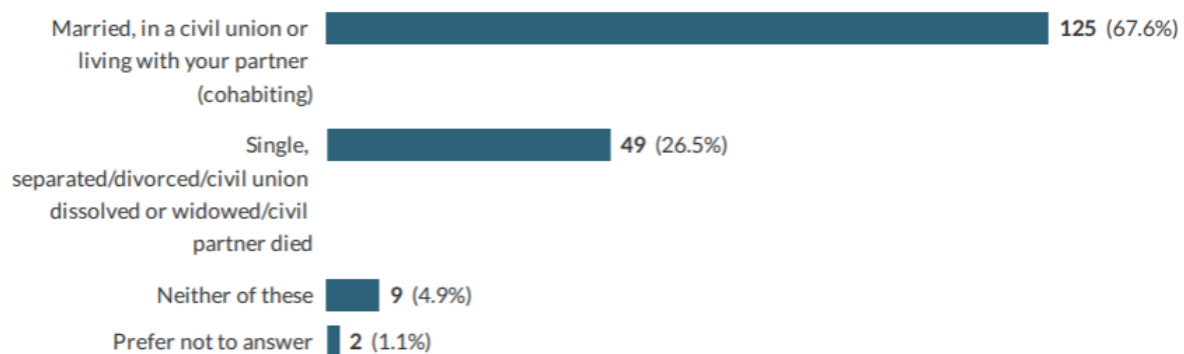


Figure 25: Survey question 'Which of the following best describes your marital status?' (Authors own, 2021)

Which of the following best describes your household's total annual income after tax and compulsory deductions, from all sources? If you do not know the exact figure, please give an estimate.

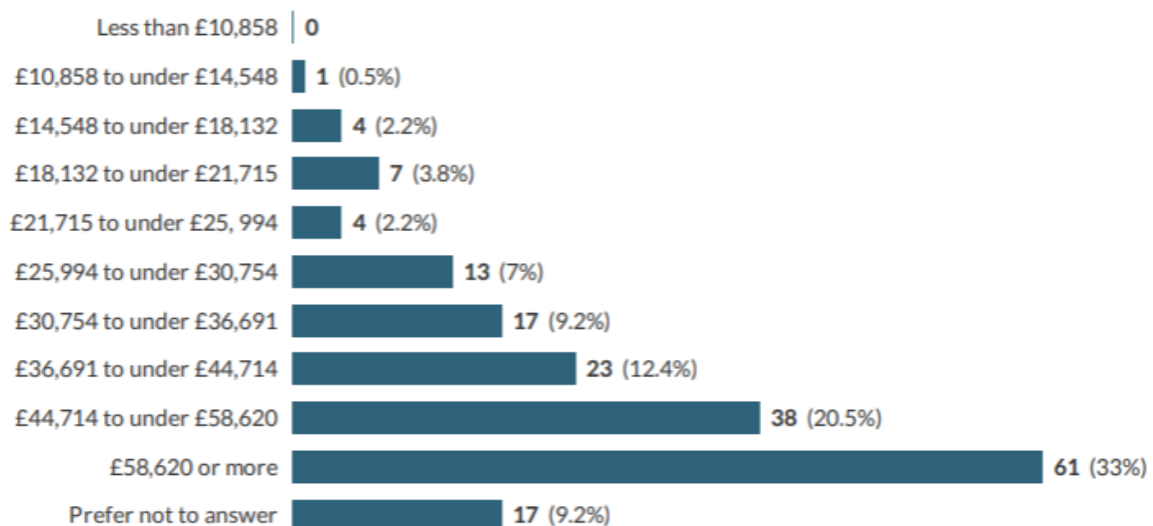


Figure 26: Survey question 'Which of the following best describes your household's total annual income after tax and compulsory deductions, from all sources?' (Authors own, 2021)

The typical profile of a user of the Lagan Towpath in accordance with findings of the survey (Figures 19-26) are majority aged 41-65, in paid work, have access to a private garden, with a household income of £58,620 or more. This is significant as Keijzer *et al.* (2019) found that more deprived people benefit more from access to blue spaces than affluent people, yet the majority of people using the Lagan Towpath are affluent. Based on the age range, a reason for a lack of older people using the Lagan Towpath could be the lack of public amenities (see Figure 42) especially since older age groups rely on these facilities more than young age groups.

7.2 Access

These questions encouraged the respondents to think about the accessibility of the Lagan Towpath.

In the last 12 months, how often on average, have you spent your leisure time at blue spaces?

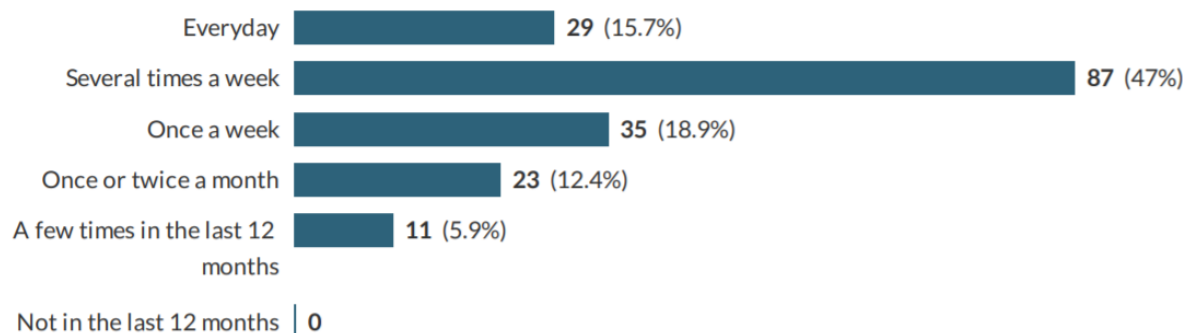


Figure 27: Survey question 'In the last 12 months, how often on average, have you spent your leisure time at blue spaces?' (Authors own, 2021)

In Figure 27 the most common answer was 'several times a week' (47%), and the least common answer was 'not in the last 12 months' (0%). This is significant as it highlights the desire for people to use blue spaces, consistent with Section 6.0, whereby BCC 'Blue and Green Infrastructure Plan' has emphasised the opportunities of different activities that can be carried out at blue spaces.

However, there were many responses comments stating barriers in them accessing such blue spaces, such as:

"unfortunately, COVID-19 restrictions (and not having a car) has kept me from the Lagan Towpath. Prior to all this I was up there 3-4 times a week"

"I was a regular to the Lagan Towpath, but over this last 12 months I've avoided it as there are too many people who won't share the path, keep left or walk in a single file. I now run on main roads with traffic fumes, just to avoid the crowds!"

In the last 4 weeks, approximately how many times have you visited the Lagan Towpath?

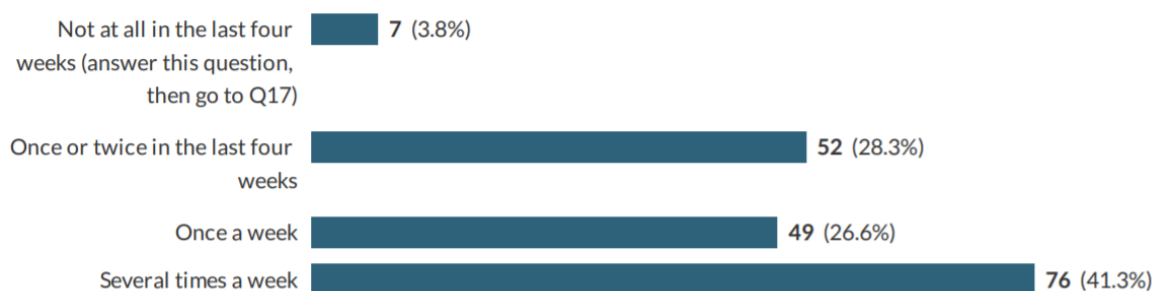


Figure 28: Survey question 'In the last 4 weeks, approx. how many times have you visited the Lagan Towpath?' (Authors own, 2021)

In Figure 28, almost half of respondents use the Lagan Towpath 'several times a week' (41.3%). Overall, 67.9% of respondents use the Lagan Towpath at least once a week. This indicates that for the people who do use the Lagan Towpath, they use it consistently. Therefore, it is important to understand the reasons why, such as living distance, which is discovered in the next question.

Approximately, how far do you live from the nearest access point to the Lagan Towpath?

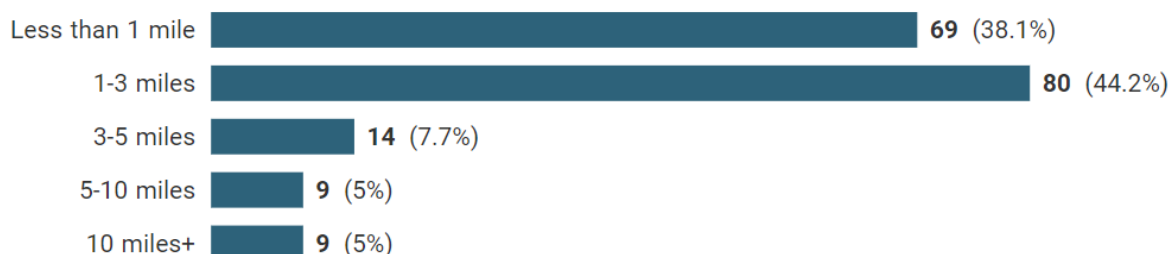


Figure 29: Survey question 'Approx. how far do you live from the nearest access point to the Lagan Towpath?' (Authors own, 2021)

Figure 29 findings suggest that only 38.1% of respondents live within 1 mile, with the largest share of responses (44.2%) living 1-3 miles from the Towpath. This is significant as Gascon *et al.* (2015) states that living within 1km is better for people to reap the benefits (see Section 2.0). However, since the majority of respondents live between 1-3 miles, it could suggest that people who live closer do not appreciate what is on their doorstep, do not like to use this type of public space, or alternatively they might prefer other nearby blue/green spaces. This issue will be explored in the following question.

How did you access the Lagan Towpath?

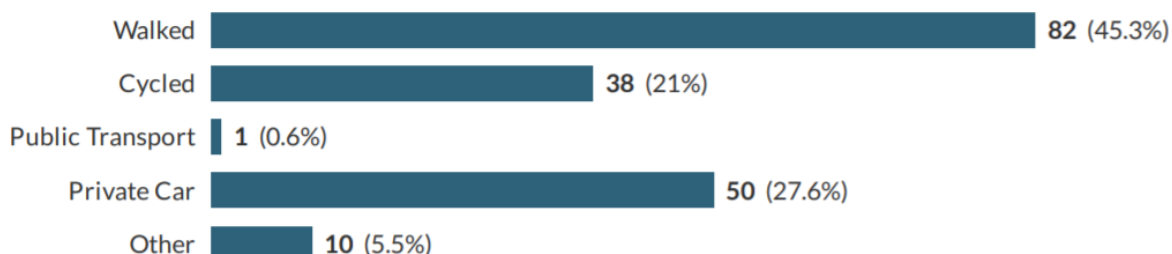


Figure 30: Survey question 'How did you access the Lagan Towpath?' (Authors own, 2021)

In Figure 30 the majority of respondents use non-motorised transport options to access the Lagan Towpath, with 45.3% walking and 21% cycling. This emphasises the importance of having access to blue spaces close to home to encourage sustainable methods of transport. To further support this, there needs to be more cycle friendly infrastructure on the Towpath, such as bike pump stations at numerous access points.

A reason why walking was the top answer could be due to many of the Lagan Towpath access points being beside residential areas, making walking easier and more convenient than the car. It is also important to note that the high amount of people using the private car, could be largely a result of COVID-19 with few people wanting to use public transport, consistent with only 1 respondent using public transport. It further stresses the need for ensuring all households live within a maximum of 3miles to green/blue spaces to make sure that users travel through more sustainable means.

7.3 Activities

These questions required respondents to state the activities they did whilst on their most recent visit, considering who was on their trip and how long their trip was.

Approximately, how much time did you spend at the Lagan Towpath?

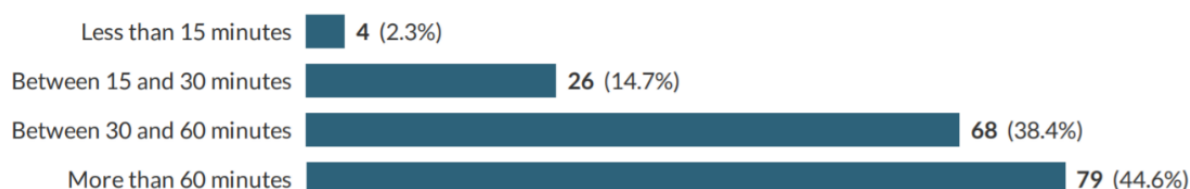


Figure 31: Survey question 'Approx. how much time did you spend at the Lagan Towpath?' (Authors own, 2021)

In Figure 31, the majority of respondents spent more than 60 minutes (44.6%) using the Towpath, with only 2.3% spending less than 15 minutes. This illustrates that it is a large part of people's day, and that they enjoy spending a lot of time here, and therefore is worth investing in. This emulates Rydin *et al.* (2012) argument in relation to the importance placed of continued improvement of blue spaces (see Section 2.0).

On this visit which of these activities, if any, was the main activity you did?

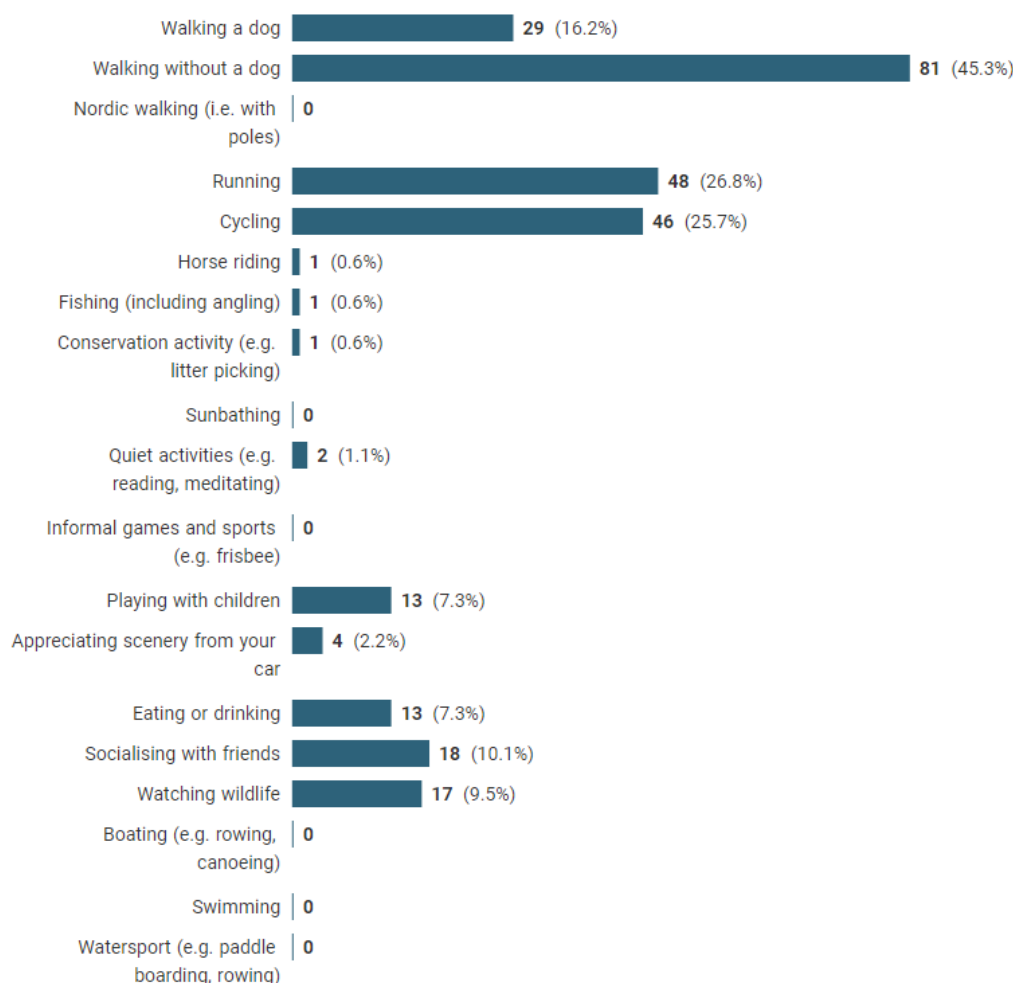


Figure 32: Survey question 'On this visit which of these activities, if any, was the main activity you did?' (Authors own, 2021)

In Figure 32, the types of activities which the majority of respondents did on their visit involved some form of physical exercise, such as walking, running, and cycling. The largest response was 'walking without a dog' at 45.3%.

In comparison, no water-based activities were taking place such as, boating. Therefore, this presents an opportunity once many of the regeneration projects along the canal are finished for more water sports.

In addition, the number of people doing conservation activities such as litter picking was only 0.6%. This means that despite the number of people that use/appreciate/value the Towpath, very few are putting anything into the Towpath themselves. This suggests a lack of local stewardship and community management of the Towpath.

How many adults aged 16 and over, including yourself, were on this visit?

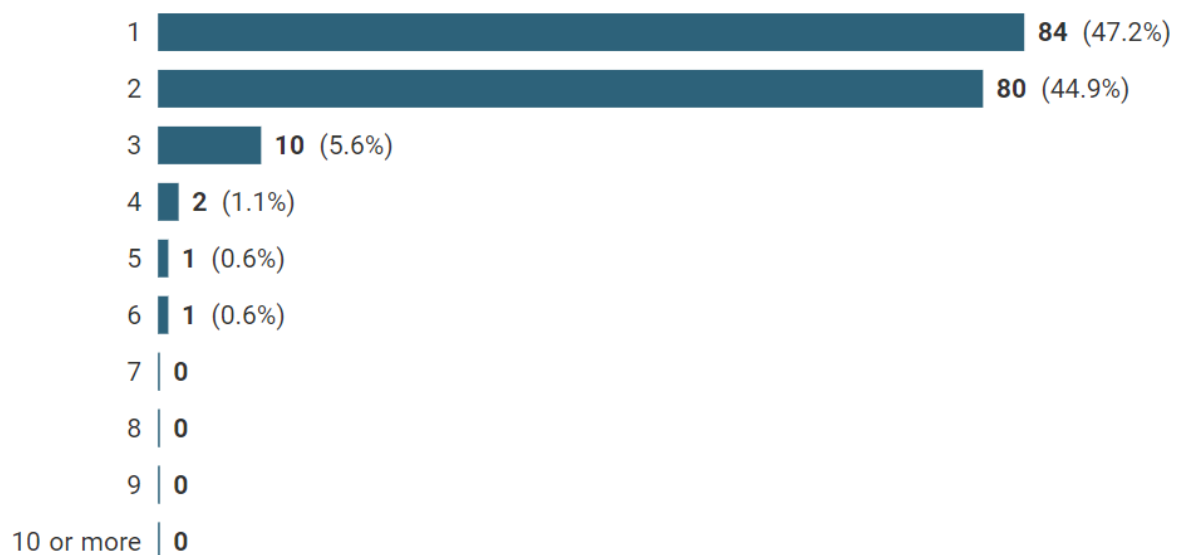


Figure 33: Survey question 'How many adults aged 16 and over, including yourself, were on this visit?' (Authors own, 2021)

In Figure 33 the majority of respondents either use the Lagan Towpath on their own (47.2%) or with one additional person (44.9%). However, these results could be due to COVID-19 whereby lockdown restrictions limit the number of people one can meet outside.

How many children aged under 16 were on this visit?



Figure 34: Survey question 'How many children aged under 16 were on this visit?' (Authors own, 2021)

In Figure 34, 82% of respondents did not have children on their visit, and only 17.9% of respondents did. This could suggest a lack of safe crossing points at different access points, making people more wary to bring their children. This was emphasised by one respondent stating:

“Also, there is no safe crossing point over that [Blaris Road] busy road which is difficult when crossing with children”.

This also suggests a lack of children’s activities, highlighting the need for more interactive activities to take part in whilst on the Lagan Towpath. Therefore, more families who live close to the Towpath are more likely to use it, instead of visiting a park which is further away.

7.4 Perception of the quality of the area

These questions encouraged the respondents to think about the quality of the Lagan Towpath.

Overall, how would you describe the quality of this location?

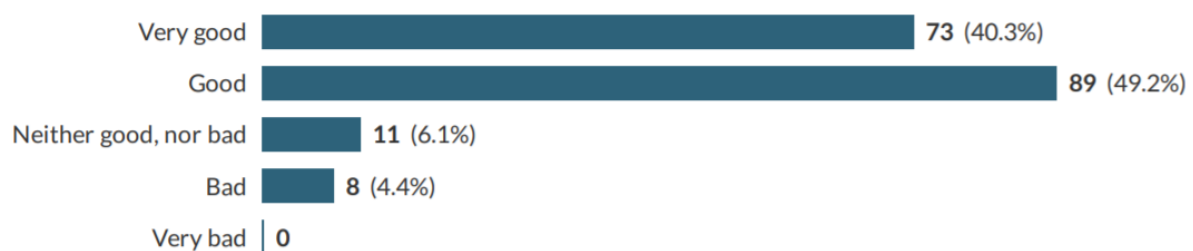


Figure 35: Survey question 'Overall, how would you describe the quality of this location?' (Authors own, 2021)

Following Vert *et al.* (2019a), determining the perceived quality of the Lagan Towpath was critical to understanding the extent to which it affected peoples use of the space or not. In Figure 35 a total of 89.5% described the Lagan Towpath to be of ‘good’ or ‘very good’ quality.

“I was satisfied with the visit”.

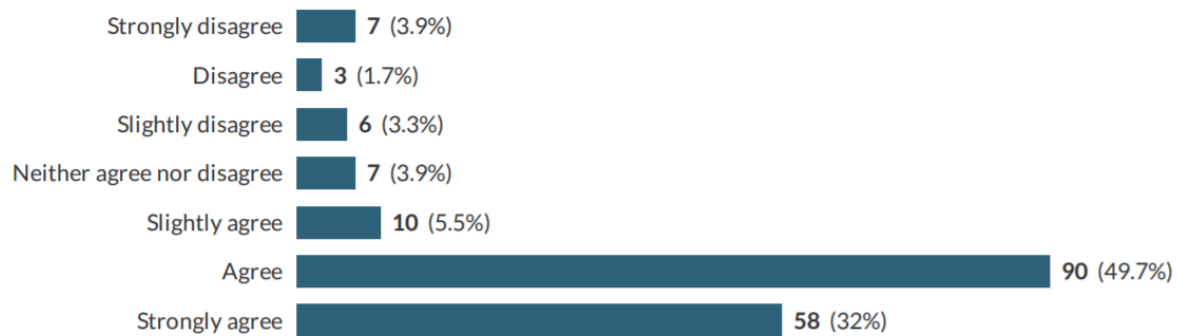


Figure 36: Survey question 'I was satisfied with the visit' (Authors own, 2021)

The aim of this question was to understand whether users are overall happy with their visit, which can be due to many factors, one being the quality of the area. In Figure 36, 49.7% 'agree' with the statement, suggesting people are happy visiting the Towpath.

“I felt part of nature”.

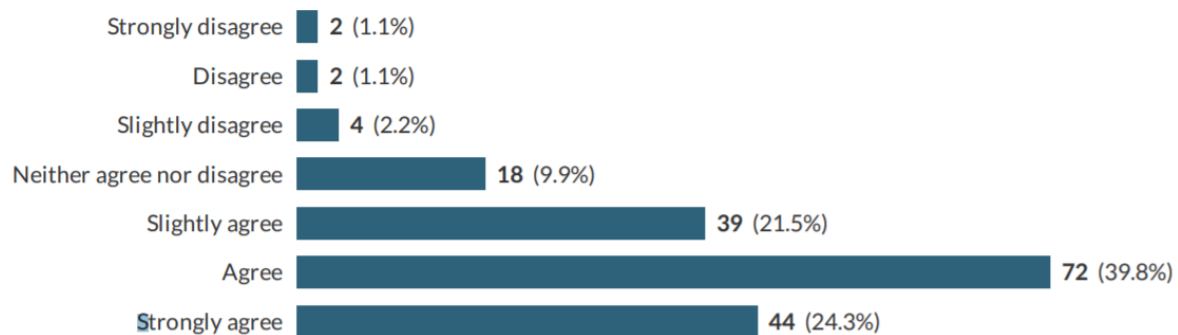


Figure 37: Survey question 'I felt part of nature' (Authors own, 2021)

In Figure 37, the highest number of respondents 'agree' (39.8%) they felt part of nature. This compares with Wheaton *et al.*'s (2019) which found having access to blue spaces causes people to appreciate nature, which in turn encourages people to use it through physical activity. Therefore, with more people appreciating the nature of the Lagan Towpath, it suggests that they enjoy quality of the area.

However, 21.5% of respondents who only 'slightly agree' particularly with some stating that:

“the water quality of the Lagan does take away from the connection to nature”.

This emulates Bell *et al.* (2015), stating that what quality has many aesthetic benefits, which can contribute to mental health (see Section 2.0).

“I felt safe”.

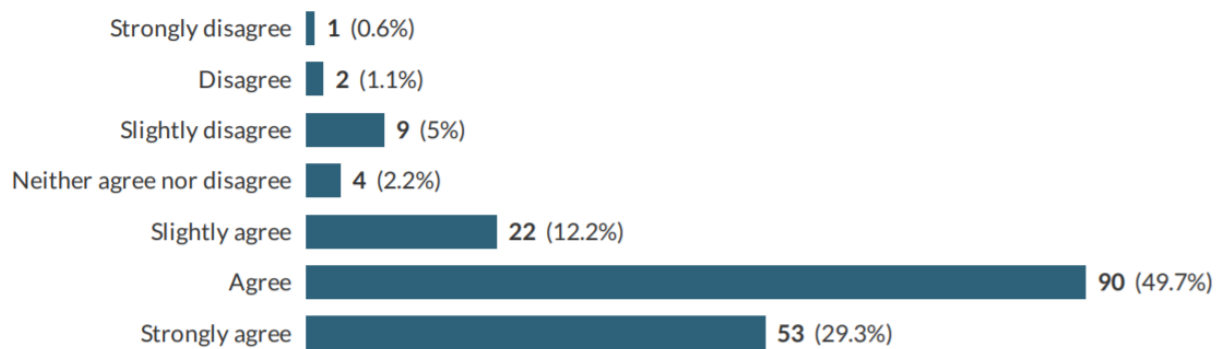


Figure 38: Survey question 'I felt safe' (Authors own, 2021)

In Figure 38, around 70% either 'agree' or 'strongly agree' that they felt safe during their visit. This suggests that it is easy to see who is around, with plenty of other people using the area. However, 6.7% disagree with the statement suggesting that there is still more that can be done in terms of providing an area which people of all ages feel safe, which would encourage more people to use the Lagan Towpath to reap the health benefits.

“The area was free from litter/vandalism”.

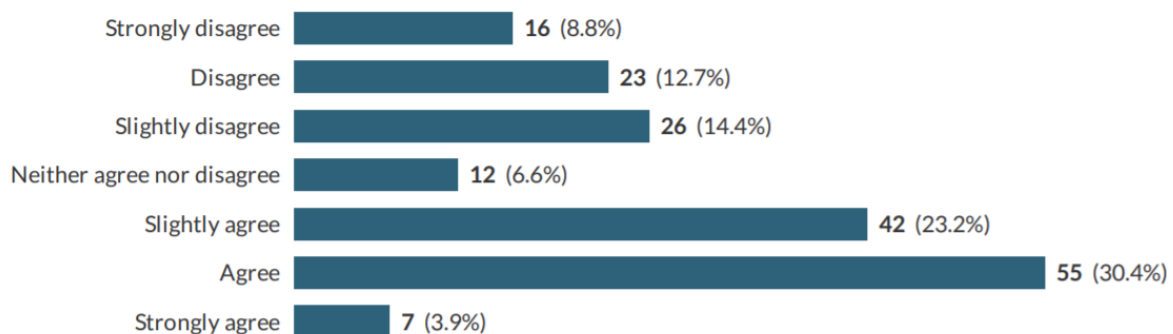


Figure 39: Survey question 'The area was free from litter/vandalism' (Authors own, 2021)

It is important to understand the levels of litter and vandalism, as this directly impacts the quality of the area, through contamination, and destroying the aesthetical aspects of the blue and green space. In Figure 39, the majority of respondents (30.4%) 'agree' that the area was free from litter/vandalism, however, 35.8% either 'stronger disagree', 'disagree' or 'slightly disagree' with the statement. The litter suggests that there is evidence of laziness and/or carelessness on behalf of users coupled with lack of consequences for littering.

“There were good facilities: footpaths”.

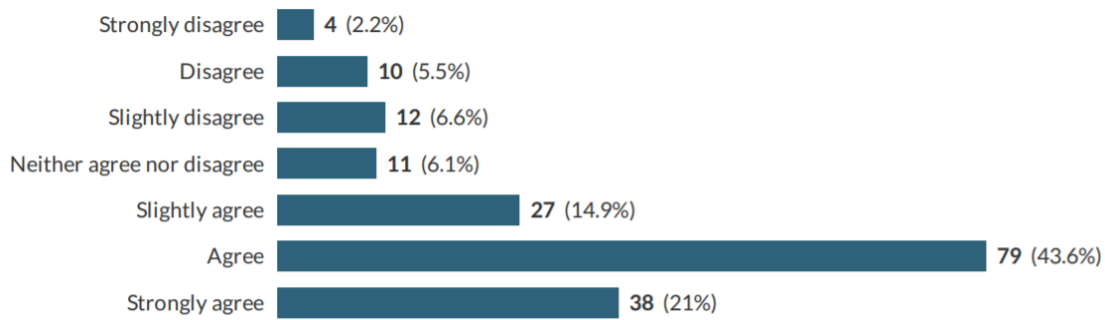


Figure 40: Survey question 'There were good facilities: footpaths' (Authors own, 2021)

Having good facilities helps to improve the quality of a space, if done so sensitively to the environment.

In Figure 40, the highest responses (43.6%) 'agree' that the Lagan Towpath has good footpaths. This is important for ensuring all people can reap the benefits such as disabled people. However, in Section 7.5 very few respondents had a mobility difficulty, which could also suggest that disabled people do not feel accommodated for, such as the narrow paths expressed below.

However, 28.6% of respondents who either 'strongly disagree', 'disagree' or 'slightly disagree' with the Towpath having good footpaths. Many of the respondents provided explanations such as:

“some parts of the upper Towpath near Lisburn are breaking up”,

“it’s a shame in many places the path is so narrow, too narrow to safely allow commuting on it by bike and the pedestrians crowds”.

Therefore, it is evident that the quality of the path is not consistent which may cause difficulties for those with limited mobility and also in terms of facilitating social distancing.

“There were good facilities: parking”.

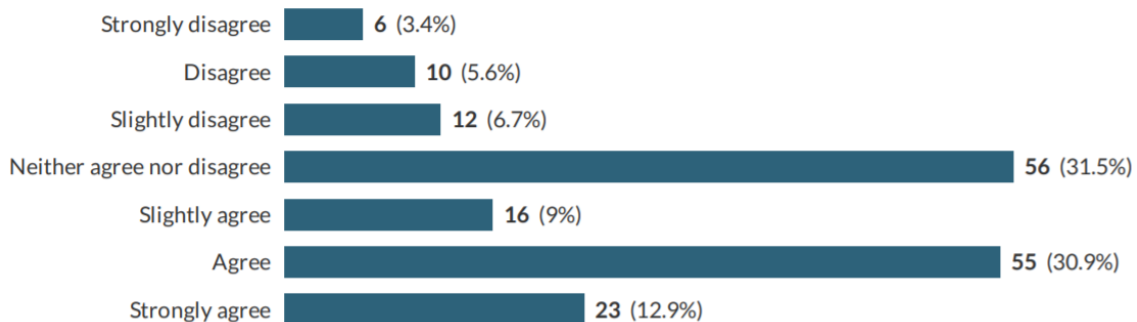


Figure 41: Survey question 'There were good facilities: parking' (Authors own, 2021)

In Figure 41, most of the responses 'neither agree nor disagree' which suggests a mixture of parking facilities, such as at Blaris Road access point there is no parking, and at Stranmillis there is parking. The second highest response is 'agree' (30.9%). This suggests that people depending on the access point can gain access as long as they have a car. However, having too much parking in specific access points does impact the quality of the Lagan Towpath, as it can lead to air pollution and overcrowding (particularly problematic on the narrow paths) as stated by many of the respondents whereby there are *“huge numbers using the Towpath”*.

“There were good facilities: public amenities (e.g., toilets)”.

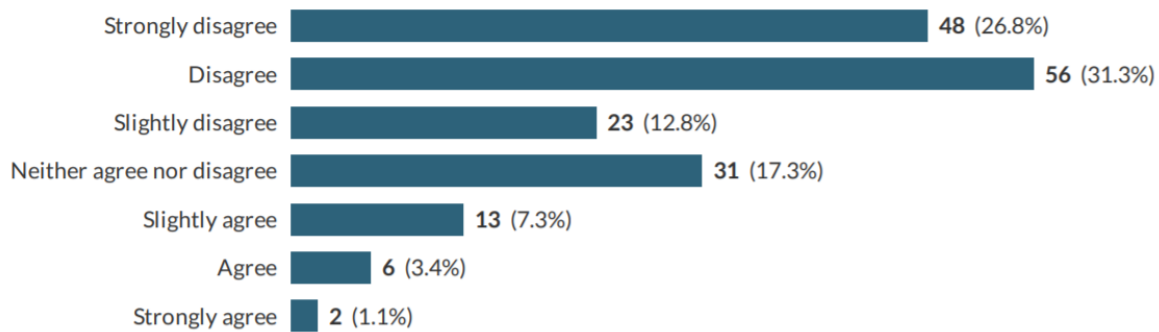


Figure 42: Survey question 'There were good facilities: public amenities' (Authors own, 2021)

In Figure 42, the majority of respondents (70.9%) either ‘strongly disagree’, ‘disagree’ or ‘slightly disagree’ that there are public amenities such as toilets. This suggests a need for more facilities which was expressed by a respondent:

“need a few more water taps and more toilets”.

However, the inclusion of toilet facilities could lead to anti-social behaviour, as well as developing on a sensitive ecological corridor which could harm the environment.

“There were good facilities: seating/benches”.

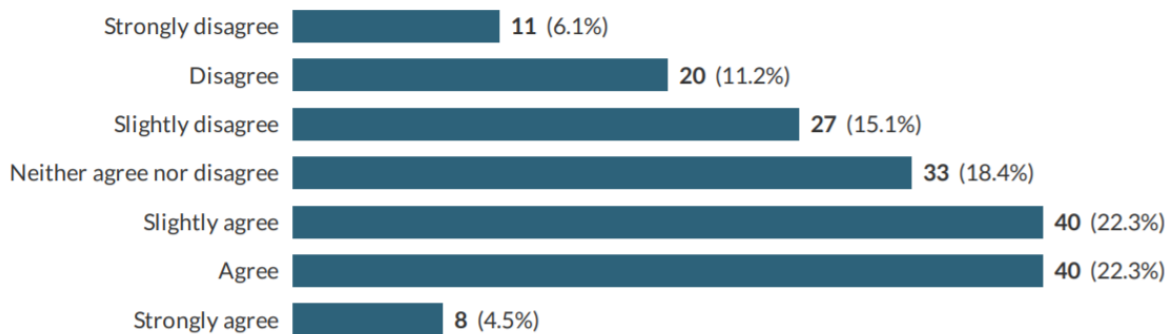


Figure 43: Survey question 'There were good facilities: seating' (Authors own, 2021)

In Figure 43, the majority of respondents (44.6%) either ‘slightly agreed’ or ‘agreed’ that there are good facilities for seating/benches. This suggests that many people have the option to watch and appreciate the river and its surroundings, helping with relaxation/stress, which was expressed by Hooyberg *et al.* (2020). It also provides a place for people to meet with others to socialise or have lunch whilst on their walk. Having quality seating areas to socialise have been proven to improve one’s mental health.

However, a significant 18.4% ‘neither agree nor disagree’ which could suggest that the seating provided is not good quality or deteriorating and so few people use it. In addition, 32.4% either ‘strongly disagree’, ‘disagree’ or ‘slightly disagree’ suggesting that along the Towpath there is not a consistent level of seating with many users not experiencing any seating on the section they use.

7.5 Respondents' health and wellbeing

These questions required the respondents to state their current state of health and wellbeing. This is important because understanding health and wellbeing will help determine the link between using blue spaces.

"I felt happier/healthier after my visit".

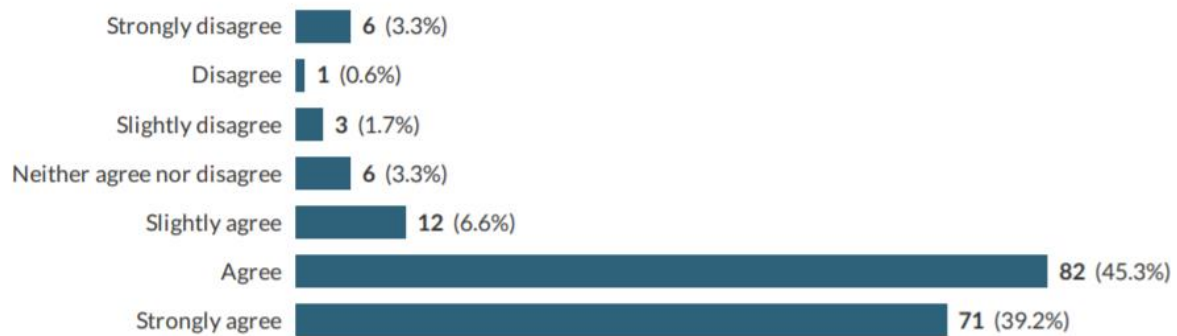


Figure 44: Survey question 'I felt happier/healthier after my visit' (Authors own, 2021)

How is your health in general?



Figure 45: Survey question 'How is your health in general?' (Authors own, 2021)

Are your day-to-day activities limited because of a health problem or disability which has lasted or is expected to last, at least 12 months?



Figure 46: Survey question 'Are your day-to-day activities limited because of a health problem or disability which has lasted or is expected to last, at least 12 months?' (Authors own, 2021)

Do you have any of the following conditions which have lasted, or are expected to last, at least 12 months?

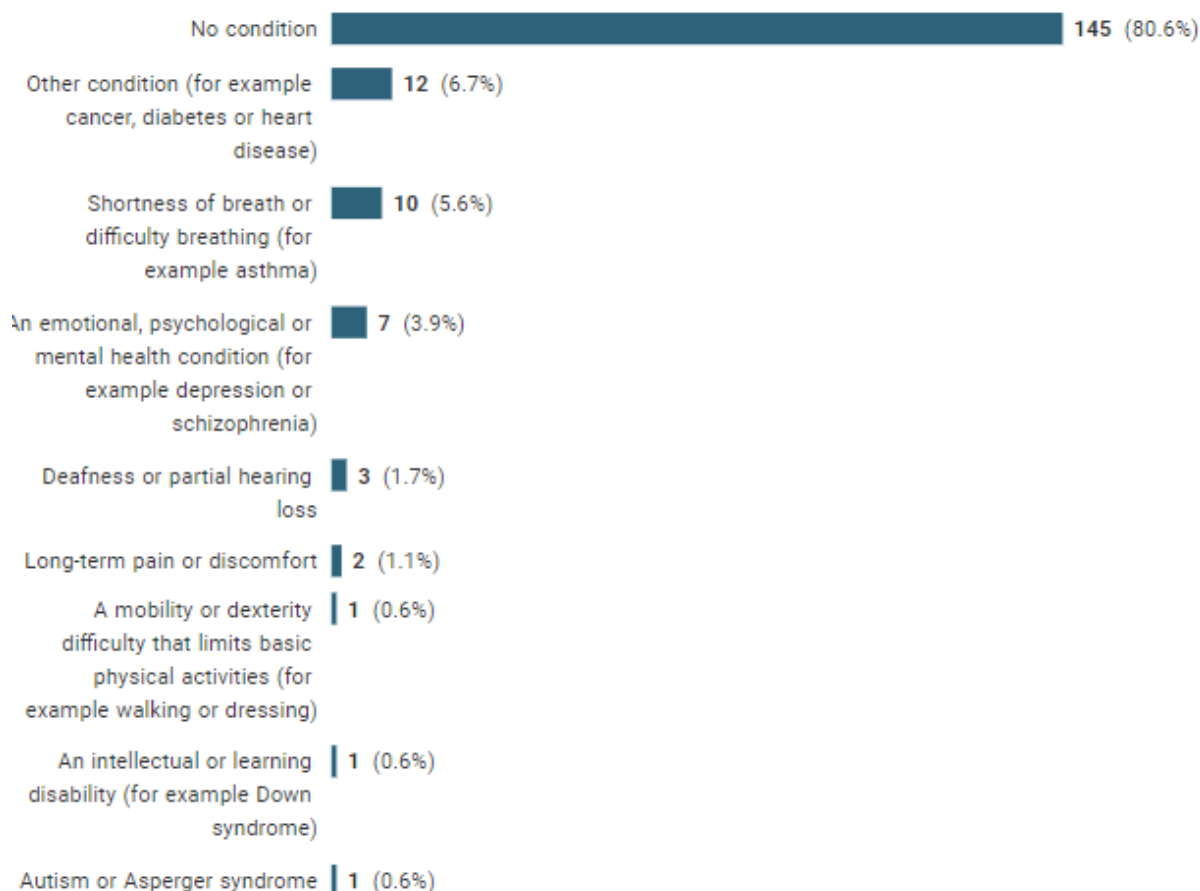


Figure 47: Survey question 'Do you have any of the following condition which have lasted, or are expected to last, at least 12 months?' (Authors own, 2021)

"I have felt cheerful and in good spirits".

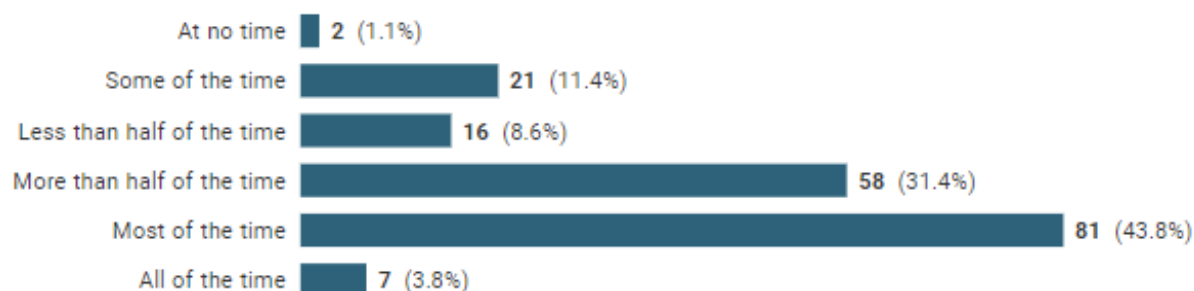


Figure 48: Survey question 'I have felt cheerful and in good spirits' (Authors own, 2021)

“I have felt calm and relaxed”.

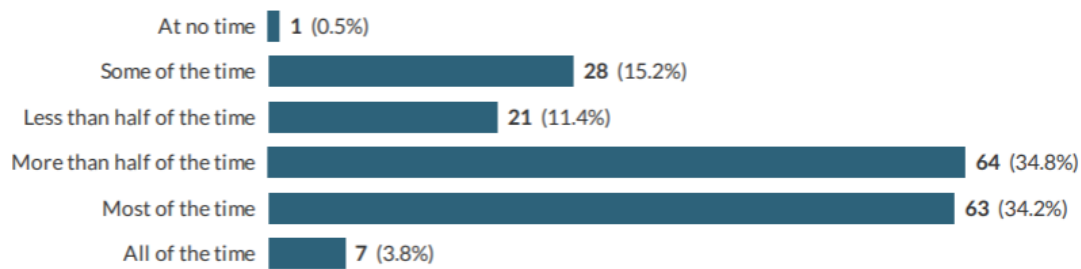


Figure 49: Survey question 'I have felt calm and relaxed' (Authors own, 2021)

“I have felt active and vigorous”.

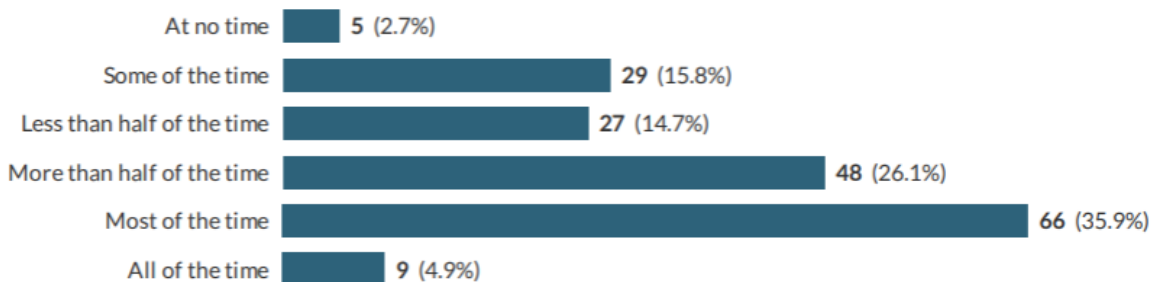


Figure 50: Survey question 'I have felt active and vigorous' (Authors own, 2021)

“I woke up feeling fresh and rested”.

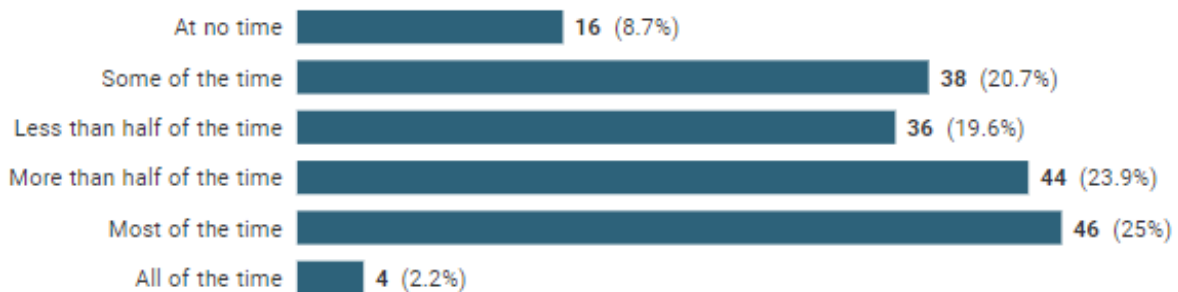


Figure 51: Survey question 'I woke up feeling fresh and rested' (Authors own, 2021)

“My daily life has been filled with things that interest me”.

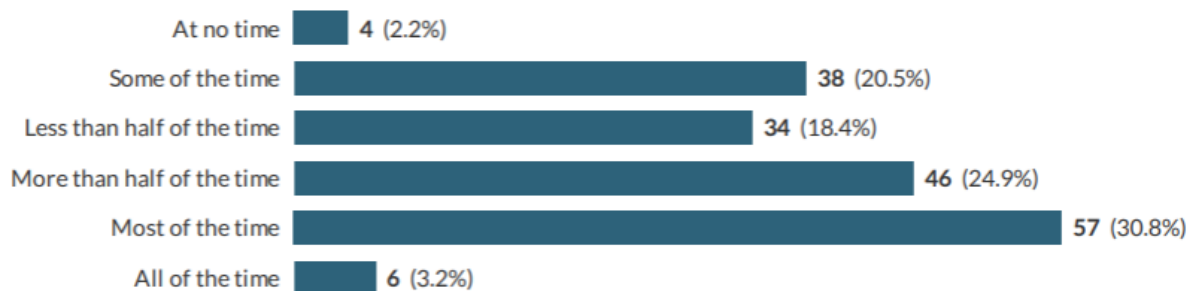


Figure 52: Survey question 'My daily life has been filled with things that interest me' (Authors own, 2021)

During the last 7 days, on how many days have you done a total of 30 minutes or more of physical activity, which was enough to raise your breathing rate?

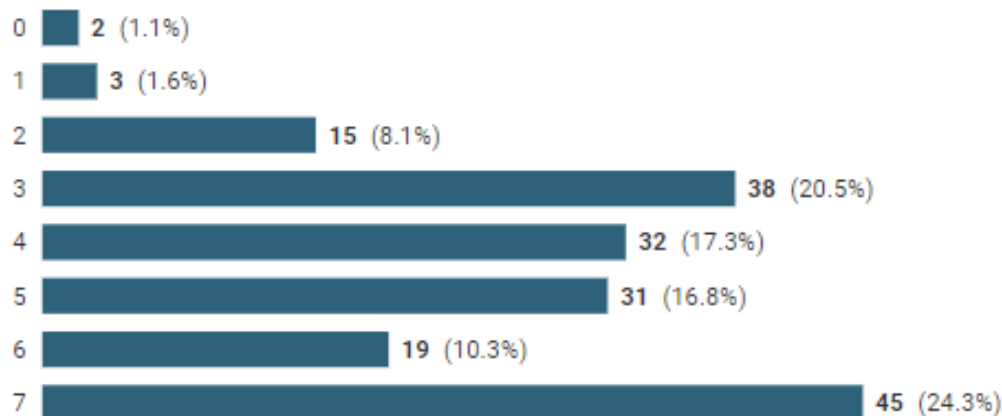


Figure 53: Survey question 'During the last 7 days, on how many days have you done a total of 30 minutes or more of physical activity, which was enough to raise your breathing rate?' (Authors own, 2021)

From Figures 44-53, the health and wellbeing theme shows that 90.2% have either 'good' or 'very good' health in general, and zero responses had bad health. The respondents who have either good or very good health, were more likely to agree that they felt happier after using the Towpath, with 84.5% of responses agreeing, and only 5.6% disagreeing. This is significant as it can either indicate that healthier people use the Lagan Towpath, or that the Lagan Towpath is significantly contributing to their health, which is consistent with the findings raised by Pasanen *et al.* (2019), whereby difficulties have emerged in distinguishing whether blue spaces encourage physical activity, or if healthier and more active people live near these spaces. In addition, this links with many studies, particularly Wheaton *et al.* (2019) stating that using places such as the Lagan Towpath does cause people to be more aware of their health, which further encourages social interactions and physical activity. However, it is worth noting that due to COVID-19, people who have health conditions are told to avoid leaving their house. Therefore, this could play a large factor in skewing the results to only receive responses from people with few health problems.

Overall, findings of respondents' health and wellbeing is significant, as it complements the work of the Lagan Valley Regional Park Five Year Plan and the Belfast Agenda, both which referred to the importance of blue spaces improving users' health and wellbeing. This is further emphasised through the qualitative responses of the survey for example:

"riverside areas and greenways are most enjoyable and relaxing when walking along them."

7.6 Survey Analysis Comparison

The survey has produced a variety of key results which support the findings identified in earlier sections of this report. This section involves an additional layer of analysis by comparing and contrasting the five key themes, which has resulted in the production of a typical Lagan Towpath user profile (Figure 54). Some key characteristics include a typical user having good health, walking to the Towpath, being in paid employment, and spending more than an hour visiting the Towpath.



Figure 54: Typical Lagan Towpath user profile (Authors own, 2021)

Linking Access & Quality

- Majority of people who thought the overall quality of the Towpath was very good, also agreed that they felt part of nature.
- All respondents that live less than 1 mile, agree that they felt safe.
- People who visit the Towpath several times a week, was very split between agreeing and disagreeing that the area was free from litter/vandalism.
- People who felt the general quality of the Towpath was bad, also agreed that there was little seating or public amenities.
- All respondents who agreed that they were satisfied with the visit, also felt the quality of the area was good.

Since people who live further from the Towpath spend the most amount of time there, it would suggest that the Lagan Towpath is recognised as having good quality assets, because people are willing to travel further and spend more time there. This contributes to the knowledge of White *et al.* (2013), who found that living within 5km of blue spaces leads to increased usage and thus improved health and wellbeing.

Linking Access & Activities

- People who live within 1-3 miles tend to spend between 30-60 minutes.
- All people who live 10+ miles spend more than 60 minutes at the Towpath.
- The majority of people who lived less than 1 mile from the Towpath walked or cycled. There are still a large number of people living 1-3 miles that walked.
- Majority of people who use the Towpath several times a week (76 respondents), majority live less than 1 mile (48 respondents), with 1-3 miles being the second highest.

This is significant as it highlights the ease of access for people who live closer to the Towpath. The numerous access points along the Towpath help in overcoming access restrictions particularly for less affluent and disabled, as emphasised as important in the Belfast LDP.

Linking Access & Health and wellbeing

- Majority who lives less than 1 mile away, either agrees or strongly agrees that they felt happier after their visit.
- Of the 45 people who do exercise every day, 34 of them live either less than 1 mile, or 1-3 miles from the Towpath.
- No link between people who accessed the Towpath with their car, and their health in general.
- Of the 69 people who live less than one mile away, 64 reported either good or very good general health.

These findings are significant as they suggest the strong link between living distance and health and wellbeing. This emulates the work of Hooyberg *et al.* (2020), who states that a huge challenge is ensuring there is access through distance to blue spaces.

Linking Access & Living Conditions/Quality of Life

- 84% of respondents who have a household income of more than £58,620 live within 3 miles of an access point. However, in comparison of the 29 people who have an income below £30,754, 79% also live within 3 miles.
- People who are aged between 25-40, use the Towpath the least often (43% of this age group have only visited once or twice in the last 4 weeks), which is significant considering 81% of these respondents live within 3 miles of the Towpath.

The findings above suggest that many people who live close to the Towpath, are possibly not aware of how close they live to it/do not appreciate the possible benefits that they can receive.

In addition, the findings also suggest that potentially living distance could be more of a factor than household income. This is because there is only a 5% difference in people who use the Towpath with largely different incomes, suggesting income is not as important. This suggests that as long as people of all incomes have good access to blue spaces, they will be able to reap the benefits, emulated through the work of *Keijzer et al.* (2019).

Linking Activities & Quality

- Of the 17 respondents who watched wildlife, all of them agree that they felt part of nature, however, only 53% of these respondents felt that the area was free from litter/vandalism.
- Of the 18 respondents who socialised, only 60% felt that there was adequate seating along their visit.
- Of the 12 respondents who played with their children, only 8% agree that there are adequate public amenities.
- Of the 98 people who walked along the Towpath, only 46% agreed that there was adequate seating.

These findings identify that people have different perspectives on the quality of an area, depending on what activity they are doing. For example, if someone is visiting the Towpath to play with their children, they will look out for public amenities such as toilets. Or people who are going for a walk or socialising will look out for areas to sit and chat. This emphasises the importance of the Belfast Green and Blue Infrastructure Plan which refers to the opportunities that river walkways can provide, such as different activities.

Linking Activities & Living Condition/Quality of Life

- 91% of respondents who do not have access to a private garden or outdoor space, spend more than 30 minutes at the Towpath.
- Only 5% of respondents who are out of work (either retired, unemployed, furloughed, permanently sick) spend less than 30 minutes at the Towpath.

This is significant as it emphasises the need for blue/green spaces near to people who do not have the same quality of life as more wealthy individuals, as it provides areas for relaxation and exercise, supporting the work of Qiang *et al.* (2019). It suggests that the Lagan Towpath is connected to a variety of different types of neighbourhoods.

Linking Activities & Health and Wellbeing

- Of the 18 respondents who socialised, only 3 have felt calm and relaxed less than half of the time, or some of the time.
- 30% of respondents who cycled, have felt active and vigorous less than half of the time, or some of the time.
- Of the 98 respondents who walked, 30% of respondents have felt calm and relaxed less than half of the time, or some of the time, with the remaining 60% feeling calm most of the time.

These findings suggest that having the ability to socialise, cycle, walk etc. does lead to feelings of relaxation as well as feeling active. Ensuring that local blue/green spaces allow for both relaxation and activity has proved important to providing an overall impact on one's mental and physical health. This follows the work of Vert *et al.* (2019), and Bell *et al.* (2015), who found that ensuring people can benefit from the different activities along riverside walkways, can improve humans mental and physical health.

Linking Health and Wellbeing & Living Conditions/Quality of Life

When comparing both the health and wellbeing of respondents, and their quality of life/living conditions, the results were very split. For example, there was very little correlation between people who have a higher household income, and between peoples' general health and wellbeing. This was mainly due to Figure 45 asking about individuals general health, finding that 90.2% have good health. This was a significant finding, as it possibly suggests that since all respondents are using the Towpath, they are all gaining the benefits that come along with this, such as improved mental and physical health, despite their income or access to a garden.

Linking Quality & Health and Wellbeing

- There is a clear correlation between respondents who find the quality of the Towpath to be good, and who have very good health.

This is significant as it emulates the work set out in the Belfast Agenda, whereby there needs to be quality open space, which will help maximise the benefits for humans.

Linking Quality & Living Conditions/Quality of Life

When comparing both the quality of the Towpath, and the quality of life/living conditions for the respondents, the results were very split. This was particularly due to 89.5% of respondents in Figure 35 finding the Towpath to be of good quality.

7.7 Concluding Summary

The findings from the survey presented in this section support much of the findings from the literature (see Section 2.0). The findings overall, present the Lagan Towpath as a relatively good quality river walkway with the ability to support and provide areas to improve health and wellbeing of its users. Despite some survey responses remaining very split with little ability to analyse them, the survey was still able to explore the relationship between blue spaces and health and wellbeing (Objective 1) and understand the perspectives of users of the Lagan Towpath (Objective 3). The following section explores the interview analysis.



8.0 Interview Analysis

This section critically explores insights and interpretations of the interviewees around four broad themes and sub-themes.

Interviews were conducted during March 2021, all of which were carried out online over Zoom due to COVID-19. The interview questions can be found in Appendix 3.

Interviewee	Interviewee Perspective
Interviewee 1	Department of Infrastructure 1
Interviewee 2	Department of Infrastructure 2
Interviewee 3	QUB Lecturer
Interviewee 4	RTPI Policy Officer
Interviewee 5	Eastside Partnership
Interviewee 6	Previous Sustrans Director

Table 9: Interviewee Perspectives (Authors own, 2021)

8.1 Blue space benefits

The general consensus across all interviewees was that blue spaces, such as river walkways do lead to improved health and wellbeing for users, with each interviewee referring to mental and physical health benefits.

8.11 Mental Health

Improvement to mental health was acknowledged by all interviewees as being a key benefit of blue space. For example, Interviewee 3 described that mental health benefits can simply be achieved from peoples *“sense of engagement and curiosity...with it being evident that serotonin levels and levels of joy are in no question impacted by people’s experiences of blue spaces”*. Further to this, Interviewee 6 referred to how even those with limited ability to do physical activity can *“have that connection to nature in an urban environment which can be very beneficial to mental health”*. Recognising the potential for improved mental health with the provision of quality blue spaces is of particular significance since urban environments experience lower amounts of natural spaces compared to rural areas. Therefore, ensuring there are natural areas in towns and cities will mean *“a larger number of residents...will have something aesthetically pleasing to look at and value”*.

Drawing on their involvement in a study into the high suicide rates of people living beside the Westlink Interviewee 2 stated, *“all you can see around you is concrete, tarmac, noise, fumes and it is an assault on the senses from every direction”*. Their study further stresses the need for nature to be easily accessible to provide people with a sense of relaxation. These findings reflect the work of Vert *et al.* (2019); Bell *et al.* (2015), and Finlay *et al.* (2015) who emphasised the sensory aspects of blue spaces which can promote benefits such as social interactions and improved mental health.

However, Interviewee 4 and 5 recognised that NI are still very far behind in recognising blue ways and river walkways. Comparison was made with London and Liverpool, and with Belfast, whereby both Liverpool and London river areas are *“thriving and buzzing”* (Interviewee 5), with there being *“walkways, cafes, good lighting...all kinds of things which activate the space”* (Interviewee 4). Whereas in Belfast along the River Lagan there is a *“no draw to the river, no direct walking routes and no sight lines, and it doesn’t feel like a space you want to be in”* (Interviewee 4). Having a lack of quality

infrastructure in place to attract people to blue spaces, will result in a lost opportunity to improve peoples' mental health particularly in urban environments.

8.12 Physical Health

In addition to mental health, physical health was also recognised as a benefit of blue space among all interviewees.

"If you recreate an environment where people are able to engage in physical activity as part of their everyday routine, it gives them that edge, as they don't have to set aside time to do it because it's part of their life" (Interviewee 1).

This argument supports the work of the Belfast LDP, referring to the importance of blue infrastructure networks connecting neighbourhoods and employment areas which will encourage an active lifestyle. Ultimately, having a knock-on effect to reduce obesity and improve health (BCC, 2018). Therefore, the LDP and Interviewee 1 both recognise the opportunity for people to use blue ways and greenways as part of their daily life, for example commuting. The survey analysis similarly found that 63% of respondents use the Lagan Towpath several times a week, carrying out activities such as walking, running, and cycling. However, it was evident amongst many interviewee responses that there are challenges regarding encouraging an active lifestyle with Interviewee 2 rhetorically asking, *"why do people not do it?"*. Both Interviewee 1, 2 and 3 recognise that it is a mindset problem with people relying too much on their car.

Indeed, a number of key barriers to reaping the benefits of blue spaces were identified in the interviews.

8.2 Blue Space Barriers/Challenges

8.21 Lack of Public Appreciation

A unanimous response from all the interviewees was the current lack of public appreciation for blue spaces in NI. Particularly, Interviewee 3 stated that *"people are just too busy...you come in from work you have dinner and then flop down in front of the TV, that's how people are recuperating these days"*. A typical working lifestyle as indicated by Interviewee 3 suggests that people are being less mentally stimulated which can result in poor cognitive performance, as well as a lack of exercise causing greater health risks. When compared with going for a walk in the evening along a blue way for example, it is evident that greater health and mental benefits would be achieved.

In addition, Interviewee 4 referred to the River Lagan *"not being treated as an asset"*. Interviewee 4 further went on to say that not only is the river walkway quality important, but *"I would say the quality of the space around the actual walkways don't encourage people"*. Therefore, consideration should be made to ensure that at the access points to river walkways such as the Lagan Towpath, there are things for people to do, such as coffee trucks and benches. Including such facilities can encourage people to make the most of the blue spaces as they can provide areas of shelter from the rain, which was also a barrier that both Interviewee 1 and 6 mentioned.

However, a lack of appreciation for blue spaces is not felt in the main tourist spots. Interviewee 3 stated that *"often we want to experience what we call spectacular nature...such as the North Coast...and they are beautiful and yet there might be a beach locally, but we don't tend to value it as*

much". It indicates that people value tourist areas more than the area they live in. A reason for this could be because tourism generates income and these are parts of NI that get advertised most, whereas walkways are maybe more the hidden gems. However, that is not necessarily a bad thing because that means they are not being overused. Although a lack of public appreciation can result in people littering in their local areas for when they do use them. For example, similar findings were evident in the survey analysis whereby 43% of respondents feel that the area has litter and vandalism. A lack of public appreciation for local assets can also be a result of high amounts of private land ownership.

8.22 Land Ownership/Property Rights

Another major barrier identified was land ownership and space. From a departmental point of view, Interviewee 1 stated that *"we have tended to allow people to build right to the edge of the river"*. Allowing people to build/own right up to the river has resulted in accessibility issues to many rivers. For example, Interviewee 5 stated that for the Connswater Greenway they *"had 60 land applications to carry out and actually there were some parts and things we weren't able to do because of land ownership"*. Therefore, landowners do not want people on their land due to liability concerns, and resultingly many of NI's beautiful natural green spaces and rivers remain out of the public. Similarly, stated in Section 2.0 property rights remain an issue, with NI having a very limited number of public walkways, particularly ones that are free (Haeffner *et al.* 2017).

However, it can lead to positive effects, for example Interviewee 6 stated that for many river walkway regeneration schemes/projects they have created a cross over bridge due to land ownership problems on one side. Interviewee 6 has emphasised this stating, *"yes they cross over because of land ownership but bridges are exciting, crossing over can improve the experience, and you get to see the river from another side"*. Thus, bridges can be used to provide vantage points to see down the river improving the sensory experience, as well as being areas for all age groups to look more at the life within the water. The survey analysis found similar findings whereby, 85.6% of respondents agree they felt part of nature, despite many parts of the Lagan Towpath requiring users to cross bridges. Indeed, land ownership problems do present accessibility problems.

8.23 Accessibility

A final barrier expressed by all interviewees was accessibility. Lack of accessibility was expressed due to car dependency. For example, Interviewee 3 stated that *"we have become too dependent on the car which is a big issue with obesity and unhealthy lifestyles"*. Further to this, from a departmental point of view, Interviewee 1 stated that *"because we have planned cities with the car in mind...people get into their cars and bypass all these things [blue/green spaces]"*. Having planned areas with the car in mind means that areas which people prefer to visit, such as the Lagan Towpath at Stranmillis which has a car park, will lead to more car parking spaces being required and less natural spaces. It can result in access points to the Lagan Towpath without car parking facilities being less frequently used in comparison to the access points with a car park. This was previously expressed in Section 8.12. Therefore, causing capacity issues which need to be managed. Contrastingly, over-dependence on the car compares with survey findings showing that the majority of users accessed the Lagan Towpath by walking (45.3%), and only 27.6% of users accessed using the private car.

Other interviewees referred to the lack of accessibility due to socio-economic issues. Particularly, Interviewee 5 stated that *"typically investment in greenways and blue ways is in more middle-class areas"*. This is significant as it emulates the work of Choe *et al.*, (2020); and Qiang *et al.* (2019) who

have found that many environmental injustices exist whereby properties that are built beside blue spaces and particularly ones with a view, tend to be higher priced.

Clearly there are a number of barriers which need to be overcome to ensure sustainable planning and management of the Lagan Towpath and similar areas into the future.

8.3 Future Planning Management Challenges

8.31 Capacity Issues

One future challenge recognised by many of the interviewees was capacity issues. Interviewee 6 stated that *“the more accessible locations tend to be the favoured ones...so don’t want to spoil the experience by overcapacity”*. This is significant as it is in line with the qualitative comments collected from the survey based on the Lagan Towpath with many users expressing concerns over narrow paths and it being too busy for everyone. Narrow paths are a particularly pressing issue during COVID-19 whereby more people are travelling and using these spaces, emulated through the work of Grey and Kellas (2020). Therefore, if more access points had better facilities it could lead to users accessing the Lagan Towpath from a bigger range of points rather than just the few main ones with car parks, which was previously outlined in Section 8.23.

Other interviewees placed greater importance on protecting and being sensitive to the environment surrounding these spaces. Therefore, not building more car parks or stringing litter bins along the path. Despite this, all interviewees recognised the need for better management of these areas, highlighting the importance of encouraging people to use more of what is on their doorstep, instead of everyone visiting the main tourist attractions.

Indeed, many people assume that to solve capacity issues there should be more car parking, however, this leads to increased risk of flooding.

8.32 Flooding

Flooding as a future challenge was stressed by each interviewee. From a departmental point of view, Interviewee 2 stated that *“many of our rivers have been covered over, but many people wouldn’t know”*. The covering over of rivers has meant there is no ability for the water to escape and backing the problem further up the system. With many houses being built on these rivers, as well as the percentage of green spaces in urban environments decreasing *“with everything turning to concrete”* stated by Interviewee 1, there is the huge risk of surface water levels increasing to severe flooding levels. Interviewee 6 went on to say that *“NI has been very slow to realising flood management isn’t all about building a wall”*. Flood risk is further heightened by the NI drainage system and sewage system all mixing and then the water that would have otherwise absorbed into the ground is now going to waste. Interviewee 2 stressed concern over this stating that *“now we have flooding when it rains, and the drains don’t have the capacity to keep up with the volume of water”*. Poor flooding and drainage systems emulates the work of Haeffner *et al.* (2017) finding that poorly managed and unmonitored rivers can lead to flood risk. Therefore, with climate change taking effect and weather conditions worsening, the ability to ensure the banks and floodplains of a river remain protected and managed is a huge problem, present and future.

Many of the interviewees did state that overcoming future flooding issues is difficult with *“an unwillingness from a high political level to someone in the street, that we do need to spend money and*

it's not just a free resource" stated by Interviewee 3. Therefore, with the high levels of investment required and the continued lack of appreciation and understanding from all levels, it appears likely that flood risk will continue to grow.

It is clear that there are a number of future planning management challenges to be tackled to ensure sustainability. Therefore, interviewees expressed their visions for the future of blue spaces in NI.

8.4 Future Visions of NI Blue Spaces

8.41 Continuity of Blue-ways

A consistent response across multiple interviewees included improved continuity of blue spaces. Interviewee 6 emphasised the importance of:

"developing a bigger network through a masterplan for greenway development...potentially there is an all-Ireland network for all communities to benefit...Belfast City Council should always be looking for new opportunities to develop and improve accessibility".

Further to this, Interviewee 3 stated that *"people would be encouraged to cycle if they were completely removed from the road and cars"*. Interviewee 3 went on to reference the potential to improve the accessibility of river greenways to encourage cycling. Both Interviewee 3 and 6's vision accentuates the importance of continuity along public spaces such as the Lagan Towpath to provide areas for people of all ages, social class, and ability, to access them. Continuity of river walkways is particularly significant during COVID-19 whereby people are seeking to use blue spaces more frequently, however, are finding themselves having to drive since there are few good quality public spaces near to where they live. Therefore, ensuring local communities are more involved in the future development of riverside walkways is important, as expressed below.

8.42 Co-Design with the community for future riverside walkways

Drawing on their experience of developing the Connswater Community Greenway, Interviewee 5 emphasised its success was due to *"engaging with local people...it's still a living and breathing project"*. Thus, even post regeneration there is continued engagement with local communities. Co-design is important since it is the communities who are using river walkways. Therefore, ensuring they are aware of everything going on will ensure it is sustainable, as well as more people appreciating their local assets. Further to this, Interviewee 4 stated the importance of designing spaces with the local community in mind:

"Think about who is going to use them [river walkways] ...there are lots of studies about if you make a place suitable for a child then it is suitable for everyone".

This highlights the importance of engaging with the community, and co-design is one effective way of doing this. It is valuable in discovering unique perspectives through collaboration to help with key decision making; something Interviewee 5 views highly however recognises it has to be *"interesting and fun"*.

8.43 Health Impact Assessment

The use of a Health Impact Assessment (HIA) for all major developments was recommended by Interviewee 3 who stated that *“unless a new development has been proven to not harm human health, with great consideration of how it will impact climate change, then the development should not be allowed”*. Interviewee 3 went on to add, *“there’s nothing stopping the planning authorities from saying these are the conditions under which new developments take place”*. This is substantial as the health impact of many developments is not usually considered in full, unless it has a notably large negative impact. In addition, Interviewee 1 stated that *“in planning terms, blue and greenspace should be an integral part of all developments”*. Therefore, the introduction of an HIA could help ensure all future developments include green/blue spaces to encourage social interaction and physical activity and reduce the dominance of the private car.

8.5 Concluding Summary

The interview findings presented in this section reveal that at present NI has huge opportunities to improve its blue spaces, however there are many challenges which exist such as property rights, accessibility, and lack of appreciation. It supports the findings from the literature and survey analysis. In addition, the interviewees have shared potential future visions and desires for the future planning, management, and regeneration of blue spaces in general and river walkways more specifically. Such findings, in conjunction with literature review findings (Section 2.0) and survey findings (Section 7.0) have informed the final recommendations of this research which are presented in the next section.



9.0 Conclusion & Recommendations

Blue ways and their ability to provide health and wellbeing benefits present significant challenges and opportunities for future planning and management along the Lagan Towpath. The literature review explored varying benefits of blue spaces from looking at how it encourages physical activity, to engaging the senses improving mental health, supported by both White *et al.* (2020) and Wheaton *et al.* (2019) meeting Objective 1. The importance of blue space intervention has become increasingly apparent due to COVID-19 with more people becoming aware of their health and wellbeing, seeking to make better use of blue spaces (Vert, 2020). Such findings led the research to identify the potential for underutilised blue spaces to carve the way for environmental injustices in urban environments, which presented a compelling case for how its progression needs to be better understood within NI.

The policy analysis signified the dominance of green infrastructure in current policy and plans in comparison to blue infrastructure, particularly the NI RDS and SPPS. However, over recent years there has been an increase in blue infrastructure recognition from local council policy level, through the publishing of the Green and Blue Infrastructure Plan within BCC, and DCSDC. Yet, nine councils are still to embark on such programmes suggesting a challenge remains in changing policy priorities.

The assessment tools identified five research led tools, meeting Objective 2. The tools assess the quality of blue environments and how these spaces impact people's health and wellbeing. This comparable research concluded that the BlueHealth Community Level Survey was most appropriate to this research due to the ability of local users of blue spaces to use it.

The survey provided local user perspectives of the case study area: The Lagan Towpath, meeting Objective 3. A correlation between users and their health and wellbeing was identified through the survey, with 90.2% recording good health. However, it is evident that this is dependent on the quality and access of the area. The majority of respondents who thought the overall quality of the Lagan Towpath was very good, were more likely to agree that they felt part of nature. In addition, all respondents that live less than 1 mile from an access point, agree that they felt safe. These findings suggest that to have good quality spaces, there needs to be good accessibility. This links with other themes, whereby people have different perspectives on the quality of an area, depending on what activity they are doing, which presents differing local perspectives. Further findings found that there is a clear correlation with people accessing the Lagan Towpath and their health and wellbeing, with respondents who walked being more likely to feel calm and relaxed, improving their physical and mental health. These findings are significant, as from the local user perspective there is a correlation between health and wellbeing and its users, however, these areas need to be maintained to ensure good quality and continuous access points.

Based off the different professional perspectives at varying levels, key themes emerging from the interviews reiterated the huge challenges within Belfast regarding blue infrastructure, largely due to how planning was carried out in the 20th century. The lack of appreciation for blue spaces in the 20th century resulted in the lack of management, and resultingly many rivers have been built over. Years later this has caused numerous problems with the most prominent being flooding. The lack of flood river management in the form of natural embankments means that neighbourhoods remain anxious about flooding which may negatively impact on their health and wellbeing. Additional findings suggested that the large amounts of private land ownership in NI have reduced accessibility to many rivers, which has limited the number of public walkways that are free. Overall, these different professional perspectives are significant as they further emphasise the need for NI to develop forward thinking ideas to improve accessibility, better managing and regenerating its urban riversides for the future, meeting Objective 4.

Overall, by challenging existing policies and ensuring engagement with local users, there is a strong potential to collaboratively challenge the lack of appreciation for blue ways/blue spaces/blue infrastructure/river walkways. To mitigate against the lack of appreciation for blue ways, and improve existing ones such as the Lagan Towpath, the following six recommendations have been put forward. The recommendations have been informed by the literature, assessment tools, policy, survey, and interview findings, meeting Objective 5.

Recommendation 1: Increased Research into Blue Space Benefits

A larger amount of research into the importance of river walkways and their health and wellbeing benefits is required. A way this can be done is through supporting and improving collaboration with organisations such as Sustrans. Having an increased amount of research will help to emphasise and prioritise the value of protecting and managing these areas. The current national and international good practice examples will help to provide BCC with reasons for regenerating its riversides. Once BCC has further improved its riversides and has experienced the benefits, it will hopefully help encourage additional councils to implement a Green and Blue Infrastructure Plan.

Recommendation 2: Encourage Greater Public Appreciation

There are many blue spaces in NI which people are aware of such as Lough Neagh. However, there are also many more that people are unaware of. People need to be presented with a brochure of all the beautiful rivers and walks and celebrate the fact that these are free/cheap resources. This is of particular importance since everyone in NI is not a long distance from a blue space. In addition, it is not just about what is along the river walkway, but also about the destination and various access points. For example, the brochure must include things to do at each access point, such as Connswater Greenway access point there is CS Lewis Square. The benefits from this could include increasing awareness of what people live next to, instead of everyone travelling to the most well-known tourist spots and causing capacity issues and large amounts of tourist erosion in one area. Therefore, once people know what they live beside they are more likely to make regular use of it.

Recommendation 3: Greater Council Appreciation and the use of the BCLS

There needs to be a greater appreciation from the council perspectives of what the users want/need. The Assessment Tools section highlights the need to assess blue spaces in some way, but also that it is not being done. Therefore, the BCLS could be adapted and used to identify really meaningful opportunities, challenges, and improvements of these types of places. Using the BCLS will add value to the councils understanding to who is using these spaces, what they are using them for, and their general perspective of them, which will also aid in achieving co-design.

Recommendation 4: Co-Design with the community for future riverside walkways

There needs to be a higher level of engagement with local people when it comes to the regeneration and continued maintenance of river walkways, for example partnering with a local primary school to create a community garden along the Towpath. Ensuring local communities are involved will result in more people appreciating the area. This will in turn result in fewer people littering and vandalising, helping to maintain the quality of the area.

Recommendation 5: Development of Permissive Paths across NI

There needs to be greater access rights to areas within the country such as mountains and streams, particularly due to NI having the most restricted access and fewest public rights of way to outdoor space within the UK. Therefore, permissive paths are where landowners agree access with councils, who organise building of the path and become responsible for maintenance and public liability. This could help improve the Lagan Towpath where certain areas of the path require users to depart from the river. The benefits of this could be significant in terms of, connecting more people to natural blue spaces and reducing the need to rely on the private car, irrespective of being in a rural or urban area.

Recommendation 6: Health Impact Assessment (HIA)

Every planning decision needs to consider the impact of the proposed development on public health. This is particularly significant for large developments from housing to industrial. For example, if planning authorities produced a set of rules, that for every development a certain size of land needs to have a percentage dedicated to quality green/blue spaces. This is significant as people's health and the environment will be the priority of developments, instead of the number of units that can fit onto a plot being the sole thought. Therefore, the requirement of an HIA alongside the percentage of space reserved for green/blue space will become a turning point in all large developments having positive health impacts.

10.0 Appendix

Appendix 1: Alternative Case Study Locations

Below is a critique of the three case studies which were considered as part of this research.

Connswater Community Greenway



Figure 55: Connswater Community Greenway (WalkNI, 2019a)

Advantages	Disadvantages
Recently regenerated into a high-quality river walkway.	Since it is already regenerated, the ability to collect perspectives pre-regeneration would be challenging.
Travels through a range of socio-economic neighbourhoods.	In comparison to the other potential case study examples, it is only 9km.
Leads to a large public park.	

Table 10: Advantages and Disadvantages of Connswater Community Greenway (Authors own, 2021)

Forth Meadow Community Greenway



Figure 56: Forth Meadow Community Greenway (U105, 2020)

Advantages	Disadvantages
Is currently pre-regeneration to improve this river walkway. Therefore, gaining a perspective during this process will be vital in understanding what users want and need.	Much of this river walkway path has not been built yet and therefore not in use, for example from the Westlink to the city centre. This means that gaining a perspective of users would not be feasible for all sections of this greenway.
Travels through a range of socio-economic neighbourhoods.	
Leads to a variety of large public parks.	
New regeneration project aims to connect the more socio-economically deprived neighbourhoods to the new Transport Hub in the city centre. Therefore, gaining a perspective on how the local neighbourhoods view this would be significant.	

Table 11: Advantages and Disadvantages of Forth Meadow Community Greenway (Authors own, 2021)

The Lagan Towpath



Figure 57: Lagan Towpath (WalkNI, 2020a)

Advantages	Disadvantages
The longest of all the river walkway considered, reaching 16km.	Since it is the most popular of the three potential case studies, it could suggest that researching into one of the other locations could be more beneficial for that area to lead to larger improvements in that greenway.
Travels through a range of socio-economic neighbourhoods.	
Has a significant history, as being a catalyst in Belfast becoming the economic hub that it is.	
Travels through a range of large public parks, making it one of the most popular greenways in Northern Ireland. Therefore, if used for the research case study it would be able to gain a wide range of local perspectives.	
Is currently pre-regeneration, for example many of its canal locks. Therefore, gaining a perspective during this process will be vital in understanding what users want and need.	

Table 12: Advantages and Disadvantages of the Lagan Towpath (Authors own, 2021)

Overall, the analysis above of the three potential case studies, has resulted in the Lagan Towpath being chosen, due to the larger potential findings for this location.



Determining health and wellbeing impacts of riverside regeneration schemes

Page 1: Page 1

Hello!

My name is Lauren Coulter, and I am a final year MSci Planning, Regeneration and Development (RTPI and RICS Accredited) student at Ulster University.

As part of my final year research project, I am assessing the links between health and wellbeing, and blue spaces. I have selected the Lagan Towpath as my main case study. This study asks you to reflect on your experiences and view of the Lagan Towpath.

Blue spaces include water and could be inland areas like lakes, canals, rivers, fountains and pools; urban coastal areas such as seaside resorts, harbours, ports and piers; or other coastal areas such as beaches, cliff and headlands.

By completing this survey I am assuming that you are giving your consent to participate in this research whilst remaining anonymous, however you are free to leave the survey at any time. Ethical approval for this study has been grant by Ulster University.

Many thanks for your support and time!

Lauren

1. In the last 12 months, how often, on average, have you spent your leisure time at blue spaces?

- ☐ Everyday
- ☐ Several times a week
- ☐ Once a week
- ☐ Once or twice a month
- ☐ A few times in the last 12 months
- ☐ Not in the last 12 months

2. In the last 4 weeks, approximately how many times have you visited the Lagan Towpath?

- ☐ Not at all in the last four weeks (answer this question, then go to Q17)
- ☐ Once or twice in the last four weeks
- ☐ Once a week
- ☐ Several times a week

3. Approximately, how far do you live from the nearest access point to the Lagan Towpath?

- ☐ Less than 1 mile
- ☐ 1-3 miles
- ☐ 3-5 miles
- ☐ 5-10 miles
- ☐ 10 miles+

4. How did you access the Lagan Towpath?

☐ Walked

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☐ Cycled

☐ Public Transport

☐ Private Car

☐ Other

5. Overall, how would you describe the quality of this location?

☐ Very good

☐ Good

☐ Neither good, nor bad

☐ Bad

☐ Very bad

6. When did your most recent visit to the Lagan Towpath take place?

Dates need to be in the format 'DD/MM/YYYY', for example 27/03/1980.



(dd/mm/yyyy)

7. Approximately how much time did you spend at the Lagan Towpath?

- ☐ Less than 15 minutes
- ☐ Between 15 and 30 minutes
- ☐ Between 30 and 60 minutes
- ☐ More than 60 minutes

8. On this visit which of these activities, if any, was the main activity you did?

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-
- ☐ Walking a dog
 - ☐ Walking without a dog
 - ☐ Nordic walking (i.e. with poles)
 - ☐ Running
 - ☐ Cycling
 - ☐ Horse riding
 - ☐ Fishing (including angling)
 - ☐ Conservation activity (e.g. litter picking)
 - ☐ Sunbathing
 - ☐ Quiet activities (e.g. reading, meditating)
 - ☐ Informal games and sports (e.g. frisbee)
 - ☐ Playing with children
 - ☐ Appreciating scenery from your car
 - ☐ Eating or drinking
 - ☐ Socialising with friends
 - ☐ Watching wildlife
 - ☐ Boating (e.g. rowing, canoeing)
 - ☐ Swimming
 - ☐ Watersport (e.g. paddle boarding, rowing)

9. How many adults aged 16 and over, including yourself, were on this visit?

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7
- ☐ 8
- ☐ 9

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-
- ☐ 10 or more

10. How many children aged under 16 were on this visit?

- ☐ 0
- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6 or more

Page 2: How much do you agree with the statements below about your visit?

11. "I was satisfied with the visit"

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Slightly disagree
- ☐ Neither agree nor disagree
- ☐ Slightly agree
- ☐ Agree
- ☐ Strongly agree

12. "I felt part of nature"

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Slightly disagree
- ☐ Neither agree nor disagree
- ☐ Slightly agree
- ☐ Agree
- ☐ Strongly agree

13. "I felt safe"

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Slightly disagree
- ☐ Neither agree nor disagree
- ☐ Slightly agree

- ☐ Agree
- ☐ Strongly agree

14. "The area was free from litter/vandalism"

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Slightly disagree
- ☐ Neither agree nor disagree
- ☐ Slightly agree
- ☐ Agree
- ☐ Strongly agree

15. "There were good facilities"

Please don't select more than 1 answer(s) per row.

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree
Footpaths	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Parking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Public amenities (e.g. toilets)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Seating/benches	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

16. "I felt happier/healthier after my visit"

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Slightly disagree
- ☐ Neither agree nor disagree
- ☐ Slightly agree
- ☐ Agree
- ☐ Strongly agree

Page 3: In this section we would like to learn a little about your health in general. We are interested in your health so that we can explore any links between general levels of health and the kinds of environments people spend their leisure time in. Remember, your responses cannot be linked to yourself or your home location.

17. How is your health in general?

- ☐ Very bad
- ☐ Bad
- ☐ Fair
- ☐ Good
- ☐ Very good

18. Are your day-to-day activities limited because of a health problem or disability which has lasted, or is expected to last, at least 12 months?

- ☐ No
- ☐ Yes, limited a little
- ☐ Yes, limited a lot

19. Do you have any of the following conditions which have lasted, or are expected to last, at least 12 months?

- ☐ Deafness or partial hearing loss
- ☐ Blindness or partial sight loss
- ☐ A mobility or dexterity difficulty that requires the use of a wheelchair
- ☐ A mobility or dexterity difficulty that limits basic physical activities (for example walking or dressing)

- ☐ An intellectual or learning disability (for example Down syndrome)
- ☐ Autism or Asperger syndrome
- ☐ An emotional, psychological or mental health condition (for example depression or schizophrenia)
- ☐ Frequent periods of confusion or memory loss (for example dementia)
- ☐ Long-term pain or discomfort
- ☐ Shortness of breath or difficulty breathing (for example asthma)
- ☐ Other condition (for example cancer, diabetes or heart disease)
- ☐ No condition

Page 4: Please indicate for each of the statements which is closest to how you have been feeling over the last two months.

20. "I have felt cheerful and in good spirits"

- ☐ At no time
- ☐ Some of the time
- ☐ Less than half of the time
- ☐ More than half of the time
- ☐ Most of the time
- ☐ All of the time

21. "I have felt calm and relaxed"

- ☐ At no time
- ☐ Some of the time
- ☐ Less than half of the time
- ☐ More than half of the time
- ☐ Most of the time
- ☐ All of the time

22. "I have felt active and vigorous"

- ☐ At no time
- ☐ Some of the time
- ☐ Less than half of the time
- ☐ More than half of the time
- ☐ Most of the time

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-
- ☐ All of the time

23. "I woke up feeling fresh and rested"

- ☐ At no time
- ☐ Some of the time
- ☐ Less than half of the time
- ☐ More than half of the time
- ☐ Most of the time
- ☐ All of the time

24. "My daily life has been filled with things that interest me"

- ☐ At no time
- ☐ Some of the time
- ☐ Less than half of the time
- ☐ More than half of the time
- ☐ Most of the time
- ☐ All of the time

25. How is your health in general? Would you say it is...

- ☐ Very bad
- ☐ Bad
- ☐ Fair
- ☐ Good
- ☐ Very good

26. During the last 7 days, on how many days have you done a total of 30 minutes or more of physical activity, which was enough to raise your breathing rate?

- ☐ 0
- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7

Page 5: This final section asks you some background information about yourself, your household and your family. This will assist in understanding the kinds of people who visit blue spaces. Again, the survey is anonymous - we will not be able to identify you as an individual.

27. Do you have a dog?

- ☐ Yes
- ☐ No

28. What is your age range?

- ☐ Aged 18 or younger
- ☐ Aged 19 to 24
- ☐ Aged 25 to 40
- ☐ Aged 41 to 65
- ☐ Aged 65+

29. Which of the following best applies to you?

- ☐ I have access to a private garden
- ☐ I have access to a private communal garden
- ☐ I have access to a private outdoor space, but not a garden (balcony, yard, patio area)
- ☐ I do not have access to a private garden or outdoor space

30. Including yourself, how many people - including children - live in your house regularly as members of the household?

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-
- ☐ 1
 - ☐ 2
 - ☐ 3
 - ☐ 4
 - ☐ 5
 - ☐ 6 or more

31. How many of these are children aged under 16?

- ☐ 0
- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6 or more

32. Which of these descriptions best describes your situation (in the last 7 days)?

- ☐ In paid work (or away temporarily) (employee, self-employed, working for your family business)
- ☐ In education (not paid for by employer)
- ☐ Unemployed and actively looking for a job
- ☐ Unemployed, wanting a job but not actively looking for a job
- ☐ Permanently sick or disabled
- ☐ Retired
- ☐ Doing housework, looking after children or other persons
- ☐ Furloughed
- ☐ Other

33. Do you belong to a minority ethnic group in Northern Ireland?

- ☐ Yes
- ☐ No
- ☐ Don't know

34. Which of the following best describes your marital status?

- ☐ Married, in a civil union or living with your partner (cohabiting)
- ☐ Single, separated/divorced/civil union dissolved or widowed/civil partner died
- ☐ Neither of these
- ☐ Prefer not to answer

35. Which of the following best describes your household's total annual income after tax and compulsory deductions, from all sources? If you don't know the exact figure, please give an estimate.

- ☐ Less than £10,858
- ☐ £10,858 to under £14,548
- ☐ £14,548 to under £18,132
- ☐ £18,132 to under £21,715
- ☐ £21,715 to under £25,994
- ☐ £25,994 to under £30,754
- ☐ £30,754 to under £36,691
- ☐ £36,691 to under £44,714
- ☐ £44,714 to under £58,620
- ☐ £58,620 or more

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-
- ☐ Prefer not to answer

36. Please feel free to add any additional comments.

Appendix 3: Interview Questions

- 1) Do you think that there is a link between people who use blue spaces such as urban river walkways/greenways, and their health and wellbeing? Please explain.
- 2) What do you feel are the biggest barriers currently that inhibit people from reaping the health and well-being benefits of river greenways/walkways?
- 3) What do you think are potential future challenges regarding the planning/management/regeneration of urban riverside schemes?
- 4) Are there any future recommendations that you would propose for urban river walkway regeneration schemes in Northern Ireland?

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