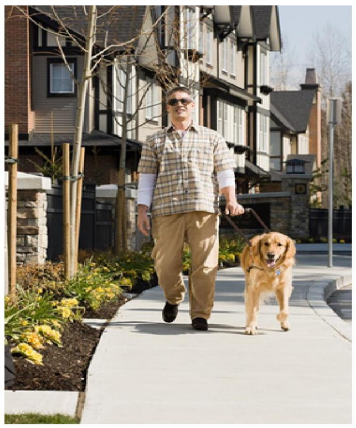

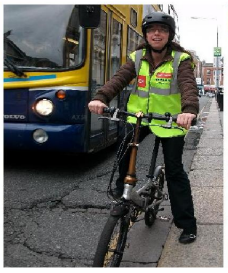

Shared Space, Shared Surfaces and Home Zones from a Universal Design Approach for the Urban Environment in Ireland

Key Findings & Recommendations

Údarás Náisiúnta Míchumais
National Disability Authority

TrinityHaus

www.trinityhaus.tcd.ie

Revision History

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Disclaimer

The National Disability Authority contracted TrinityHaus, Trinity College Dublin to conduct this research. The views expressed in the report are those of the authors and do not necessarily reflect the views of the National Disability Authority.

TrinityHaus
16 Westland Row
Civil, Structural and Environmental Engineering
Trinity College Dublin
Dublin 2
Ireland

Tel: +353 1 896 3802 or +353 1 896 3956
E-mail: tom.grey@tcd.ie or emma.siddall@tcd.ie
Web: www.trinityhaus.tcd.ie

Project:
9019

Contents

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- All stakeholders who attended the first and second workshop who are named in Appendix 5 and Appendix 12
- All the interviewees listed in appendix 2.
- Eoghan and Amelia for help with the workshop.
- Genny for guidance on JAWS readability and for putting up with all our questions!

Go raibh míle maith agaibh go léir.

Executive Summary



Introduction

This research has been undertaken by TrinityHaus (Trinity College Dublin), on behalf of the National Disability Authority's (NDA) Centre for Excellence in Universal Design (CEUD). The aim of the research was to engage with a wide range of stakeholders in a discussion about Shared Spaces, Shared Surfaces and Home Zones in the Irish context. The research seeks to explore contemporary national and international practices and thinking on Shared Spaces, Shared Surfaces and Home Zones and to investigate these concepts from a Universal Design approach in the Irish urban environment. This report sets out key evidence based findings and provides key recommendations in relation to the implementation of Shared Spaces, Shared Surfaces and Home Zones in Ireland.

Definition of key terms

Shared Space - A street or place designed to improve pedestrian movement and comfort by reducing the dominance of motor vehicles and enabling all users to share the space rather than follow the clearly defined rules implied by more conventional designs. (Department for Transport UK, 2011a)

Shared Surface - Shared space schemes sometimes used what is often referred to as a 'shared surface', where there is no kerb or level difference to segregate pedestrians and vehicles. The term 'level surface' is also used in some situations and this simply refers to "A street surface with no level difference to segregate pedestrians from vehicular traffic" (Department for Transport UK, 2011a)

Home Zone - Home Zone is the UK term for a [residential] street where people and vehicles share the whole of the road space safely, and on equal terms; and where quality of life takes precedence over ease of traffic movement. (Jones and Institute of Highway Incorporated, 2002).

Shared space design – For the purposes of this report the term shared space design will be used to refer collectively to Shared Space, Shared Surfaces and Home Zones.

Universal Design - Universal Design is the design and composition of an environment so that it can be accessed, understood and used to the greatest extent possible by all people, regardless of their age, size, ability or disability. This includes public places in the built environment such as buildings, streets or spaces that the public have access to; products and services provided in those places; and systems that are available including information and communications technology (ICT). Disability Act 2005 (http://www.universaldesign.ie/

Vulnerable Pedestrians – Vulnerable pedestrians is a term used in this report to identify pedestrians such as older people, children, or those with mobility, sensorial, or cognitive difficulties.

Project outline

This research project has been conducted over six months and has involved an extensive literature review of national and international best practice, guidelines, reports and peer reviewed journal papers in relation to Shared Space, Shared Surfaces and Home Zones. In addition to this, engagement with over twenty organisations, interviews with over thirty individuals, site visits and analysis of urban spaces and Home Zones, and two workshops has informed the research. Key urban issues, road design and end user concerns in have also been examined and these form the backdrop to Shared Space, Shared Surfaces and Home Zone concepts in the Irish context. Figure 1 below illustrates the process that has led to the key research findings and recommendations contained in this report.

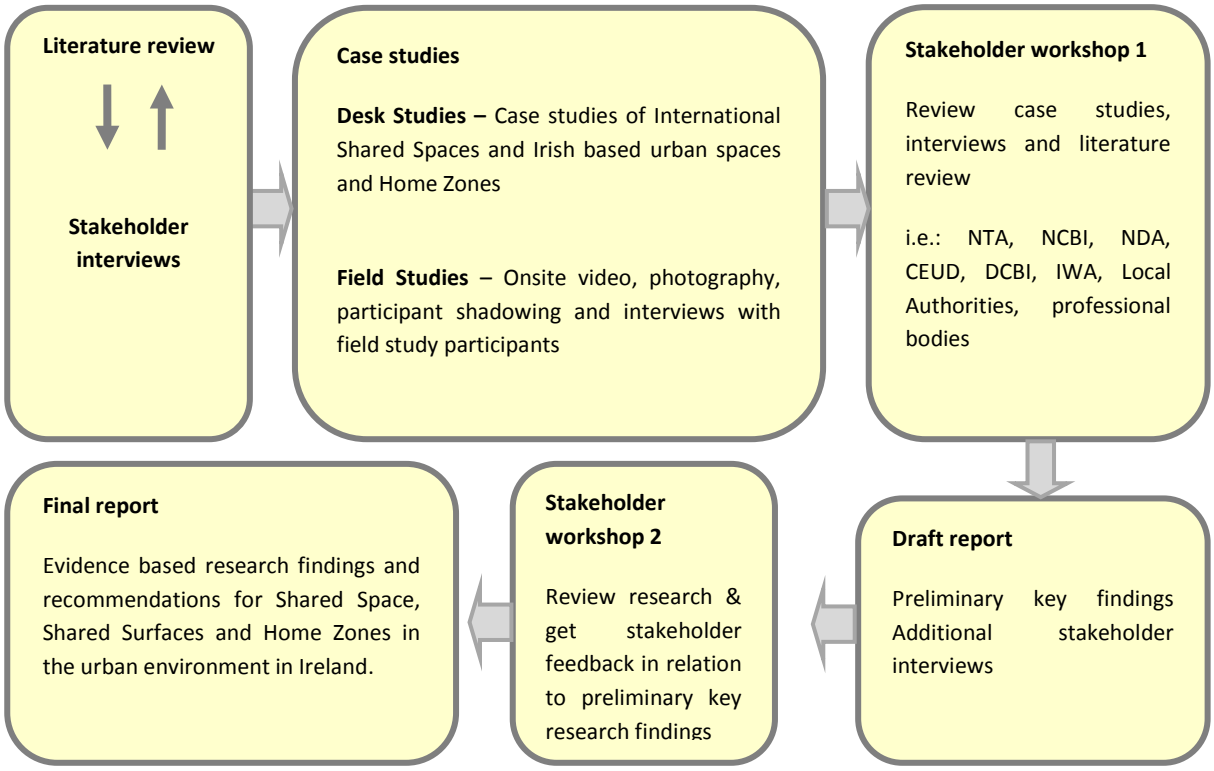


Figure 1 – Flow diagram of the research process

Following the completion of the stakeholder interviews and having conducted a large part of the research, a draft report was prepared which outlined the key preliminary findings up to that point. This was circulated to all stakeholders prior to the second stakeholder workshop and was used as the basis to discuss all the findings with the stakeholders at the workshop. This document was subsequently amended to include all feedback and now forms a large part of this final report.

Key findings

During the research a range of issues were highlighted by the stakeholders, however the following views quickly became apparent;

Lack of awareness - While the concepts of Shared Space, Shared Surfaces and Home Zones are now being used more commonly in mainland Europe and the UK, there is very little awareness of these design approaches among the general public in Ireland. Among specific organisations who represent more vulnerable pedestrians such as the National Council for the Blind Ireland and the Irish Guide Dogs for the Blind, there is a greater knowledge due to their concerns about the impact of specific shared space design features such as kerb removal and Shared Surfaces. Design professionals and local authority architects and engineers also had a good level of awareness although in some cases there was little knowledge about specific design features or best practice guidelines such as those recently published in the UK.

While there are quite a few built examples of Home Zones throughout the country, especially in the redeveloped Ballymun and the recently constructed Adamstown area, both in Dublin, there was little awareness of the Home Zone concept among the many user groups interviewed. In fact, in some cases there was limited awareness of the rationale behind this concept among those actually living in areas designed as Home Zones. All stakeholders reported that the definitions presented to them in this research for Shared Space, Shared Surfaces and Home Zones, provided them with a clearer understanding of these design concepts.

While most designers and local authorities acknowledged the challenges of shared space design in relation to people with visual difficulties, many were surprised to hear that other organisations such as the Irish Wheelchair Association also had reservations about shared space design and agreed that there needed to be greater awareness among designers and providers about the full range of end user needs.

Support and concerns - Having discussed the main issues, all of the stakeholders supported the general aims of shared space design, as long as the focus was on improving the usability of the urban environment and providing more liveable streets. However, many stakeholders expressed very strong views about specific design features such as Level Surfaces which

remove the typical delineation between traffic and pedestrians and they stressed the importance of best practice guidelines and design approaches which protect more vulnerable pedestrians.

Universal Design - In line with these concerns many stakeholders were supportive of adopting a Universal Design approach to shared space design as they believed this would help address many of the needs of more vulnerable pedestrians. The stakeholder engagement process which is central to the Universal Design was considered a key attribute to adopting this approach.

Evidence based guidelines - There was broad consensus that Ireland needs a set of national shared space design guidelines specific to the Irish context that would include advice on both Shared Space and Home Zones, which should be guided by Universal Design principles. It was also agreed that further research and pre and post construction data gathered from pilot studies would be needed to underpin any guidelines. In addition an education and awareness campaign would be required to inform all users about the intentions of shared space design and how the priority is shifted away from the car towards a more shared environment where individual responsibility, awareness of other users, especially vulnerable pedestrians, and courtesy must be exercised.

Maintenance and ongoing success – Finally, many stakeholders emphasised the need for ongoing management and maintenance of all public urban spaces, but expressed particular concern for shared space design schemes where they believed a sense of local stewardship was required. It was acknowledged that while shared responsibility was the key to long term success, the local authority would also have to help foster this sense of shared ownership, but would also need to be proactive in terms of management and enforcement if required.

While carrying out the research and stakeholder consultation, the key findings started to cluster around a number of themes which broke down into seven headings including; Evidence based decision making; Legislation, design guidelines and enforcement; Education, awareness and training; Consultation and Planning; Design and appropriate locations; Economic implications; and finally Maintenance, management, durability and sustainability. Figure 2 below outlines these main themes and illustrates how they were presented to the stakeholders.

Figure 2: Key finding themes for Shared Spaces, Shared Surfaces and Home Zones.

The research findings have been organised under these seven headings and are detailed further in chapter 12 of this report. Following each set of research findings there is a number of key recommendations based on the evidence presented. Firstly, these recommendations represent the views and concerns of the key stakeholders which have both informed and been informed by this consultation process. Secondly the recommendations provide advice on how to best advance shared space design practices in Ireland at a local authority and national level while providing for the needs of all street users. The following sections outline these key recommendations.

Evidence Base Decision Making

- At national level Shared Space pilot studies are required in association with selected local authorities in a number of urban and rural locations. These pilot studies need to be guided by a set of national level preliminary site selection and assessment criteria, local

stakeholder consultation and design guidelines to ensure consistency of site selection and research findings at all test sites.

- Examine international examples of pre and post construction design assessments along with key performance Indicators and develop an appropriate national assessment methodology and indicator suite to measure the impact of shared space design on specific locations in line with international best practice and standards appropriate to the Irish context. This assessment procedure should follow Universal Design principles and also include a range of selected end users including older people, children and those with visual, mobility and cognitive difficulties to be involved with pre and post construction on-site assessments.
- Such assessment could be conducted presently in selected existing Home Zones to determine the usability and success of such spaces in terms of Universal Design. This assessment could provide initial feedback and help inform the preliminary guidelines used in connection with the pilot studies.

Legislation, design guidelines and enforcement

- Use of the term 'shared space design' as an overall term when referring generally to design which includes specific terms Shared Space, Shared Surfaces and Home Zones.
- National level legislative change to define the specific terms; Shared Space, Shared Surface, Level Street and Home Zones in the appropriate Irish road traffic or development acts.
- Legislative and regulatory changes at a national government level to incorporate shared space design measures to provide Local Authorities with clear consultation and design guidelines as well as clarity around the function of shared space design, permitted uses, permitted road user behaviour and liability and responsibility for designers, Local Authorities and users.
- Create a national level shared space design guidance document built around the principles of Universal Design, and the Universal Design process. This document could support the forthcoming 'Design Manual for Urban Streets' which is currently being finalised by the Department of Transport, Tourism and Sport and the Department of Environment, Community and Local Transport. It could also support other existing national level design guidance such as the recently published 'Building for Everyone: A Universal Design Approach. This document should provide detailed best practice design and construction detailing guidance to include Shared Space, Shared Surfaces and Home

Zones. The guidance should include advice on local consultation and the carrying out of local pilot studies and mock-ups as part of the community consultation.

- The adoption of guidance by local authorities could be expedited through the use of Section 28 of the Planning and Development 2000, which allows the minister to issue guidelines directly to local authorities.

Education, Awareness and training

- At a national and local authority level training should be provided to key design professionals in private practice and those working with local authorities. This training should educate practitioners about the necessary consultation process associated with Shared Space design, end user needs and the specific design requirements of Shared Space design. This training should also extend to key contractors who will carry out the construction work as correct detailing and consistency are vital to successful shared space design.

- Relevant government authorities and departments such as the Road Safety Authority (RSA) to undertake an education and awareness campaign to extend to all road users to fully explain how shared space design has been implemented are supposed to work. The campaign should instil in all road users an understanding that in Shared Space there is a different set of priorities, that the carriageway is to be shared and that a greater level of communication, negotiation and courtesy is required.

- Any rules of the road, safe cross code, or similar road safety guidance prepared by the RSA to include information and instructions about shared space design and responsibilities of each user within such spaces. The road safety campaigns currently run by the RSA in partnership with the Department of Education and local community groups would also need to include information about shared space design schemes.

- Where shared space design pilot schemes or redevelopment takes place, the local authority need to provide accessible information onsite, online and using other relevant media to inform and educate the street users about the intentions of shared space design or the aims and objectives of the pilot study

Consultation and planning

- The consultation process and stakeholder engagement must be seen as one of the central components of shared space design. All national guidelines should make this explicit and provide guidance to design practitioners and local authorities on how to best engage with end users, carry out local pilot studies or on site mock-ups. Beyond the national level guidelines, all local authorities must make the stakeholder consultation central to their process of implementing shared space design.
- Any guidance must stress that the objectives around a higher quality of life and increased liveability must be kept to the fore and that the process must focus on the key local issues and not get sidetracked by the pursuit of shared space design as the ultimate goal.

Design and appropriate locations

- The appropriate location of Shared Space design schemes is critical to the success of these designs and this often includes avoiding areas trafficked by heavy vehicles or excessive volumes of traffic. A set of national level selection criteria must be defined in order to guide local authorities and design practitioners in selecting appropriate locations for the implementation of shared space design.
- Any national guidance developed should be based on the principles of Universal Design and the Universal Design process should be employed throughout any shared space design process. Emphasis should be placed on key shared space design measures such as gateways, comfort zones, delineators or crossings points. Surface treatments should also be used where appropriate to provide audible warning for quieter vehicles, electric cars and hybrids.
- Further research is required to fully understand the impact of raised kerbs or dedicated comfort zones on the level of 'sharedness' within a Shared Space or Home Zone and to what extent this has a negative or positive impact on the quality of the space. In line with this further research should be conducted by relevant government departments in conjunction with local authorities to examine acceptable delineators other than kerbs that could be used to demarcate comfort space and space shared with vehicles.
- Recent guidance from the UK in relation to shared space design makes it clear that kerb removal and Shared Surfaces are not compulsory in achieving Shared Space or Home Zones. Therefore, until satisfactory evidence exists, through data gathered from national

pilot studies or verification from rigorous international research, which demonstrates successfully the operation of an alternative delineator to kerbs, shared space design, in the short term should maintain an appropriate kerb to indicate the comfort zone for vulnerable pedestrians.

Economic Implications

- This research has found that while a better quality street environment and pedestrian experience has positive implications for the local economy, the economic value of a high quality urban environment is not appreciated by many businesses. In fact British research shows that many businesses overestimate the value of vehicular access while underestimating the value of pedestrian traffic to their business. Using tools such as the 'Pedestrian Environment Review System' (PERS) as developed by TRL limited, or the 'Valuing Urban Realm (VUR) Toolkit', or a similar methodology developed for the Irish context, a cost-benefit analysis is required to help quantify the economic implications of improvements to the urban environment in the Irish urban areas (See Section 12.6 for an explanation of these terms). Whether existing tools are used, or a new Irish specific tool is developed, a consistent set of evaluation criteria is needed, similar to those outlined in 12.6 in this report. If a scoring system similar to PERS is employed then the PERS score of the existing street can be used as baseline in terms of judging the proposed, or completed improvements. While the VUR Toolkit automatically monetises the benefits of urban space improvement, rental values, property prices, or pedestrian footfall can also be used as a indicator proxy for the economic benefit of improving the public realm.

- Further to this, as part of any pre-and-post assessment of the implementation of shared space design, a local cost benefit exercise, along the lines of that outlined above, should be carried out by an objective team of multidisciplinary experts to quantify the affect of shared space design on local businesses. Any such team should be composed of professionals such as; retail experts, architects, landscape architects, roads or civil engineers, and quantity surveyors. Depending on the complexity of the project, the

Maintenance, management, durability and sustainability

- Successful long term maintenance and management of streets and public spaces requires a sense of stewardship amongst the local residential and business community. Any guidelines should stress that the consultation process should have as one of its goals the full participation and support of the community. The physical design and layout of shared spaces, and Home Zones in particular, should carefully consider the interaction of 'defensible space', accessibility to non residents and 'routine activities of place'. In line with this, every effort must be made to ensure that the design process and resulting built environment engenders a sense of ownership, stewardship or territorial guardianship in the local community (See Section 12.7 of this report for an explanation of these terms). This must be driven primarily at the local authority level.
- Continuing maintenance of the shared public or semi-public spaces is critical to the ongoing success of shared space design. 'Broken window' thinking is useful in terms of preventing neighbourhood deterioration, especially in shared public and semi-public spaces where obvious ownership and responsibility may not as clear as privately owned space (See Section 12.7 of this report for an explanation of 'Broken Windows' theory). Management and maintenance schemes should acknowledge that initial minor damage or graffiti can often lead to more widespread disorder and thus undermine the community and any territorial guardianship.
- While a certain level of local authority enforcement is required, the design guidelines should enable a final product that encourages self regulation and self enforcement at a local community level.

Conclusions

The research findings and key recommendations emphasise the current issues associated with shared space design in general and specific concerns expressed by key stakeholders in the Irish context. There is a belief held by many stakeholders that the urban design experienced in Ireland to date was not of a sufficient quality and this had some bearing on their opinion about the potential success of shared space design in Ireland.

While this report contains over sixty key research findings and twenty recommendations it is understood that these need to be prioritised and consideration given to shorter term achievements.

Many stakeholders, particularly those representing end-users had little awareness of shared space design and those that did tended to represent people with visual difficulties. These groups were therefore more aware of the potential difficulties presented by certain existing features of shared space design. However, all stakeholders were supportive of the core principles of shared space design which focus on increased pedestrian priority and the overall improvement of the street environment.

The other reoccurring themes coming out of the stakeholder engagement process centred on the need for evidence based design guidelines specific to the Irish context, serious concerns about Shared Surfaces and the lack of delineation for certain vulnerable pedestrians and the necessity for in-depth stakeholder engagement in relation to both the preparations of guidelines and ongoing local consultation regarding any proposed shared space design schemes. The stakeholders agreed that the Universal Design approach would be critical in meeting end user needs. Upon presenting the preliminary research findings the stakeholders reported that the key research findings now captured the majority of their concerns.

One of the main conclusions of this report finds that pilot studies are necessary immediately to inform end-users about the intentions of shared space design and to learn from direct onsite interactions between selected end-users, the public and local businesses and shared space designed pilot study schemes. Where local authorities are considering urban upgrade or trial pedestrianisation, this would provide an ideal opportunity for such pilot studies. Such pilot studies need to be informed by preliminary site selection criteria, draft design guidelines and an assessment methodology with an associated indicator suite to measure the impact of the alterations. These guidelines and assessment criteria need to be developed prior to the pilot study phase. Once the research has been completed a set of evidence based national guidelines can be created based on these preliminary guidelines.

Such assessment can be carried out immediately on selected existing Home Zones to determine the usability and success of such spaces in terms of Universal Design. This assessment could help inform the preliminary guidelines in relation to Home Zone design specifically. It could also be used to provide initial feedback in connection with any pilot studies associated with non residential Shared Space, and to test an appropriate pre and post construction assessment methodology.

In the short term, if there is still a genuine absence of a reliable alternative to the traditional kerb as a delineator of comfort zones, any shared space design that proceeds should maintain a kerb to act in this capacity. When evidence exists that demonstrates the successful application of an alternative delineator such as a wide tactile strip or similar, then Shared Surfaces may be considered, in consultation with local stakeholders and end-users.

In general there was much support for the Home Zone concept among the stakeholders interviewed, however the same concerns about Shared Surfaces exist. This report finds that Home Zones can bring many benefits to a local community and that with proper guidelines, addressing the concerns of vulnerable pedestrians that Home Zones could be widely implemented throughout Ireland in new build or retrofit schemes.

This report highlights the gaps in knowledge that exist in relation to Shared Space, Shared Surfaces and Home Zones, while the key findings and recommendations propose further research in the Irish context to address these issues. This research acknowledges the potential benefit of shared space design towards the creation of more liveable and pedestrian friendly street environments. Notwithstanding this, the report stresses the need for evidence based design informed by ongoing stakeholder engagement and the ongoing development of best practice. In adopting a Universal Design approach, local public involvement as advocated by Manley (Manley, 2011), an understanding of the local cultural context (Steinfeld, 2010, Steinfeld and Danford, 2007) and a continuous evolution of a design approach (Preiser, 2011), are all central to the sustainability of any high quality, people friendly and Universally Designed streetscape.

Part 1

Introduction, Context and Literature Review

Part 1 of this report, containing chapters 1, 2 and 3, provides an introduction to the report and sets out the aims and objectives of the research. It also discusses not only the concepts of Shared Space, Shared Surfaces and Home Zones, but also puts these concepts in context by presenting some key urban design and street design documentation and practices which provide a framework for the overall research.

1. Introduction

Research context, aims and objectives

Chapter 1 sets out the background for this research and briefly introduces the concepts of Shared Space, Shared Surfaces and Home Zones. It then outlines some benefits and challenges associated with these concepts before going on to present the original project brief, aims and deliverables. The section finishes with an outline of the project structure and research methodology.

"Life between buildings comprises the entire spectrum of activities, which combine to make communal spaces in cities and residential areas meaningful and attractive". (Gehl and Koch, 2011)

1.1. Introduction

According to Jan Gehl, social activity in the public realm is heavily dependent on the quality of the built environment, he argues that "A characteristic common to all optional, recreational, and social activities is that they take place only when the external conditions for stopping and moving are good, when a maximum number of advantages and a minimum of disadvantages are offered physically, psychologically, and socially, and when it is in every respect pleasant to be in the environment"(Gehl and Koch, 2011) Shared Space, Shared

Surfaces and Home Zones are traffic engineering and street or road design concepts aimed at creating safer urban spaces and residential environments where emphasis is on place-making and pedestrians, not traffic movement. These concepts involve removing traditional separation between motor vehicles, cyclists and pedestrians, and the removal of typical lines, kerbs, signs and signals. The idea is to improve road safety by forcing road users to negotiate their way through shared areas at appropriate speeds. The following definitions are taken from recent UK based guidance documents and are being used as accepted definitions throughout this research.

Definition of terms Shared Space, Shared Surface and Home Zones

Shared Space - A street or place designed to improve pedestrian movement and comfort by reducing the dominance of motor vehicles and enabling all users to share the space rather than follow the clearly defined rules implied by more conventional designs. (Department for Transport UK, 2011c)

Shared Surface - Shared space schemes sometimes used what is often referred to as a 'shared surface', where there is no kerb or level difference to segregate pedestrians and vehicles. The term 'level surface' is also used in some situations and this simply refers to "A street surface with no level difference to segregate pedestrians from vehicular traffic". (Department for Transport UK, 2011c)

Home Zone - Home Zone is the UK term for a [residential] street where people and vehicles share the whole of the road space safely, and on equal terms; and where quality of life takes precedence over ease of traffic movement. (Jones and Institute of Highway Incorporated Engineers, 2002)

The research refers to other terms which are used throughout the report and definitions for these terms are included in the sections below.

Definition of Universal Design and Vulnerable Pedestrians

Universal Design - Universal Design is the design and composition of an environment so that it can be accessed, understood and used to the greatest extent possible by all people, regardless of their age, size, ability or disability. This includes public places in the built environment such as buildings, streets or spaces that the public have access to; products and services provided in those places; and systems that are available including information and communications technology (ICT). Disability Act 2005 (http://www.universaldesign.ie/)

Vulnerable Pedestrians – Vulnerable pedestrians is a term used in this report to identify pedestrians such as older people, those with mobility, sensorial, or cognitive.

Shared space design – For the purposes of this report the term shared space design will be used to refer collectively to Shared Space, Shared Surfaces and Home Zones.
difficulties or children.

In recent times Shared Space, Shared Surfaces and Home Zone concepts have become more popular in urban design and town planning practices particularly in the Holland, Germany, Denmark and the UK. Over the last few years these concepts have appeared in various Irish urban design and street design guidelines with some local authorities and private developers starting to employ such techniques.

While Shared Space, Shared Surface and Home Zone principles may provide benefits, they may also present some problems to specific user groups, such as people with visual, hearing or mobility difficulties, older people or children, to name a few. Some of these benefits and problems are as follows

Benefits

- Enhanced safety as drivers and other road users interact in an environment where the car no longer dominates the space.
- Creating a better pedestrian environment through reduced street clutter and signage.
- Helping to revive declining retail areas and enhancing the public realm with places for civic activities.
- Reduced speed & volume of traffic.

Problems

- People with visual difficulties cannot acknowledge the presence of other road users using eye contact.
- Difficult to navigate and way-find for many users.
- Lack of delineators such as kerbs used by children, long cane users, or guide dogs.
- Users unsure how to use Shared Spaces, Shared Surfaces or Home Zones

The shared space philosophy is about "making spaces for people, spaces in which they feel they can relax in and where they enjoy being"(Shared Space Project). However, as outlined above the provision of fully accessible, equitable and legible public space has presented some challenges for the Shared Space concept. In a recent submission to an Oireachtas Committee NCBI highlighted that shared spaces typically "places the emphasis on eye contact and person-to-person negotiation between those using the space to decide on right of way" and therefore presents challenges for visually impaired people (NCBI, 2010). The NCBI also express concerns about the removal of kerbs from Shared Space as typical footpath kerbs provide clear markers and boundaries for those using canes or guide dogs and the lack of such division can cause disorientation and anxiety (NCBI, 2011). In the UK these concerns are shared by others who recognise the potential of Shared Space but also understand that it not without its difficulties. (Thomas Pocklington Trust, 2011)

This research project has come about in light of increasing reference to Shared Spaces, Shared Surfaces and Home Zones in the Irish context and the associated concerns outlined above in relation to more vulnerable road users. The research was undertaken by

TrinityHaus (Trinity College Dublin), on behalf of the National Disability Authority's (NDA) Centre for Excellence in Universal Design (CEUD). The aim is to engage with a wide range of stakeholders in a discussion about Shared Spaces, Shared Surfaces and Home Zones in an Irish context. The project aims to research contemporary national and international practices and thinking on Shared Spaces, Shared Surfaces and Home Zones and provide key recommendations on the direction that the NDA should take on these issues.

One of the central aspects of this research is to examine specific difficulties experienced by vulnerable road and street users and to consider whether a Universal Design approach may provide some solutions. The Centre for Excellence in Universal Design (CEUD) was established by the National Disability Authority (NDA) in January 2007 under the Disability Act 2005 and is tasked with promoting Universal Design and "is dedicated to the principle of universal access, enabling people in Ireland to participate in a society that takes account of human difference and to interact with their environment to the best of their ability" (http://www.universaldesign.ie/)

Therefore in addition to providing recommendations regarding the national and local implications of Shared Spaces, Shared Surfaces and Home Zones for the Irish urban environment, this research aims to consider solutions through a Universal Design approach for the challenges and problems posed for specific users such as those who have visual, hearing, mobility and cognitive difficulties, older people or children.

1.2. Research Objectives from NDA and CEUD

Research and consultation with key stakeholders to determine the following;

- What are the strengths and weaknesses of Shares Spaces, surfaces and home zones?
- How have these weaknesses been resolved?
- Are there specific user groups that have significant difficulties and are there solutions by using a Universal Design approach?
- What has proved difficult in implementing shared spaces, surfaces and home zones and can they be overcome?
- Recommendations for the design of Shared Spaces, surfaces and home zones in Ireland."

1.3. Research Methodology

The research has involved an extensive literature review, case studies and field studies, stakeholder interviews and stakeholder workshops all of which has fed into the key findings presented in this current document. The structure of this research is illustrated in the flow chart below.

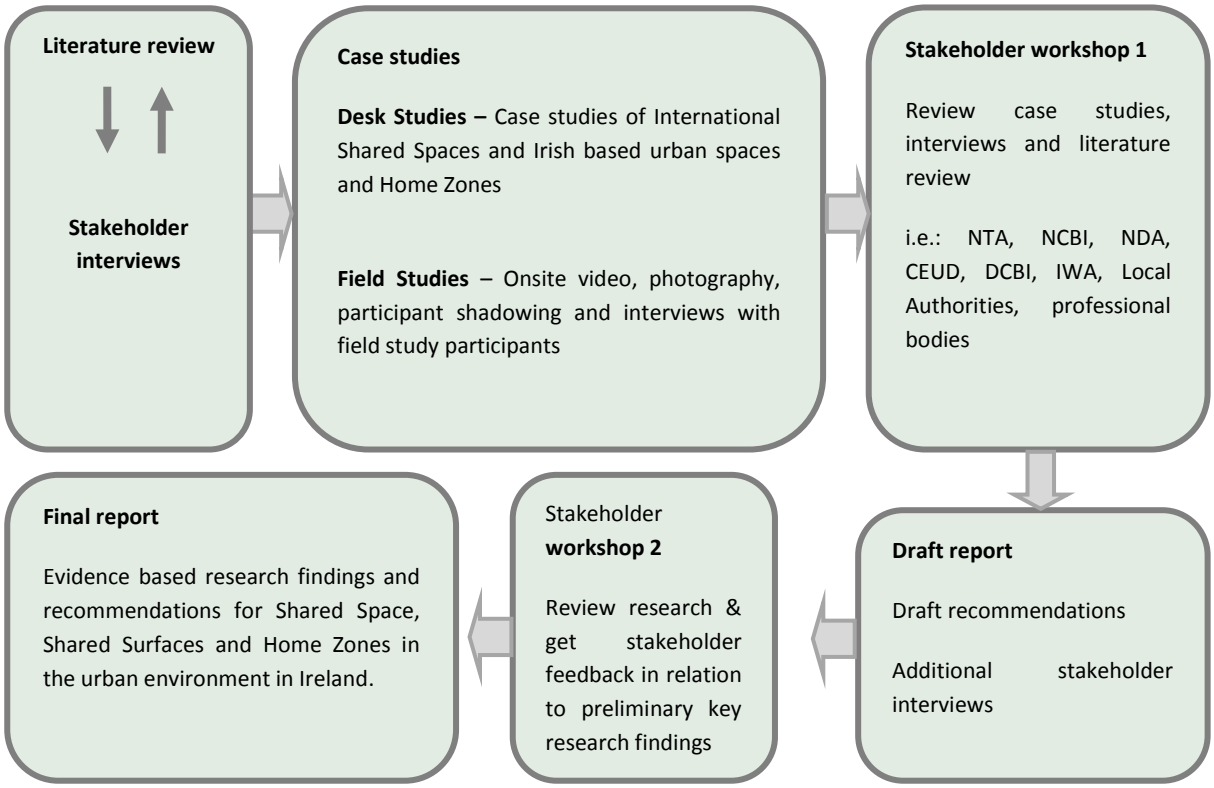


Figure 1.1 – Flow diagram of the research process

1.3.1. Literature Review

Much of the literature reviewed for this document is contained in Chapter 2 and Chapter 3. However, a significant amount of additional literature is referenced elsewhere throughout the document as required. This review has involved a diverse spread of online searches using 1) peer reviewed journal and conference papers sourced from Scopus and Science Direct databases 2) literature from Trinity College Dublin libraries and online databases and 3) material from Google, Google Scholar and other similar online search engines. The key search terms used included; Shared Spaces, Shared Surfaces, Home Zones, Woonwerf, Naked Junctions, Shared Streets, Civilised Streets, Shared Zones, Liveable Streets, and Living Streets. Furthermore, many stakeholders throughout the engagement process also highlighted and provided relevant material to the research team, thus providing an added layer of references and insight which would have been more difficult without this interaction.

Chapter 2 looks at a wide range of national urban design literature to provide a background for the application of shared space design in Ireland and to see where shared space design is already being implemented or recommended. This review of the literature sets the overall context for the research of Shared Space, Shared Surfaces and Home Zones through a Universal Design approach for the urban environment in Ireland.

Chapter 3 then focuses directly on the concepts of Shared Space, Shared Surfaces and Home Zones and details the International literature which is reviewed to fully understand the historical context, current thinking and practices in relation to shared space design. The research refers to shared space design schemes and literature from the Netherlands, Germany, Denmark, Sweden, the UK, Japan, New Zealand, Australia and the United States. While the Scandinavian countries, such as Sweden or Denmark as listed above, are often at the forefront of urban and user-centred-design, the literature review carried out for this project did not reveal much material on shared space design in these countries. It may be that such material has not been widely published or possibly that it has not been translated into English. However there are a few key sources specific to shared space design, such as the European Interreg (an EU funded research programme) 'Shared Space' project (includes Denmark), which is examined closely in this current report. There is also a selection of highly relevant UK based Home Zone documents, or the recently published UK Department for the Environment 'Shared Space' Local Transport Note 1/11. The literature arising out of these sources has proven invaluable to this research and has helped to inform the research process throughout.

1.3.2. Interviews

Interviews with over thirty individuals and engagement with over twenty organisations produced a large amount of feedback and helped steer the direction of the research. This is detailed in Chapter 5.

1.3.3. Field Studies

A series of on street observation and interview exercises were carried out with a range of different street users including people with sensory and mobility difficulties, a driver, a cyclists, an older person, a person of small stature and a parent with a child. This field study was designed to understand the typical navigational cues and challenges associated with moving through a standard street environment. This details of this field study are contained in Chapter 6

1.3.4. The use of Persona to investigate user experiences

In order to help all stakeholders understand the issues that face vulnerable pedestrians and other street users, participants in the first workshop were assigned predesigned personas representing a range of user needs. They were asked to envisage, through workshop handouts, a certain journey through a selected streetscape and comment on their experiences. This is outlined in Chapter 7.

1.3.5. Case studies

A number of key urban sites in Dublin, Cork and Galway, and existing Home Zones in Galway and Dublin were visited and analysed to examine how people use public urban space and illustrate some current urban design practices in Ireland A selection of these case studies are presented in Chapter 9.

1.3.6. Workshops

Chapters 7 and 11 outline the first and second workshops respectively. These workshops were used to present and discuss findings with all stakeholders with the resulting feedback informing and shaping the key findings and recommendations.

1.3.7. Ongoing working papers and reports

At the start of the project a briefing document was prepared which outlined the research aims and objectives and provided some definitions and background information on Shared Space, Shared Surfaces and Home Zones. This was sent to all stakeholders as screen reader friendly PDF. Throughout the process a series of working papers were written and prior to the second workshop a preliminary research findings report was prepared and sent to all stakeholders to inform them fully in advance of the workshop discussions. These documents and preliminary reports now form a this report.

2. Urban and Street Design

A literature review of the Irish context

The concepts of Shared Space, Shared Surfaces and Home Zones need to be considered in the larger context of urban design and street design. It is important to fully understand how these concepts are influenced by urban design and traffic management best practice. In more recent years a greater appreciation for the urban public realm has brought about renewed interest in the quality of urban spaces and city streets. This section outlines a range of urban design and road or street design documents that are currently in use in Ireland. These documents provide design guidance for local authorities, design professionals and building developers. This literature is reviewed to provide a context for Shared Space, Shared Surfaces and Home Zones in Ireland and to see what documents refer to these concepts and to examine what guidance, if any is provided.

"The major challenge for urbanism in the Information age is to restore the culture of cities. This requires a socio-spatial treatment of urban forms, a process that we know as urban design. But it must be an urban design able of connecting local life, individuals, communes, and instrumental global flows through the sharing of public spaces" (Castells, 2011).

2.1 Introduction

Jane Jacobs declared that "Streets and their sidewalks, the main public spaces of a city, are its most vital organs" (1961), while Gehl, in discussing outdoor activities in the city states that "Life between buildings comprises the entire spectrum of activities, which combine to make communal spaces in cities and residential areas meaningful and attractive"(Gehl and Koch, 2011). The value of high quality public urban space has long been recognised as an essential part of any civilized society, from Alberti's 'Ten Books on Architecture' in 1452 (Alberti et al., 1988), to the work of the Urban Task Force in the UK (Urban Task Force and Rogers, 1999).

In the Irish context, in a recent public realm strategy prepared for Dublin City (Dublin City Council, 2011b), the public realm of the city is referred to as "all areas to which the public has access (such as roads, streets, lanes, parks, squares and bridges) make up the 'public realm'. This includes the publicly accessible space between buildings, along with the spaces and the buildings or other structures that enclose them." The strategy goes on to talk about the importance of a high quality public realm and points out how it is vital to the life of the city and greatly impacts on movement, access to services, orientation, accessibility, business and safety. In fact this strategy embeds the principles of Universal Design as discussed earlier and states that "The Public Realm Implementation Group advocates the use of Universal Design Principals as a standard for planning and design. Using these will deliver public space that is safe and easy to navigate, thus increasing Dublin's attractiveness to business and as a place to live." While this document refers specifically to Dublin, the principles are equally valid for all cities, towns and villages in Ireland and clearly identifies the importance of decent streets, roads, parks, squares and public spaces to the quality of life in urban areas.

The public realm strategy discussed above follows a number of other key documents which provide urban design and street design guidance in Ireland. In turn, many of these documents have been greatly influenced by design guidance originating in the UK such as the **Manual for Streets** (Department for Transport UK, 2007) and its companion guide **Manual for Streets 2 : Wider Application of the Principles** (Chartered Institution of Highways and Transportation, 2010), **Urban Design Compendium 1** (English Partnerships & Housing Corporation, 2003), **Urban Design Compendium 2: delivering quality places** (English Partnerships & Housing Corporation, 2007) and **By Design-Urban design in the planning system: towards better practice** (Commission for Architecture & the built Environment, 2000)

Section 2.2 looks briefly at the various Irish design guidance documents to provide some background to the Shared Space, Shared Surface and Home Zone concepts. In some cases

these concepts are referred to specifically and in such instances reference will be made to the relevant sections.
Section 2.3 outlines some key guidance in relation to detailed design such as pedestrian crossings, kerb design and tactile paving. The final part of the material in this part of the literature review, section 2.4 moves away from hard infrastructure and engineering approaches and looks briefly at road user behaviour in the context of 'Sustainable Safety' principles as developed in Holland.

2.2 Urban Design, Road and Street Design in Ireland: Best Practice and Guidelines

The following documents, which are in chronological order, provide the majority of urban design, road design and street design guidance in Ireland. As discussed above, some of these documents, especially the more recent documents, refer specifically to Shared Space, Shared Surface and Home Zone concepts (reference will be made to the relevant sections). However, they mostly provide more general urban design, road and street design guidance. An exploration of these documents is useful to put Shared Space, Shared Surface and Home Zones in context and to see how they are being referred to in the Irish guidance documentation.

2.2.1. Streets as Living Space: Dublin (Dublin Transportation Office, 1998)

The Streets as Living Space: Dublin was one of the early documents to look at the public realm and focus on quality of life for pedestrian users in the city. This document is part of a wider research project which involved a number of other European cities and is largely composed of surveys aimed at understanding how people use and travel around the city. Rather than focusing purely on transportation, the document considered larger quality of life issues and adopted a more pedestrian centred and public transport orientated approach. The surveys looked at a range of issues such as; Modes of Transport, Purpose of journey, Social activities, Preferred areas of the city, problems experienced as a pedestrian and Parking, among others. The document set forward a set of recommendations including; an increase in pedestrianisation, a better cycling network, reduced on street parking, and improvements to specific areas such as O'Connell Street and the Grafton Street area. In the context of this research this document is interesting as it is one of the first documents to identify the quality of city streets and public spaces as an integral part of the public realm. As the title makes clear, a city's streets should not merely act as transportation routes, but be seen as part of any city's living space.

Key issues in relation to Shared Space, Shared Surfaces or Home Zones

Requirement for larger pedestrian areas with careful street design, well equipped with street furniture, seating and greenery to enable outdoor social life.

Long waiting times at pedestrian crossings leading to irritation, stress and danger due to people crossing at a red light.

High traffic volumes and excessive parking leading to a 'boundary effect' where pedestrian areas are not sufficiently linked to each other.

2.2.2. Traffic Management Guidelines (Dept. of the Environment Local Government et al., 2005)

This document is a national manual to provide traffic management guidance promoting sustainability and accessibility through improvement to and better management of the transport system (Dept. of the Environment Local Government et al., 2005). Section 1.6 (pg. 23), which refers to road hierarchy, states that shared pedestrian / vehicular areas may be appropriate on Access roads where design speeds are 20mph or less. According to section 1.8 (pg. 25) Minor access roads, which generally serve up to 50 dwellings, and again where design speeds are 20mph or less, may also have shared surfaces for motorists and other road users. This document discusses European experiences in terms of traffic calming in Section 6.1 (pg. 79), referring in particular to Holland where "Woonerfs" (Living areas) where motorists are forced to drive at low speeds and share road space with cyclists and pedestrians. Section 7.2 talks about speed restraint measures including Entry treatment, Shared surface, Carriageway narrowings and chicanes, Speed reduction bends, Speed control islands, Change of priority at junction, Traffic Island, and Speed table/cushion. This document describes Shared surface as follows;
"This is where a road does not have a separate footway. These can serve up to 50 dwellings and may need further calming features if longer than 80m. The minimum width of the road should be 4.8m but may require widening on bends. The road surface finish should contrast visually and texturally with other conventional access roads so that drivers do not assume precedence."

Key issues in relation to Shared Space, Shared Surfaces or Home Zones

Shared pedestrian / vehicular spaces may be appropriate on Access road with a speed of 20mph.

Shared Space may be used as a traffic calming measure in residential areas with other appropriate measures such as entry treatment, carriageway narrowing and chicanes, speed reduction bends, speed control islands, priority junctions and traffic islands.

2.2.3. Design Manual for Roads and Bridges (DMRB) The National Roads Authority (NRA), 2007.

The "Design Manual for Roads and Bridges" (DMRB) was introduced in 1992 in England and Wales, and subsequently in Scotland and Northern Ireland. A modified version, the "National Roads Authority Design Manual for Roads and Bridges" (NRA DMRB) was formally introduced for use in Ireland from 2001. These guidance documents are aimed principally at primary roads and larger infrastructure works of national importance that carry larger volumes of traffic over longer distances, rather that urban spaces and residential areas (The National Roads Authority, 2007). The proposed Design Manual for Urban Streets (referred to later in this section) will act as a companion guide to the DMRB and will focus on the street design of Ireland's cities, towns, suburbs and villages.

Key issues in relation to Shared Space, Shared Surfaces or Home Zones

This document was never intended to provide detail design guidance for urban or residential areas. It was principally aimed at larger national and regional roads or primary distributor roads in the urban context. The forthcoming Design Manual for Urban Streets will fulfil the role of providing design guidance for streets in the urban context.

2.2.4. Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas (Cities, Towns and Villages). (DEHLG, 2009a)

"The aim of these guidelines is to set out the key planning principles which should be reflected in development plans and local area plans, and which should guide the preparation and assessment of planning applications for residential development in urban areas" (DEHLG, 2009a). In section 3.15 of this document it is stated that design of streets should start by considering people, not the movement of traffic. Section 3.18 refers to Home Zones and defines them as;

"Home Zones" are residential streets in which the road space is shared between drivers and other users and where the wider needs of residents (including pedestrians, cyclists, and children) are emphasised in the design. In these cases, very low traffic speeds allow a sense of place to be prioritised over movement. The street can be designed as an attractive place with distinctive paving, planting, play areas and seating. Shared vehicle / pedestrian surfaces can serve up to 25 dwellings where there is one point of access and up to 50 dwellings where there are two access points. Particular attention should be paid to the design of entry points to shared surfaces; for example, the use of tight kerb radii, ramps at entry points, and distinctive surface materials and colours, will help to emphasise the difference between shared surfaces and other types of street. Consideration should also be given to the needs

of blind or visually impaired people who might normally rely on the presence of a footpath kerb."

Key issues in relation to Shared Space, Shared Surfaces or Home Zones

Street design should start by considering people, not traffic.

Home Zones provide the opportunity in residential areas to remove the priority from cars and meet the wider needs of residents.

2.2.5. Urban Design Manual: A best practice guide, Part 1 and Part 2- (Department of the Environment Heritage and Local Government, 2009)

This document was published as a companion document to Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas (Cities, Towns and Villages). The manual outlines 12 criteria aimed at generating high quality residential development. These include; Context (does the development respond to its surroundings) Connections (How well connected is the neighbourhood), Inclusivity (How easily can people use and access the development), Variety (How does the development promote a good mix of activities), Efficiency (How does the development make efficient use of resources, including land), Distinctiveness (How does the proposal create a sense of place, Layout (How does the proposal create people friendly streets and spaces), Public Realm (How safe, secure and enjoyable are the public areas), Adaptability (How will the buildings cope with change), Privacy and amenity (How does the scheme provide a decent standard of amenity), Parking (How will the parking be secure and attractive) and Detailed Design (How well thought through is the building and landscape design).
When discussing criteria 7 –Layout (pg. 57-58), the manual advises that in residential areas with low levels of motorised traffic that it may be appropriate to design the street as a Shared Surface. The authors go on to outline how the Shared Space concept;
"seeks to affect the behaviour of the road user – be they a driver, cyclist or pedestrian – by the design of the road and the presence of other users. This differs from Home Zones in that there is less reliance on signage and traffic calming measures."

Key to the creation of Shared Spaces is the removal of the distinction between roadway and pavement. The resultant blurring between the two encourages people to exercise their natural caution and results in slower traffic speeds and a safer environment for pedestrians and drivers alike."

Other 'softer' methods of reducing traffic speeds that have been derived as part of the Shared Space philosophy include the removal of traffic lights and formal junction markings, encouraging higher levels of on-street parking." (DEHLG, 2009b)

Key issues in relation to Shared Space, Shared Surfaces or Home Zones

The use of Shared Space design may be appropriate in certain residential areas with low levels of traffic.

This document distinguishes Shared Space design from Home Zone design by stating that Shared Space design relies less on signage and traffic calming measures.

2.2.6. Adamstown Street Design Guide (South Dublin County Council, 2010)

This street design guide was published as part of the South County Dublin, Adamstown Strategic Development Planning Scheme. The idea is to implement place based street design which creates walkable streets that provide direct links between communities, public transport, shops and other facilities. The document seeks to provide detailed street design guidance to achieve the following;

Safe Streets that passively manage vehicular behaviour through a holistic design approach and 'shared space' philosophy.
Accessible Streets with a focus on the free movement of vulnerable users such as cyclists and pedestrians.
Attractive Streets that enhance the areas sense of place and people's enjoyment of the urban environment.
Legible Streets that direct and assists the most casual of users in finding their way around.
Cost Effective Streets where materials, finishes and street furniture are rationally and strategically applied.
Innovative Streets that continue to evolve through the application of best practice and contemporary design models.

The manual clearly differentiates between roads and streets. It states that roads are used to distribute traffic, while "A street is multi-functional and is a place to live, work, walk, cycle, interact and spend time." There are many references to Shared Space, Shared Surface Streets and Home Zones throughout the manual with construction details provided for Home Zone shared carriageways. (South Dublin County Council, 2010)

Key recommendations in relation to Shared Space, Shared Surfaces or Home Zones

Clearly distinguishes roads from streets, stating that roads are for distributing traffic while streets are a place to live.

One of the few published design documents that provides detailed design guidance in relation the use of Shared Space design for Home Zones.

2.2.7. Your City Your Space: Draft Dublin City Public Realm Strategy (Dublin City Council, 2011b)

As referred to at the beginning of this section, this public realm strategy has recently been published and it outlines a number of key challenges which must be addressed. The strategy highlights the following challenges which are relevant to this research;

"Space is for everyone - Public spaces must be welcoming and accessible to all people in society. How public spaces meet the need of those with access difficulties as well as their attractiveness to groups such as children or the elderly has to be considered and developed.

Clearing congestion - Ease of movement of people and goods through the city is critical to Dublin's future success. Making Dublin a pleasant and accessible city for walking will aid this, but continual innovation is required to meet the requirements of the diverse street user groups. Too much traffic (and its controls, such as pedestrian barriers) impacts negatively on the street environment because of noise and the compromise in air quality. Pedestrian congestion itself is also proving to be a growing challenge in some areas.

It's time to declutter - There has been a proliferation of street furniture, signage and other forms of street clutter in recent years. Some of this is in response to legal requirements; some is caused by low controls on informal installations and signage. This clutter has negatively affected the accessibility of spaces and their visual quality. Removing or reducing clutter where possible would contribute positively to the public realm." (Dublin City Council, 2011b)

Key recommendations in relation to Shared Space, Shared Surfaces or Home Zones

This document states that "Planning and design for the public realm has to recognise the importance of creating enjoyable spaces that are convenient, accessible and safe.

Universal Design principles should be used to ensure the city's spaces are safe, easy to navigate and facilitate daily life and business for all regardless of age, size or ability.

2.2.8. Design Manual for Urban Streets (proposed for 2012) – (insert ref. about not being published as yet – NRA

The 'Department of Environment, Community and Local Government' and the 'Department of Transport, Tourism and Sport', are currently finalising the 'Design Manual for Urban Streets' which will be Ireland's first national level design guide for urban streets. This document will apply to all streets and roads in all cities, towns, suburbs, and villages in Ireland to which a speed limit of up to 60kph applies. The intention is to create a more sustainable balance between place and movement functions. through the provision of

pedestrian and cycle friendly, public transport orientated communities. While full details of this document are not yet available, it is understood that the document contains some guidance on Shared Spaces and Home Zones with reference to shared carriageway surfaces, kerbs and vertical and horizontal deflections as traffic calming measures. The document is due for release in the coming months.

Key recommendations in relation to Shared Space, Shared Surfaces or Home Zones

This is the first national document to provide design guidance specifically for urban streets in Irish cities, towns and villages.

Puts forward a pedestrian focused approach which prioritises sustainable forms of transport, while emphasising the place function rather than the movement function.

The guidance will also refer specifically to Shared Space, Shared Surface and Home Zone design with reference to carriageway materials, kerb design and traffic calming measures.

The document also recommends a multi-disciplinary approach to the design of streets and promotes community consultation as an integral part of the design process.

2.3. Design for Accessible Streets: Footways, crossings and tactile paving

The Traffic Management Guidelines (Dept. of the Environment Local Government et al., 2005), discussed earlier in Section 2.1., includes a chapter which outlines the key design requirements for facilities for people with mobility or sensory difficulties.

This document firstly focuses on the following the barriers and hazards that my impede pedestrians especially those with sensory or mobility difficulties;

Insufficient footpath width - especially at staggered junctions.

Absence of dished crossings or poorly designed / constructed crossings – To be provided at controlled and uncontrolled crossings with an optimum ramp of 1:20 and to be flush with the road surface or have a maximum upstand of 6mm.

Trip hazards - Kerbs, loose or cracked paving., or sunken chamber covers.

Obstruction of footpaths- Cars, advertising or street furniture.

Inadequate illumination of hazards – Use high quality sodium lighting with lamp columns to the rear of the footpath, thus not providing an obstacle.

The document then goes on to discuss the appropriate layout and location of tactile blister paving, controlled crossing devices and basic design dimensions as follows:

Tactile blister paving – Tactile paving is used to guide those with visual difficulties, whether this is to guide them towards certain features or warn them of potential hazards. At controlled crossings and zebra crossings, red tactile blister paving should be used in an L-shaped configuration. Grey or buff coloured tactile paving should be used at uncontrolled crossings to warn of dished kerb edge and prevent them for accidently stepping out onto the road.

DETAILS OF TACTILE LAYOUTS AT CROSSINGS POINTS

Use	Colour	Shape	Width of blister paving
Controlled crossing facility	Red	Varies (see below)	
1. On pathways at either side of road		L shape	Stem 1200mm wide kerbside 800mm / 1200mm at inset [a] or 1200mm at line [b]
2. On central islands (refuges)		Kerbside	800m wide at each side if greater than 2m wide or full width if less than 2m wide
Uncontrolled crossing point	Grey or Buff	Varies (see below)	
3. On footways at either side of road		Kerbside	800mm / 1200mm at inset [a] Crossing point 1200mm wide at line [b] Crossing point
4. On central islands (refuges)		Kerbside	800mm wide at each side if greater than 2m wide or full width if less than 2m wide

[a] Inset crossing is away from junction

[b] In-line crossing is at junctions in line with direct pedestrian movement

Figure 2.1 – Details of tactile paving at crossing points (Dept. of the Environment Local Government et al., 2005)

Beyond the typical blister paving (1) which is used to indicate a pedestrian crossing, there is also Corduroy paving (2) to convey the message of a hazard ahead and to proceed with caution, and (3) Platform edge warning surface to alert users that they are approaching the edge of an on-street light rail platform. In certain circumstances, such as in historic areas,

stainless steel studs set in granite paving slabs (4) are used as blister paving. These typical tactile paving types are illustrated below in Figure 2.2.

Figure 2.2: Typical tactile paving types

Audible and Tactile Devices for controlled crossings – The Traffic Management Guidelines also describe how audible bleepers emitting a pulsed tone to notify the pedestrian with visual difficulties that they can cross. The document also describes how difficulties can be experienced at staggered crossings and signals with split pedestrian phases due to confusion between various signals or adjacent signals.

Basic Design Dimensions – This chapter of The Traffic Management Guidelines finishes with a section describing adequate dimensions and passage widths for key pedestrians. A wheelchair requires a length of 1140-1500mm with a passage width of 900mm. A wheel chair being pushed by another person requires a length of 1750, while an adult with a guide dog requires a length of 1500mm and a passage width of 1100mm. A person with a child's push chair requires a length of 1900mm and a width of 670mm-1100mm.

2.4. Sustainable Safety: Human behaviour and road safety

Much of the literature reviewed so far is related to hard infrastructure and engineering solutions. However, the concept of "Sustainable Safety" which originated in the Netherlands in 1992, places the human and human behaviour at the centre of road safety. Developed by the Institute for Road Safety Research (SWOV)- The Netherlands, the goal of Sustainable Safety is to prevent serious crashes, and where this is not possible to reduce the chances of severe injury. This approach focuses on road user education as well as infrastructure.

There are five principles to sustainable safety which are based on theories from road engineering, biomechanics, and psychology. These principles include, Functionality, Homogeneity, Predictability, Forgiveness, and State Awareness as outlined in Figure 2.3 below (Wegman et al., 2006).

Sustainable Safety Principles	
Functionality of roads.	Mono functionality of roads, as either through roads, distributor roads, in a hierarchically structures road network.
Homogeneity of masses and/or speed direction.	Equality in speed, direction and masses at medium and high speed.
Predictability of road course and road user behaviour by a recognisable road design.	Road environment and road user behaviour that support road user expectations via consistency and continuity in road design.
Forgiveness of the environment and of road users.	Injury limitation through a forgiving road environment and anticipation of road user behaviour.
State awareness by the road user.	Ability to assess one's own task capability.

Figure 2.3:The five Sustainability Safety Principles (Wegman et al., 2006)

The Sustainable Safety concept is now being employed in many countries, including Ireland, where it underpins the National Cycle Manual as prepared by the National Transport Authority (2011a). Initial conversations between the research team and the National Transport Authority and the Road Safety Authority (RSA) during this research revealed that these organisations are more frequently looking at the Sustainable Safety principles in terms of their own policy.

The principles of Sustainable Safety are very relevant to the concepts of Shared Space, Shared Surfaces and Home Zones which requires specific driver, cyclist and pedestrian behaviour to facilitate safe and comfortable use of the space by all users.

The principle of functionality suggests that the design of a road must be guided by its primary function which may be either movement or place creation. Sustainable safety divides roads into three main categories; 1) Through roads which allow traffic flow, 2) access roads that provide access to destinations such as a residential or shopping street, and 3) distributor roads which connect the other road types. Through roads have more of a movement function, while access roads have more of a place function and therefore traffic does not take priority here (Wegman et al., 2006). This echoes the movement and place functions discussed in the Department for Transport Shared Space Local Transport Note (2011c), which places a greater movement function on motorways and a greater place function on residential streets. Shared space design seeks to develop the place function of streets while maintaining a movement function (Department for Transport UK, 2011c). It therefore seems that shared space design may be feasible on access roads but are inappropriate for through roads where separation between motorised vehicles and other roads users is preferable.

The principle of homogeneity recommends that all road users on a road have similar speeds, mass and direction in order to reduce accident rates and their severity. Sustainable safety recommends that if pedestrians and cyclists cannot be separated from motorised traffic then speed limits should be restricted to 30km/h (Wegman et al., 2006). There is an issue with shared space design as all forms of road users are mixed together, therefore leading to great differences in mass. Also the direction of movement may be greatly varied, however due to the low speeds created by shared space design the speed of movement may be homogenised (Department for Transport UK, 2011c).

Sustainable safety also highlights the need for predictability and suggests that all road users should be able to read and understand the road design safely and should be able to predict the behaviour of other road users accurately. A predictable design should be self-evident, self-explanatory, and self-enforcing (National Transport Authority, 2011a). All road users' need to be aware of the likely behaviour of other road users and they need to be able to understand in advance the route they have to negotiate. The increased legibility of the road is based on continuity and consistency of road design, however shared space design may often reduce predictability of the road design as well as the road user behaviour due to a removal of traditional road marks, signage and delineation (Department for Transport UK, 2011c).

Forgiveness applied to both the road design and the interaction of different road users with one another. The road should be designed in such a way that if accidents occur they will have the most favourable outcomes possible.

In terms of the interaction between different road users, this principle suggests that they should anticipate each others' behaviour and errors, thereby reducing accident rates. This principle is very applicable to shared space design in which the interaction between different road users is often said to be a negotiation based on eye contact. Recent work suggests that visual communication is often one way, as the drivers assess the potential behaviour of pedestrians and therefore respond accordingly (Department for Transport UK, 2011c).

Self-awareness is also a key principle to sustainable safety and it recommends that all road users should be able to assess their own abilities and limitations on safely using a road. With regards to shared space design this has important implications as it is essential that vulnerable pedestrians be fully educated as to the design of Shared Space, Shared Surfaces and Home Zones so that they can determine how best to navigate safely through the space.

3. Shared space design

An international literature review of Shared Space, Shared Surfaces and Home Zones

Shared Space, Shared Surfaces and Home Zones are traffic engineering and street or road design concepts aimed at creating safer urban and residential spaces where emphasis is on place-making and pedestrians, not traffic movement. These concepts involve removing traditional separation of motor vehicles, cyclists and pedestrians, and the removal of typical lines, kerbs, signs and signals. The idea is to improve road safety by forcing road users to negotiate their way through shared areas at appropriate speeds.

3.1. Introduction

"Nearly everyone in the world lives on a street. People have always lived on streets. They have been the places where children first learned about the world, where neighbours met, the social centres of towns and cities, the rallying points for revolts, the scenes of repression. But they have also been the channels for transportation and access, noisy with the clatter of horses' hooves and the shouts of their drivers, putrid with dung, garbage, and mud, the places where strangers intruded and criminals lurked" (Appleyard, 1981)

Appleyard paints a colourful historical picture of the street and in one sense outlines how streets throughout history were typically shared among all users until modern planning practices started to segregate the pedestrians from the carriageway in an effort to deal with the new phenomenon of motorized traffic. Still today, in villages, small towns and backstreets of cities throughout the world, many streets are still shared among all road users with little formal segregation of pedestrians and motorists. Frequently side streets in large Japanese cities such as Tokyo are comprised of a shared surface with no delineation between the carriageway and footpath. These streets were not designed following the principles of Shared Space, or with the aim of reducing accident rates, but instead a result of limited available space (Reinventing Urban Transport, 2010). In an examination of shared community spaces in the Yanaka district of central Tokyo, Sorensen (2009) writes about the many public side streets which are too narrow to accommodate large amounts of vehicular traffic. They have instead been used by all members of the local community for generations. Sorensen compares these shared spaces to the sidewalks of Greenwich Village in New York as described by Jacobs (1961). These are used by the community as their primary space for safe travel, social interaction and the shared activities of everyday life. In recent times these spaces have taken gained significance and local communities are stressing the importance and fragility of these spaces and using them as a focus in the face of redevelopment.

3.2. History of shared space design

While many such de facto shared spaces existed throughout history, it was the early 1960's and 1970's that saw emergence of formal approaches to creating liveable residential urban environments. Appleyard (1981) discusses the 1963 'Traffic in Towns' prepared by Colin Buchanan (Buchanan and Ministry of Transport (UK), 1963) a report prepared for the British government which sought to deal with the increasing problem of motorized traffic in cities. Buchanan, who had a background in engineering and architecture proposed a planning approach which provided efficient access and distribution of vehicles while maintaining a satisfactory standard of environment. In an attempt to protect this environmental quality, this report called for the creation of environmental areas or urban rooms where through traffic would be excluded and forced to travel instead along distributor roads. To achieve the creation of environmental areas, while maintaining vehicular access, Buchanan proposed the building of traffic decks and urban motorways. According to Appleby, this aspect of the report was unfortunately more readily adopted by city planners rather than the creation of environmental areas. Hamilton-Baillie (2008b) argues that the segregation of pedestrians and traffic in cities largely grew from this feature of the Buchanan report and he points to the UK Ministry of Transport 1966 publication 'Roads in Urban Areas' which states that "Traffic segregation should be the keynote of modern road design'.

However, while the Buchanan report may be seen by many as the instigator of traffic and pedestrian segregation, it could also be contested that through the proposed environmental

areas, where on specific streets pedestrians should to be able to cross where and when they wanted (Appleyard, 1981) Buchanan was also one of the earliest proponents of formally designed and intentional Shared Space.

Ben-Joseph (1995) discusses the impact of the Buchanan report on the creation of the Woonerf concept. He points out that while some of these proposed environmental areas were planned to totally segregate traffic from pedestrians, others would allow the mixing of traffic and pedestrians safely in the street through the physical redesign of the street to reclaim the public realm for the pedestrians. Ben-Joseph describes how Niek De Boer, a professor of Urban Planning at Delf University of Technology and the University of Emmen in the Netherlands looked to Buchanan's concept of vehicle and pedestrian coexistence in these environmental areas. De Boer applied similar thinking in the late 1960's to the design of cul-de-sac residential areas in a form that made motorists feel as if they were driving in a "garden" setting and called this kind of a street a 'Woonerf' which translates as a residential yard. Ben-Joseph refers to the Woonerf as a 'shared street' and describes how this idea was quickly adopted and established through guidelines and regulations; firstly in the Netherlands (1976), then reaching Germany (1976), England, Sweden and Denmark (1977), France and Japan (1979), Israel (1981) and Switzerland (1982). Appleyard (1981) also refers to the Woonerf as a "shared space" in his exploration of liveable streets and it could be argued that the Woonerf is the foundation of the modern Shared Space concept.

While the Woonerf concept refers specifically to residential areas, the use of shared space design not specific to residential areas, was initially developed in the 1980's, again in the Netherlands by Hans Monderman. Subsequently the use of Shared Space on the high street or other non exclusively residential areas has spread across Europe with recent applications in the US, Australia and New Zealand. Shared Space schemes have been in operation since 1985 in villages such as Oudehaske in northern Holland while some of the most widely reported Shared Space projects such as Drachten and Haren, are also based in the Netherlands. Further to these, Shared Space principles have been successfully employed in the UK including high profile schemes on New Road, Brighton, and Exhibition Road in Kensington, London. Home Zones have been employed in many UK towns and cities, while in Ireland Home Zone designs have been implemented in Ireland including Galway city and Ballymun and Adamstown in Dublin.

While much of the literature surrounding shared space design uses the phrase 'Shared Space', there are other related concepts and terms such as Shared Surfaces and Home Zones. Other ideas such as Civilised Streets (CABE, 2008), Shared Street (Auckland City Council, 2009) or Naked Street (Auckland City Council, 2009) use similar traffic calming principles. Whichever term or specific concept is employed, the main aim is still the same, to create a public urban space or residential area that facilitates the movement and safe interaction of pedestrians of all ages and abilities, cyclists, and vehicular traffic in an inclusive, safe, fully accessible, legible and pleasant environment.

However, this document seeks to address specifically the concepts of Shared Space, Shared Surfaces and Home Zones, to clarify their meaning and to examine whether these concepts are appropriate in the Irish context for all users.

This section of the report firstly examines the concept of 'Sharing' in the context of Shared Spaces, Shared Surfaces and Home Zones, as this is critical to an overall understanding of the issues. The following sections then separate out the concepts into Shared Space and Shared Surfaces, and Home Zones and looks at literature from Europe, Australia, New Zealand and the USA. There is however, an emphasis on recent UK based guidelines as the UK is often viewed as a leader in the field in terms of guideline development; Auckland City Council based much of its Shared Space development on UK guidelines (Karndacharuk A. et al., 2011). Also, it was felt by the research team that UK guidelines were more appropriate to the Irish context due to the similarity in climate, culture and legislation.

It is acknowledged that there is much overlap between the principles of Shared Space, Shared Surfaces and Home Zones, however, in the interest of clarity they are examined individually in this part of the report. The following definitions, some of which have been already stated in Part 1, refer to some of the key terms used in this report and are outlined at this stage to further clarify some of the key concepts and terminology. Shared space design and Vulnerable pedestrians have been added as two new definitions and these are included below.

Definition of terms Shared Space, Shared Surface , Home Zone and Shared Space Design

Shared Space - A street or place designed to improve pedestrian movement and comfort by reducing the dominance of motor vehicles and enabling all users to share the space rather than follow the clearly defined rules implied by more conventional designs. (Department for Transport UK, 2011c)

Shared Surface - Shared space schemes sometimes used what is often referred to as a 'shared surface', where there is no kerb or level difference to segregate pedestrians and vehicles. The term 'level surface' is also used in some situations and this simply refers to "A street surface with no level difference to segregate pedestrians from vehicular traffic". (Department for Transport UK, 2011c)

Home Zone - Home Zone is the UK term for a [residential] street where people and vehicles share the whole of the road space safely, and on equal terms; and where quality of life takes precedence over ease of traffic movement. (Jones and Institute of Highway Incorporated Engineers, 2002)

Shared space design – For the purposes of this report the term shared space design will be used to refer collectively to Shared Space, Shared Surfaces and Home Zones.

Definition of Universal Design and Vulnerable Pedestrians

Universal Design - Universal Design is the design and composition of an environment so that it can be accessed, understood and used to the greatest extent possible by all people, regardless of their age, size, ability or disability. This includes public places in the built environment such as buildings, streets or spaces that the public have access to; products and services provided in those places; and systems that are available including information and communications technology (ICT). Disability Act 2005 (http://www.universaldesign.ie/)

Vulnerable pedestrians – Vulnerable pedestrians is a term used in this report to identify pedestrians such as older people, those with mobility, sensorial, or cognitive difficulties or children

3.3. Sharing

In a recent Shared Space Transport Note prepared by the Department of Transport in the UK, sharing is seen as a measure of how well pedestrians can use a space without having to give priority to motorists or cyclists. (Department for Transport UK, 2011a). This document defines sharing as;

"The ability and willingness of pedestrians, facilitated by the sympathetic behaviour of motorists and others, to move freely around the street and use parts of it that, in a more conventional layout, would be considered largely dedicated to vehicular use"

The authors point out that indicators of sharing include; pedestrians occupying the carriageway, increased levels of interaction and leisure activity, people spending longer in the street, drivers and cyclists giving way to pedestrians, pedestrians crossing the street at locations, angles and times of their choosing, and drivers and cyclists giving way to one another.

Research carried out by Kaparias *et al* (2011) into the willingness of drivers to share space with pedestrians suggests that this willingness to share is highly dependent on certain variables such as lighting, the presence/absence of children and older people. It was found that good lighting was conducive to sharing while the presence of children and older people can make drivers uneasy and therefore less willing to share. However in a later paper Kaparias *et al* (2012) also points out that such uneasiness also led to enhanced driver alertness. This paper finds that pedestrians are most comfortable in a Shared Space when their presence is clear to other road users and where the conditions include low vehicular traffic, high pedestrian traffic, good lighting and pedestrian only facilities.

3.4. Shared Space and Shared Surfaces

The use of the terms Shared Space and Shared Surfaces often proves confusing and are sometime incorrectly used interchangeably. Shared Space is a term used to describe an overall street or public space with a number of design measures to encourage all users, motorist, cyclist and pedestrian to share the full extent of the street. While Shared Surfaces relates specifically to the actual street surface of the Shared Space where there is no kerb to separate the carriageway from the footpath. Many Shared Spaces contain Shared Surfaces, but this is not essential. The current thinking is that less demarcation and segregation of the carriageway from the footpath encourages greater 'sharedness' thus reinforcing the overall traffic calming objectives (Department for Transport UK, 2011b). The following sections explore these individual concepts in more detail to help distinguish between the terms.

3.4.1. Shared Space

According to recent Shared Space design guidance from the UK, Shared Space is defined as;

"A street or place designed to improve pedestrian movement and comfort by reducing the dominance of motor vehicles and enabling all users to share the space rather than follow the clearly defined rules implied by more conventional designs." (Department for Transport UK, 2011a)

Figure 3.1 – Example of Shared Space – Brighton Road (Gehl Architects, 2012)

Shared Space is a whole street design approach which typically uses minimal road markings, signage, traffic lights, pedestrian barriers and other traffic management measures. Shared space design is often introduced to improve the quality of the built environment, and according to an appraisal of Shared Space as conducted by MVA Consultancy (MVA & Department for Transport UK, 2009), seeks to achieve a range of outcomes such as;

- Improving the urban environment
- Giving people freedom of movement rather than instruction and control
- Improving the ambience of places

- Enhancing social capital
- Enhancing the economic vitality of places

Much of the literature on Shared Space refers to the Place/Movement Matrix as introduced in the Manual for Streets (Department for Transport UK, 2007). Figure 3.2 below shows this matrix and proponents of Shared Space would argue that Shared Space design balances these functions in favour of the Place function, while retaining the Movement function, as opposed to pedestrianisation which typically removes the movement function altogether. It is argued that this balance is essential to the true sharing of streets (Department for Transport UK, 2011b)

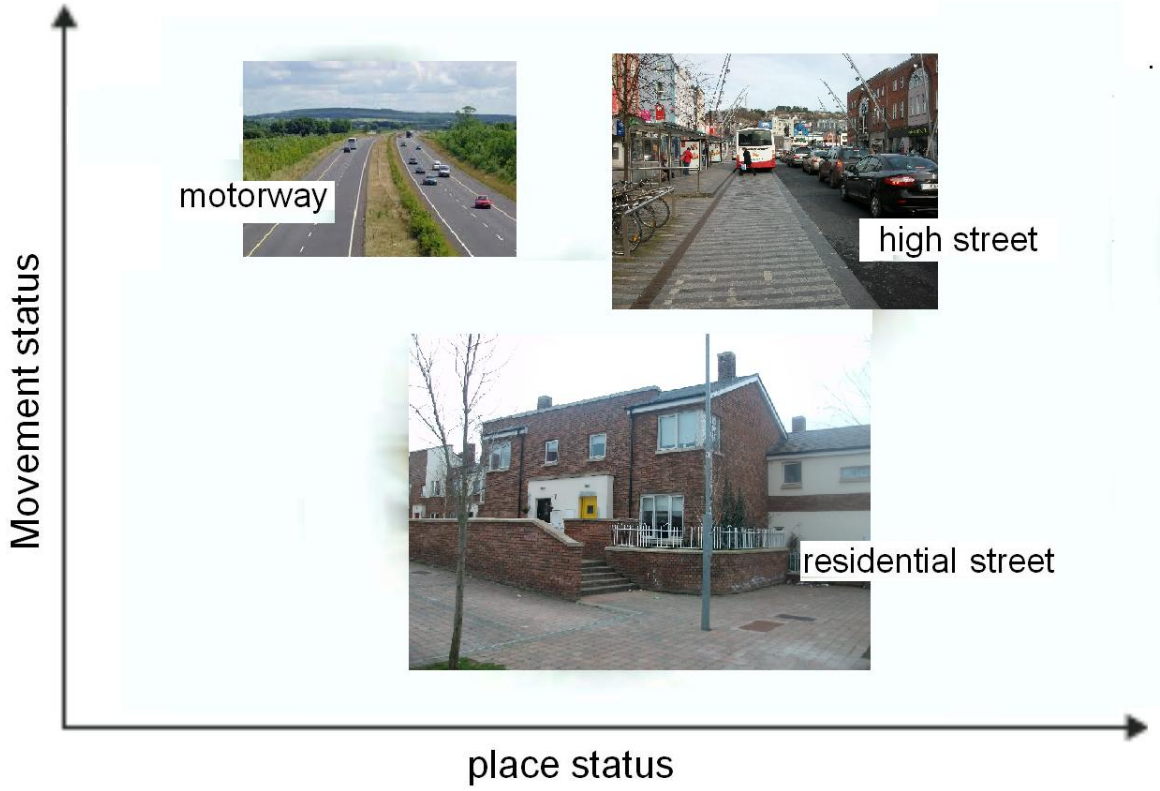


Figure 3.2 – Place/movement matrix. (long description to be included) Adapted from (Department for Transport UK, 2007)

Shared Space Project –Five partner countries led by the Netherlands

As mentioned earlier, Hans Monderman is widely recognised as one of the earliest proponents of Shared Space through his work in the Netherlands from the 1980's until his untimely passing in 2008. Between 2004 and 2008, Monderman collaborated with the UK based Shared Space expert, Ben Hamilton-Baillie on an Interreg IIIB funded European project called 'Shared Space' which defined Shared Space as;

"a new philosophy and set of principles for the design, management and maintenance of streets and public spaces, based on the integration of traffic with other forms of human

activity. The most recognizable characteristic of shared space is the absence of conventional traffic signals, signs, road markings, humps and barriers - all the clutter essential to the highway. The driver in shared space becomes an integral part of the social and cultural context, and behaviour (such as speed) is controlled by everyday norms of behaviour" (www.shared-space.org)

This European Shared Space project involved seven partners in five countries, including the Netherlands, Belgium, Denmark, Germany and the UK. This project was possibly the most in-depth and extensive research programme into Shared Space undertaken to date and produced a number of documents with detailed research findings. ((Shared Space project team, 2005, Shared Space project team, 2008a, Shared Space project team, 2008b, Shared Space project team, 2008c, Shared Space project team, 2008d)

According to one of the final documents produced by the Shared Space Project, 'Final Evaluation and Results, the project was influenced by concerns about the decline of public space and increasing segregation and "grew out of widespread interest in measures to improve the quality, liveability, sustainability and economic vitality of the built environment" (Shared Space project team, 2008d). The first partner workshops threw up a number of themes and objectives including;

- Road safety: reduce the number of accidents and change the perception of risk which has become a barrier to walking.
- Community safety: reduce crime and fear of crime while improving the public realm and perceptions around security.
- Economic regeneration: renew deprived neighbourhoods and encourage greater investment through an improved and more distinct public realm.
- Public engagement: greater public participation in the design and management of public spaces with associated enhanced cohesion and democratic participation.
- Liveability: Enhanced attractiveness and sustainability of public realm while improving the interaction between built and natural environment.

Each participating country had at least one pilot project as varying from a rural road in the province of Fryslan in the Netherlands to a major project for Bremer Strasse in the German town of Bohmte which carries approximately 12,600 vehicles per day. Each pilot project had varying levels of redevelopment to incorporate Shared Space measures and at the time of publication of the research all projects were reporting some level of early success.

In addition to the initial themes which developed early in the project, a number of additional findings are outlined in the final project evaluation document including the following;

- Speed: At speeds above 30kph the use and quality of urban space is negatively affected.
- Influencing speed: Driving speeds are greatly influenced by the driver's interpretation of their context and therefore a key aspect of Shared Space is the engagement of drivers with other road users and their environment.

- Risk and promotion of safety: There is a paradox where oftentimes the safest places are those that appear to be most dangerous. In Shared Space there is the need to introduce a degree of uncertainty and unpredictability to encourage better behaviour.
- Integration of profession skills and expertise: Conventional segregation between traffic and public realm has also segregated built environment professionals. Successful Shared Space requires the integration of several disciplines, local authorities, politicians and local stakeholders.
- Lower speeds and improved transport efficiency: Evidence from some Shared Space projects which lowered traffic speeds resulted in a reduction in delays and congestion and improved journey times.
- Coping with change: The removal of kerbs, barriers and controlled crossings which is typical of many Shared Space schemes proves challenging to many users especially those with visual difficulties. A new set of navigational and guidance clues are required in order for people with visual difficulties to positively experience the space.
- Social interaction and liveability: One of the key aims of Shared Space is to reconcile the wide range of functions that a typical street must facilitate. The ordinary daily social interactions that take place on the street are critical to social cohesion, safety, public health and economic activity.

Throughout the Shared Space Project literature, the research team stress the need to combine engagement at several levels, across various service areas within any local authority with the design and implementation process. The team developed 'The Nine Cell' model to describe and track progress with the many stakeholders through the various stages of the Shared Space process (see Figure 3.3 below).

	Administration	Design	Implementation
Vision	Political vision. Requires clear set of values and objectives for the public realm	Clarification of design principles and objectives	Application of best practice, knowledge and experience.
Working Methods	Administration aimed at empowerment of communities and maximum participation	Creativity. Observations, not assumptions. Interdisciplinary co-operation. Communication methods	Co-operation and co-ordination of multiple agencies with an impact on streetscape and the public realm.
Tools	Process skills and communication tools	Participative design methods. New professional boundaries and integration.	Selection and deployment of materials, use and testing of new materials, technologies and equipment

Figure 3.3 – The 'Nine Cell' Model developed by the Shared Space Project (Shared Space project team, 2008d)

The 'Final evaluation and results' report at the end of the research project concludes that "Shared Space defines a set of integrated ideas about people, movement and public space" (Shared Space project team, 2008d). The authors urge a rethink of the public realm to enable greater responsibility and control for the local community. They also stress the deeper importance of urban centres as places for human interaction, the formation of bonds, and the expression of civic values and beliefs.
Since its widespread introduction in the Netherlands in the 1980's, shared space design schemes have implemented all over Europe in a similar manner to the Netherlands. Some of these formed part of the Shared Space Project discussed earlier, while others developed independently.

Germany

In Germany, the town of Bohmte in the state of Lower Saxony, with a population of 13,000 people, decided to redesign a section of Bremen Street as part of the Shared Space Project (See Figure 3.4 below). In 2006 the plan was to remove segregation between traffic and pedestrians, remove the footpaths and asphalt and cover the entire space with cobbles (Schulz, 2006). Only two traffic rules would remain, vehicles must travel at a maximum speed of 30km and everyone must yield to their right, regardless of whether it is a car, bike or pedestrian. While many city officials were confident that the scheme would work, Whitlock reports a comment by one local woman who is reluctant to use the street on her bicycle stating that "I don't know if I will feel comfortable riding down" (Whitlock, 2007).

Figure 3.4 – Bohmte, Germany (http://www.verkeersnet.nl/2030/vragen-rond-shared-space-blijven-ook-na-duits-onderzoek)

Denmark

Copenhagen, in Denmark has undergone radical transformation over the last forty years in terms of creating a more pedestrian friendly city. Gehl Architects have been involved in much of this and have written extensively about their experiences (Gehl, 2010, Gehl and

Gemzøe, 1996, Gehl and Koch, 2011). While large areas of Copenhagen have become car free through pedestrianisation, many shared space designed streets also exist which are specifically designed and designated to give pedestrian priority (See Figure 3.5 below).

Figure 3.5 – Copenhagen's Shared Streets (alyse, 2012)

Sweden

Hamilton-Ballie discusses a Shared Space implemented in the Swedish University town of Norrköping (2008a).The redesign of Skvallertorget (Gossip Square) included a single surface, kerb-less plaza with contrasting boundary paving materials to define the space. Hamilton-Baillie refers to research carried out by the Swedish firm Tyrens (Jaredson, 2002) and states that 13,000 vehicles traverse the space daily, including bendy-buses and that pedestrian activity and economic has increased around the square. It is reported that most pedestrians take a direct route across the middle of the square and traffic speeds, delays and congestion have also been reduced. However, while confidence in using the pace is increasing, there are still concerns expressed by older people and those with visual difficulties (See Figure 3.6)

Figure 3.6 – Skvallertorget, Norrköping, Sweden (alyse, 2012, Jaredson, 2002)

The Shared Space concept which originated and developed in Europe is now being implemented in many other parts of the world including Australia, New Zealand, the US and beyond.

Australia

There has been a movement in Australia towards more pedestrian friendly urban design where typically Australia would have been considered a car dominant society.
In 2000, the Roads and Safety Authority in New South Wales (RTA) produced a practitioners guide for creating more pedestrian friendly commercial centres which centred on 'Sharing the main street' (Roads and Traffic Authority New South Wales, 2000). While the majority of the document refers to the creation of traffic calmed high streets through environmental adaptation and not Shared Space per se, there are useful references to gateways, thresholds, staggered carriageways and other measures typical to shared space design. There is however one section which refers specifically to the design of Shared Space and outlines a set of criteria for shared space design. Compared to later guidance, very high traffic volumes are permitted, up to 12,000 vehicles per day in country towns and with a limitation of 16,000 vehicles per day in more urbanised settings.

The liveable communities guidance published by the Western Australian Government (2009) proposes the use of shared streets for access streets within residential areas. The recommendations for these shared streets include; a low speed environment, 30 km/h or less, up to 1000 vehicles per day and the street to be of a short length, less than 150 meters.

Recently the Western Department of Transport, in conjunction with other state authorities have produced a series of planning guidelines including the 'Planning and designing for pedestrians: Guidelines' (Department of Transport Western Australian Government, 2012). This emphasises the needs of vulnerable pedestrians and recommends the adoption of Universal Design to meet the needs of all users. This document proposes the use of 'Shared Zones' where pedestrians and vehicles mix, but motorists must give way to pedestrians. This guidance limits the location of Shared Zones to central business districts, tourists areas and heritage areas. The zone once completed should meet a number of criteria among them; traffic volumes less than 300 cars per day, a speed limit of 10kmh, a legal right of way for all pedestrians and the removal of kerbs to eliminate the perception of vehicle priority. There are also guidelines for surface treatment, gateway design and road widths.

The Australian VicRoads Traffic Engineering Manual Vol. 1 Design Guidelines (VicRoads, 2010) also recommends a normal speed limit of 10 kmh, with a maximum speed of 20 kmh and states that the kerb should be removed to enhance the sense of equality between pedestrians and vehicles. They reiterate the need for clear transition zones on all entry and exit points to Shared Zones. The design guidelines suggest that Shared Space may not be

suitable on streets that carry over 200 vehicles per hour in peak periods, or over 1,000 vehicles between 7 am and 7 pm or in areas with a history of speeding problems. These are far more conservative than the 'Sharing the main street' guidance referred to earlier.

Figure 3.7 – Port Macqaurie, New South Wales, Australia (Tooby, 2009).

Tooby's (2009) analysis of the intersection of Horton and Clarence Street in Port Macquarie in New South Wales, reveals how this intersection, shown in Figure 3.7 above, has operated as a Shared Space since its redevelopment in 1995. Tooby describes how the junction is trafficked by 800 cars at peak times and that in the period from 1995 to 2009 there had not been a single reported accident resulting in a minor injury. While some confusion has been experienced at the intersection, especially through the tourist season, the overriding opinion from local police, local authority representatives and members of the public interviewed was that the intersection was a success. Interestingly, Tooby points out that one of the traffic engineers involved argues that this intersection works on the 'intrusion principle' rather than the sharing principle. The intrusive competition generated in the space makes all users feel unsafe and therefore heightens the safety of the environment.

A Sidney Morning Herald article (Lucas, 2007) referred to a proposed Shared Space scheme for Bendigo City in Victoria using the term 'naked streets', a description frequently used for shared space design in Australia. The author reports on a plan to remove kerbs and greatly widen the footpath to return the city to pedestrians and cyclists. Using similar terminology, Sutcliffe carried out a review of 'Shared Space and Naked Intersections' for the Municipal Engineering foundation Victoria (Sutcliffe, 2009).Concentrating on the experiences in the Netherlands and comparing these to Shared Space practices in Australia, Sutcliffe believes that Australian guidelines are too conservative and that greater traffic volumes and road widths could be accommodated in Australian Shared Space. He also contends that while the right of way for pedestrians exhibited in the Netherlands changes the priority for pedestrians, this has not been the case in Australia. However, the right of way enshrined in the Shared Zone proposal in Western Australia as discussed earlier may change this.

New Zealand

New Zealand's Manukau City Council *Local Area Traffic Management* guidelines (2004) recommends similar Shared Zones as a traffic management device for commercial areas, medium to high density residential areas, and low traffic volume recreational areas. The guidelines recommend a 10 km/h speed limit and highlight the need for differentiation between Shared Zones and ordinary streets.

In 2009 the New Zealand Transport Agency produced the 'Pedestrian planning and design guide' (New Zealand Transport Agency, 2009) in which they propose a number of pedestrian environment concepts which are relevant to Shared Space. One concept is called 'Living Streets" where priority is given to community interaction and where drivers are made aware of the importance of pedestrians and other users, sharing is not explicitly mentioned however. Shared zones which are similar to the Australian model, are defined as "a residential or retail street that has been designed to give priority to residents and pedestrians while significantly reducing the dominance of motorised vehicles" and they are compared in this document to Home Zones and Woonerfs. Finally there is a reference to 'Sharing the main street', and again this is taken from the Australian guidance previously discussed.

Over the past few years Auckland City Council has completed a number of Shared Spaces in the central business district and is planning more in the future. According to the Council, monitoring on the recently redeveloped Darby street in Auckland city centre has recorded fifty percent more pedestrian activity, fewer cars and motorists travelling along the street at approximately 16km/h (Auckland City Council, 2011b).

Figure 3.8 – Darby Street, Auckland City during launch of new Shared Space. (long description to be included) (Auckland City Council, 2011b)

It appears that the council have been proactive in informing people how to use Shared Space with on-street events and online information with tips and rules for using Shared Space (Auckland City Council, 2011a). These include instructions in relation to stopping a vehicle, pedestrian right of way and the presence of pedestrian only zones which run along the sides of the street. Figure 3.8 above shows Darby Street upon completion but prior to full opening and the admission of vehicles.

USA

In the US up until recently, much of the Shared Space implemented has taken place in alleys and streets with low levels of traffic. In a New Urban Network article, Langdon discusses various shared space design schemes and reports how one designer refers to the value of experimenting with intimate streets as they form a natural refuge (Langdon, 2008). However he also points out that Shared Space is appearing in more prominent locations such as Longfellow Street in Santa Monica, California and Linden Street in San Francisco. In 2008 Winthrop Street and Palmer Street in the Harvard Square area of Cambridge, Massachusetts was converted to Shared Space and according to the city's community development officer, it has been well received (Langdon, 2010). Langdon reports how Winthrop Street scheme has become so successful from a business perspective that restaurant owners pushed for the closure of the street to traffic for certain periods of the day. While in San Francisco, a section of Linden street, seen in Figure 3.9 below, has become the city's first 'living alley'. A San Francisco Chronicle article by King (2010) describes how the scheme grew out of a 2002 plan where existing alleys in the city were to be recast as places where "people and cars share space…a common front yard for public use and enjoyment". King reports how a kerb free street has been created with the vehicle passage narrowed by planting and low benches, and how it has been given a legal status as a 'living alley'.

Figure 3.9 – Linden Street 'Living Alley'. (King, 2010)

Hiatt and Supawanich (2010) outline a number of shared space design schemes throughout the US, including Terry Avenue North in Seattle. They examine the legal and local guideline challenges that face Shared Space in the US. In the absence of specific Shared Space legislation, the authors point to the Californian Vehicle Code with references to the legal pedestrian and vehicle rights of way in both 'crosswalks' and 'driveways'. While suggesting that both concepts might help clarify liability issues, a crosswalk gives pedestrians the right of way in a street and that an entire street could be categorised as a crosswalk and therefore the liability in a Shared Space street would be clear.

The authors declare that very few city wide Shared Space policies have been implemented and that any guidelines or codes have been adopted on a very narrow basis. Again the Harvard Square area of Cambridge is referred to and the authors discuss how the city code has come some way to supporting shared space design. Guidelines dictate that all motorized and non motorized vehicles must yield to pedestrians and all vehicles must proceed with caution and at a slow speed (below 10mpH or 16kmh). Designation of a Shared Space is at the discretion of the city Traffic Director.

With the implementation of more Shared Space schemes in San Francisco, the Planning authority have recently published guidelines which help clarify the purpose and detailed design of Shared Space streets. The San Francisco Better Streets Plan: Policies and Guidelines for the Pedestrian Realm, (San Francisco . Planning et al., 2010) uses the term 'Shared public ways' which are defined as "public right-of-ways designed for pedestrian use which permit vehicles and bicycles to share the open space." This document states that Shared Public Ways should;

- "Prioritize use of the entire right-of-way for pedestrians and public space over vehicular through travel
- "Accommodate small numbers of vehicles at low speeds as necessary for local access to building entries and driveways, on-street parking, loading, service and emergency access, and deliveries; and
- provide clarity for people with visual impairments regarding the shared pedestrian / vehicular nature of the space."

Some of the criteria for these spaces specify that Shared public ways may be considered on streets which do not have parking garages with greater than 100 parking spaces; have through traffic of fewer than 100 cars per hour; and do not have transit service. The guidance also recommends; alternative paving materials to make the space distinct, yet provide coherent patterns and a smooth surface; small plazas or vehicle free areas; landscaping and street furniture to allow barrier free pedestrian movement; and the facility to close the street for events or markets. Visual and tactile cues must be present to differentiate between the Shared Space and traditional streets and to define pedestrian only zones and shared zone areas. A posted speed limit of 10mph (16km/h) will apply and all

motorists and cyclists must yield to pedestrians. This is one way in which the Shared public way may differ from Shared Space as implemented in Europe, where all users are typically treated as equals and the space is shared. Traffic calming measures, some of which are illustrated in Figure 3.10 below, are also recommended in the form of gateways through narrowing of the carriageway; a raised entrance so traffic must ascend a driveway apron into the space; signage to notify users about the space, speed limit and indication of pedestrian priority, distinct paving materials to send tactile and visual cues to drivers; and finally chicanes to provide horizontal deflections to slow traffic.

The guidance also stresses the need for community consultation and input from people with disabilities. Further to this the document highlights the issue of maintenance and how responsibility for maintenance of all Shared public ways needs to be clarified prior to any approval of a proposed scheme.

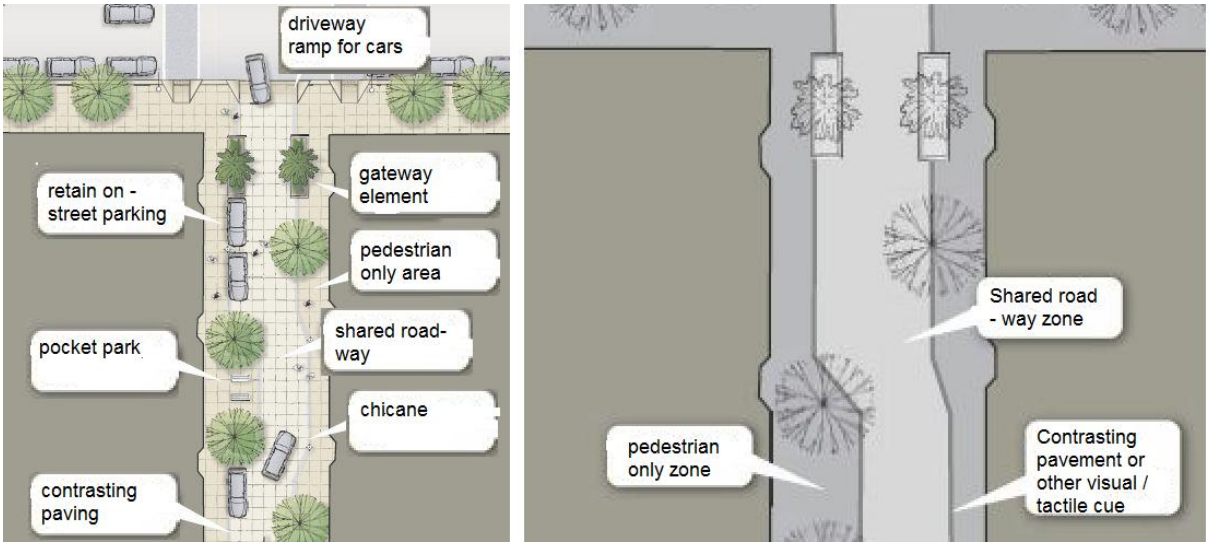


Figure 3.10 – Shared public way guidance (San Francisco . Planning et al., 2010)

This section has referred to Shared Space schemes as they have been appearing internationally and has in many cases referred to level surfaces and kerb-less streets. Indeed, many Shared Spaces contain Shared Surfaces as a feature, but Shared Space is not totally reliant on this feature. The following section examines the concept of Shared Surfaces to illustrate the differences and understand where it fits in the overall context of Shared Space.

3.4.2. Shared Surfaces

Shared space schemes sometimes used what is often referred to as a ‘Shared Surface’, where there is no kerb or level difference to segregate pedestrians and vehicles. The term ‘level surface’ is also used in some situations and this simply refers to “A street surface with

no level difference to segregate pedestrians from vehicular traffic" (Department for Transport UK, 2011a)

Figure 3.11 – A Shared Surface in Adamstown, Dublin.

Figure 3.11 above shows an example of a Shared Surface where there is no distinct pedestrian footpath or vehicular carriageway. This street has been constructed with no level differences or segregation of people from vehicles to encourage users to occupy and use the entire street surface. The low kerb in front of the houses is used to distinguish defensible space for the houses and does not form part of the street per se. The street is thus composed of a level street to be shared equally by all users whether motorist, cyclist, or pedestrian.

3.4.3. Shared Space and Shared Surface: Guidelines from the UK

Over the past few years there has been an increased interest in shared space design in the UK as measure to create more civilised and liveable streets. In response, the Department for Transport commissioned an evidence based research programme to appraise Shared Space Design in the UK context. This programme included a number of reports form MVA consultancy (MVA & Department for Transport UK, 2009, MVA Concultancy, 2011a, MVA Concultancy, 2011b, MVA Concultancy, 2011c) which finally informed the first UK Department for Transport Shared Space design guide in 2011 which took the form of a Local Transport Note. This guidance is very relevant to the Irish context due to a similar climate, legislative and regulatory system and urban culture. Therefore this guidance is briefly outlined below.

3.4.4. **Shared Space (Local Transport Note 1/11**) (Department for Transport UK, 2011b)

This guidance is evidence based, focuses on Shared Space in high street environments and states that it has a particular emphasis on stakeholder engagement and inclusive design. The document sets out much of the background for Shared Space, discusses user needs and behaviours and then goes on to provide design guidance.

User needs and behaviour- In discussing user behaviour, the authors refer to the need for eye contact between road users, including motorists, cyclists and pedestrians when crossing a Shared Space. Their contention however, is that this communication is often one-way, and that it is typically the driver who must see the other road user, rather than a two –way visual communication. Further into the document, the authors outline typical user needs of pedestrians, cyclists and motorists but also refer specifically to people with disabilities including; mobility impairment, visual impairment, hearing impairment and cognitive impairment. The use of building edges and kerb lines as key navigational cues are acknowledged and this issue is again addressed in the design guidance section of the document.

Scheme Development – Much emphasis is placed on stakeholder consultation as part of the design process. Establishing a vision, purpose and actions is central, while the using a mulit-disciplinary team, auditing the design and providing post scheme monitoring is also critical to any Shred Space design project.

Design – The document sets out general design considerations including gathering occupancy data and dealing with maintenance, material selection and historic site issues. More detailed design is also provided and this refers specifically to the following:

- De-cluttering of unnecessary signage markings and traffic management measures.
- Designing for low speed with a preferably speed of 15mph (24kph) or lower.
- Providing transition zones from Shared to traditional street spaces.
- Promote uncontrolled crossings but with the use of courtesy crossings.
- Use of level surfaces to encourage greater sharing, but only where appropriate.
- Tactile paving in the form of corduroy delineator where level surfaces are used.
- Creation of a comfort space where required to create a pedestrian only zone.
- Use of a ladder grid crossing pattern to create set crossing points between safe zones.
- Careful parking and goods loading design to prevent obstruction of pedestrians.
- Appropriate location of cycle parking positioned if possible near other trip hazards.
- Coordination with public transport and if necessary localised raised kerbs at bus stops.
- Seating to create a sense of space, to provide resting places possibly at 50m intervals.
- Reduced traffic signs and road markings as a fundamental part of Shared Space design.
- Adequate and evenly distributed lighting for safety and night time sense of place.
- Level surfaces with appropriate cross fall and possible use of Sustainable urban drainage.

- Adequate wheel loading design for the entire area of space to allow maximum flexibility.
- Consider traffic impact on adjacent streets to maintain the living environment elsewhere.
- Monitor schemes and carry out remedial measures where required.

3.4.5. Shared Space and Shared Surface – Existing Examples

This section will briefly examine one Dutch based and one UK based Shared Space and Shared Surface examples. Very different examples are deliberately chosen to demonstrate the different contexts where Shared Space design has been used. The Laweiplein junction in Drachten is a very busy traffic intersection while the New Road in Brighton and the CBD in Auckland are predominantly used by pedestrians.

Laweiplein, Drachten, Friesland, the Netherlands

One of the most well publicised Shared Spaces in Europe is the Laweiplein junction in Drachten. This was one of the last spaces redesigned by Hans Monderman, one of the pioneers of Shared Space, before his untimely death in 2008 (see Figure 3.12 below). In a New York Times article Monderman demonstrates how the space works by walking out safely into the space without any incident or conflict with the motorists using the space. He states that in this space “People have to find their own way, negotiate for themselves, use their brains” (Lyall, 2005). According to the article some 20,000 drivers use the intersection which is stripped of all lights, signs and road markings and Monderman is quoted as saying that typical traffic management measures give the wrong signal to drivers, one where they believe they have priority and do not pay due regard to all other road users such as pedestrians and cyclists.

Figure 3.12 – Laveiplein junction Drachten before and after Shared Space design measures were implemented (Hamilton-Baillie, 2008b)

According to Hamilton Baillie (2008a) this area was previously configured as a typical traffic intersection with formal crossing areas, traffic lights, bus and cycle lanes and was

considered unattractive to pedestrians and cyclists. The volume of traffic through the space necessitated the use of a small roundabout in redesigned Shared Space but this is well integrated into the design of the overall space. Hamilton Ballie contends that this space is now a coherent and well functioning public space where pedestrians, cyclists and motorists interact in a more civilised manner (see Figure 3.13 below). He quotes an evaluation of the reconstruction of the space carried out by the local municipality (Smallingerland Municipality, 2007), which claims that the annual injury rate at the intersection has fallen from 8.3 to 1 in the three years since reconstruction.

Figure 3.13 – Laveiplein junction Drachten (Hamilton-Baillie Associates, 2012)

However, research carried out by The Guide Dogs for the Blind Association in the UK, which worked with focus groups in the Netherlands to look at shared space design in terms of those with visual difficulties, has raised concerns about the Shared Space in Drachten (Thomas, 2006). During a visit to the Shared Spaces in Drachten with p+ eople with visual difficulties, it was noted that the user groups found the space difficult to use due to lack of segregation between traffic and pedestrians, disorientation due to Shared Surfaces and problems using the building line to navigate because of obstacles such as shop displays. The absence of a kerb to form a 'shore-line' exacerbated this experience.

New Road, Brighton, the UK

In 2007 Brighton and Hove Council carried out works to New Road and converted it into a Shared Space (see figure 3.14 below). In a study carried out as part of a European funded 'CIVITAS' project, the local authority spoke to the local business community and the general public and found that a positive response to the new design (Mayor and Coleman, 2011). The public responded well to the less car dominated space, citing reduced segregation of the space as a positive contributor to their perception of ownership. There was also the belief that cars and cyclists moved more carefully through a space shared by pedestrians.

Local businesses also reported positive feedback with regard to a sense of ownership, street appeal and that the more balanced street environment increases the sense of community amongst businesses and makes them more likely to care for their environment.

Figure 3.14 – New Road Brighton (Gehl Architects, 2012)

Figure 3.14 – New Road Brighton (Gehl Architects, 2012)

However, similar to the experiences in Drachten, there was not the same positive feed-back from those with visual difficulties. Before and after surveys carried out by the UK Guide Dogs for the Blind Association (Thomas, 2007), found that while some of their users found the traditional street layout hard to navigate due to obstacles, they still felt safe. On the Shared Space street, the lack of kerbs and other navigational cues made them feel very unsafe and the majority of participants would not use this space by themselves or would avoid it altogether.

Central Business District, Auckland, New Zealand

As referred to earlier, shared space design schemes incorporating Shared Surfaces have been implemented on a number of streets in the Central Business District of Auckland, including the Elliott, Lorne and Fort Street areas. There is a consistent design for these streets and includes spaces that are divided into Shared Space which can be used for all users, and a comfort zone called an Accessible Route which is designed to cater more specifically for the needs of vulnerable pedestrians such as those with visual difficulties. (Karndacharuk A. et al., 2011) This Accessible Route is 1.8m wide on either side of the Shared Space and is delineated using tactile paving, see figure 3.15 below.

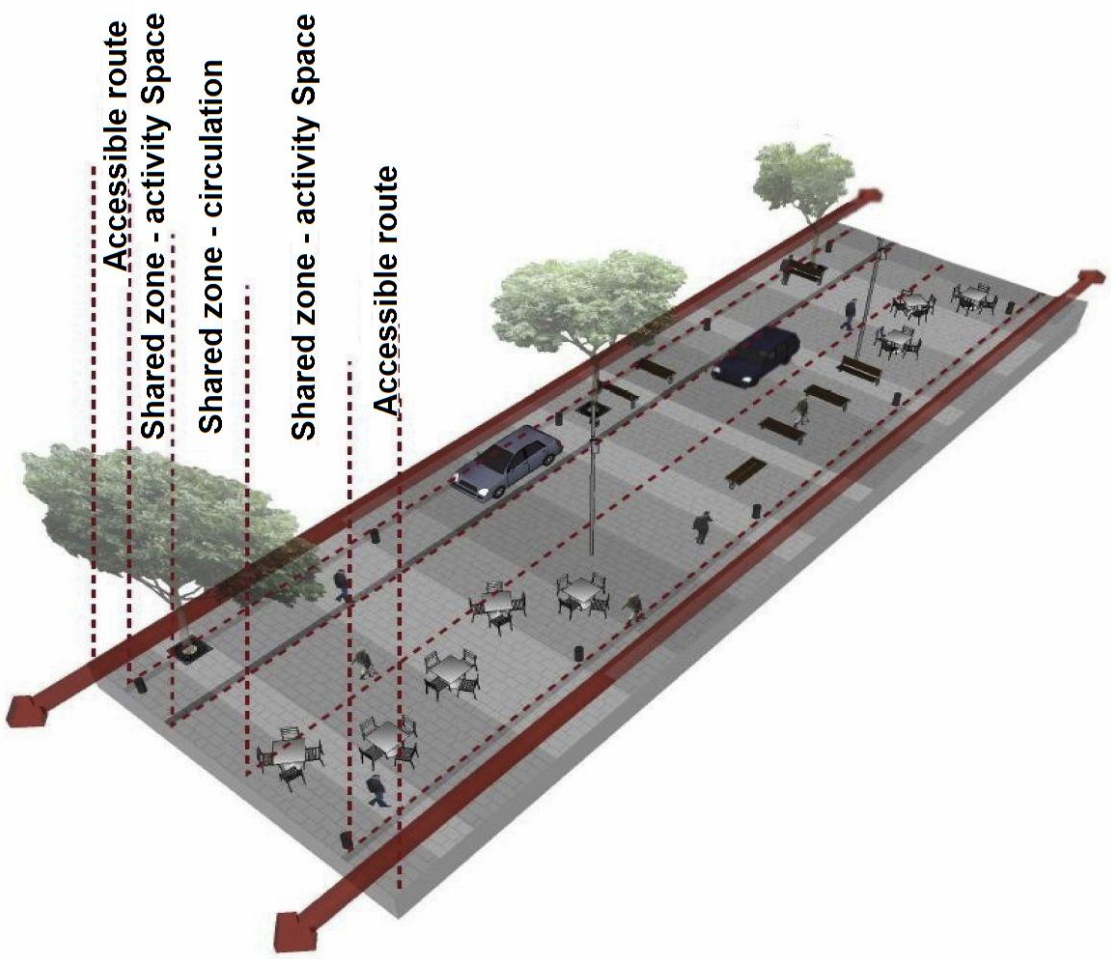


Figure 3.15: Spatial allocation of shared space in the Central Business District, Auckland, New Zealand (Karndacharuk A. et al., 2011)

Figure 3.16 – Elliot Street, Auckland (Jon C, 2011)

Figure 3.16 above shows images of Elliot Street which is one of these completed streets. Since its reopening it appears to be quite successful, however one online commentator points to the nighttime problem of badly parked cars, including those parked in areas specifically reserved for motorcycles (Jon C, 2011).

There is a current collaboration between the University of Auckland and Auckland Transport to develop and gather pre and post construction data on this development in order to assess the impact and effectiveness of these Shared Space projects.

The previous section refers to Shared Space and Shared Surface schemes and predominantly relate to high street and non residential areas. The following sections refer specifically to Home Zones, which often use Shared Surfaces and are part of the Shared Space concept, but they are exclusively used in residential areas. The residential areas may contain a certain mix of land use, but the predominant use is residential.

3.5. Home Zones

According to Home Zone Guidelines prepared by the UK Institute of Highway Incorporated Engineers, a Home Zone is defined as;

"the UK term for a [residential] street where people and vehicles share the whole of the road space safely, and on equal terms; and where quality of life takes precedence over ease of traffic movement". (Jones and Institute of Highway Incorporated, 2002)

The Woonerf in the Netherlands

This Home Zone guidance refers to the 'Woonerf' as the original Home Zone. This concept which was developed in the Netherlands enabled streets in residential areas to be used more actively by the residents rather than being dominated by cars. The origins of the Woonerf have already discussed in the earlier section 3.1. but it is worth looking at this concept in a little more detail to see how it has evolved into the Home Zone concept in other countries. According to Appleyard "A Woonerf is a residential area in which most of the traffic has its destination within the area, and where traffic flows are generally between 100 and 300 vehicles per hour during the peak period" (Appleyard, 1981) He goes on to say that the street is shared between people and cars and that to this end the kerbs are eliminated. Vehicle travel is slowed down and a residential atmosphere is created with planting, street furniture, surface changes and vertical features. Appleyard contends that the real power of the concept lies in the traffic rules applied to Woonerf areas where each Woonerf is clearly signified by signage and all users must obey a special set of rules which apply specifically to the space. These rules include; the right of pedestrians to use the full width of the road, including play; drivers may not drive faster than walking pace; drivers must make allowance for other pedestrians, children at play, unmarked objects and irregular road layout; all traffic coming from the right has priority, regardless of speed; drivers may not impede pedestrians; and that pedestrians my not unnecessarily hinder the

progress of motorists. Appleyard believes that while the space must be shared, pedestrians and children have greater rights to the residential space than vehicular traffic.

Ben-Joseph (1995) describes how the first set of minimum standards and traffic regulation which legally defined the traffic rules within a Woonerf were legalized by the Dutch government in 1976. He writes how by 1990, 3,500 shared streets had been constructed in the Netherlands and Germany, more than 300 in Japan and 600 in Israel. He describes how in 1978 a team of architects and landscape architects were assembled in Israel by the Ministry of Construction and Housing, to study the Dutch model and design a prototype residential shared street. In 1981 and 1982 a set of shared street design guidelines were published based on the Woonerf model, which stated that the proposed shared street must comply with the following; the street must be residential, a analysis of traffic conditions and impact must be completed, and the design must follow planning guidelines in addition to resident's input. In 1987 the shared street concept was formally adopted through specific traffic ordinance and went on to become leading design element in subdivision layout all over Israel.

Germany

Hass-Klau (Hass-Klau, 1990) refers to the Wohnstrasse (living street), the German version of the Woonerf and describes how schemes similar the Woonerf were employed widely throughout German cities. Before and studies reveal that many redesigned areas that employed such traffic calming measures displayed a reduction in the number and severity of accidents, reduced vehicular speed better local environmental conditions and an increase in community interaction.

The USA

Ben-Joseph examined the viability of adapting the Woonerf concept to the suburban environment in the US and found that it is very suitable for the US context (Ben-Joseph, 1995) Following Jacobs (1961), Appleyard (1981), Jacobs (Jacobs, 1993), Ben-Joseph argues the need to restore the human scale to residential streets and believes that shared streets or Home Zones would not just benefit residents, but also developers and local authorities.

The Home Zone concept has recently been receiving more attention in the US. A Chicago Tribune article describes the 'Albany Home Zone' and outlines the plans to create a Home Zone on Albany Avenue in Chicago in an effort to generate a more liveable, pedestrian friendly community (McNamara, 2010). Previously, a report prepared for the New Jersey Department of Transportation, (Alan M. Voorhees Transportation Center, 2004),

recommends the application of the Home Zone concept for appropriate communities across New Jersey. The report acknowledges that few Home Zones have been created in the US and points to the fact that only since 2002 has the US Federal Highway Administration identified Home Zones as potential pedestrian design. The report does however detail a series of existing US residential areas such as; Asheville, North Carolina, West Palm Beach, Florida, and Boulder and Colorado, that are based in one way or another on Woonerf or Home Zone principles. One of the more interesting examples is in Kalamazoo, Michigan where a previous pedestrian mall, constructed in originally in 1958, had traffic introduced for the first time when it was converted into a Woonerf in 1998. The authors of the New Jersey report judge the Kalamazoo Woonerf, shown below in Figure 3.17 to be of a very high quality as it is already a narrow street, but how consistent paving, shallow kerbs and attractive bollards all serve to maintain a pedestrian priority area. The authors point to a Planning magazine article (Flisram, 2000.) which contends that the introduction of cars was deliberately a matter of perception rather than function where the presence of cars has brought more activity and may have attracted increased numbers of pedestrians, shoppers and tourists. Besides the success or otherwise of this Woonerf, it is suggested that Kalamazoo is very useful as a downtown pilot study to offer future guidance to further Woonerf or Home Zone design in the US.

Figure 3.17 – Kalamazoo Woonerf, Michigan (Alan M. Voorhees Transportation Center, 2004),

New Zealand

In New Zealand, Nelson City Council has developed guidelines for that they call ‘Residential Shared Zones which are in effect Home Zones. The council states that “A Residential Shared Zone is a street where pedestrians and cyclists share the road with motor vehicles” (Nelson City Council, 2012).

Figure 3.18 – Photomontage of Shared Residential Space as proposed by Nelson City Council (Nelson City Council, 2012).

Shearer (2010) outlines some of these Residential Shared Space guidelines as follows;

- A maximum speed limit of 30 kmh.
- Entry treatment/demarcation, for example a speed table, narrowing and signage.
- Mid-block treatment to keep 85th percentile speeds to 30 kmh, using reduced sight distances and landscaping.
- A lane width of 2.7 metres.
- No separation between users except in short sections where vulnerable road users need extra safety, for example on blind corners. Use of kerb and channel is discouraged, instead the use of lower impact stormwater devices is recommended.
- Parking areas demarcated without the use of road marking, for example with planter boxes.
- The zones are recommended for local roads and residential streets with a traffic volume less than 100 vehicles per hour or 1000 vehicles per day.

Ireland

While there are no national Home Zone guidelines in Ireland some local authorities have prepared documents to guide developers who are proposing to implement Home Zone measures. The Adamstown Street Design Guide as referred to in Section 2.2.4 sets out design standards for various street types including 'Back Streets' for which it recommends the use of shared streets, Shared Surfaces and Home Zones. on suitably identified back streets within the development. Speed limits of 10 kmh, specification for shared carriageways and a typical suggested street layout are provided as design guidance. (South Dublin County Council, 2010). An example of a Home Zone in Adamstown is outlined in Section 9.1.3.

Galway City Council has also produced a Home Zone guidance document (Galway City Council, 2008) which backs up the Galway City Development Plan (Galway City Council, 2005) where the Home Zone concept is promoted. This document offers guidance in relation to; Optimum location, Designing streets as amenity spaces, traffic speed (a preferred design speed of 16km/h), Home Zone entrances, Junction design, Parking, Layout and building design, Planting design, Hard landscape design, street furniture, Lighting, Utilities and Surface water drainage. While only still in draft form, this guidance covers many important aspects of Home Zone design and recognises the important relationship between architecture, scheme layout and hard and soft landscaping in the design of Home Zones.

The UK

As outlined earlier, since the foundation of the concept in the Netherlands in the 1960's, the Woonerf and Home Zone concept has been implemented all over the world including the UK where it has been used extensively and has become part of national policy.

The Transport Act 2000 (UK Government, 2000), Section 268, enables Local Authorities in the UK to designate any road of which they are a traffic authority as a 'quiet lane' or a 'home zone'. (A quiet lane is a minor rural road which are shared by pedestrians, cyclists, horse riders or other traffic). In addition the act permits the appropriate national authority to make regulations authorising Local Authorities to make 'use orders' and 'speed orders' for the designated road. These enable the road to be used for uses other than passage subject to certain conditions such as a person not wilfully obstructing the road or denying reasonable access to premises adjacent to the road. The speed order authorises the Local Authority to take measures to reduce speed of vehicles and cycles to below that specified in the order.

In 2006 'The Quiet Lanes and Home Zones (England) Regulations 2006' introduced regulations supporting Section 268 of the Transport Act 2000. These regulations made it compulsory for the Local Authority to consult with a range of national and local stakeholders about any 'quiet lane' or a 'home zone' designation and specified the required notification that must be given to all parties in relation to such consultation. The regulations also defines what uses may be considered under the use order including; communal, social, cultural, spiritual, educational, entertainment and recreational. In addition to provisions for speed orders, the regulations also set out the need for appropriate signage informing road users about the designation of the road as a 'quiet lane' or a 'home zone'.

Figure 3.19 below clearly illustrates before and after images of a UK street which has been redesigned as a Home Zone. Home Zone design typically relies on traffic calming measures, threshold features, appropriate signage and a certain number of housing units to delineate and identify a Home Zone. The following sections refer to some key UK based Home Zone

Guidance which expands on typical Home Zone design features. Similar to the Shared Space guidelines, this report uses UK based guidelines to examine some of the latest existing best practice guidelines due to a similarity in climate, legal context and culture between Ireland and the UK.

Figure 3.19 – Before and after photographs of a street in the UK redesigned as a Home Zone (Department for Transport UK, 2005a)

3.5.1. Home Zones: Guidelines from the UK

The first comprehensive set of UK Home Zone Design guidelines was prepared by the Institute of Highway Incorporated Engineers (Jones and Institute of Highway Incorporated Engineers, 2002). Following this the Department for Transport in the UK published a document called 'Home Zones: Challenging the future of our streets', which complemented the earlier document and sought to disseminate best practice through experience of completed Home Zone projects (Department for Transport UK, 2005a). In 2007 another document was produced this time providing guidelines for designing for disabled people in Home Zones (JMU Access Partnership, 2007). These three key documents are examined briefly in the following sections.

Home Zone Design Guidelines – Institute of Highway Engineers (IHE)

This guidance document outlines the background to the Home Zone concept (Jones and Institute of Highway Incorporated Engineers, 2002), gives details on selected case studies and provides design guidance as follows ;

Planning a Home zone- Emphasis on tailor made design, community participation and place making
Location and Size of Home zone- Connectivity to surrounding locality, appropriate road hierarchy, appropriate size and acceptable levels of traffic flow / number of dwellings.
Defining the Home Zone Space – Relate well to existing features, minimal front gardens and the creation of an entrance threshold
Designing for Activity – Designs should encourage socialising with seating and play areas.
Designing for People and vehicles – Design speeds of no more than 10 mph with Shared Surfaces where possible to encourage greater sharing of the space.
Parking – Carefully designed on street parking with carefully designated areas created with seating and landscaping
Designing the elements – Protecting street furniture and planting from cars, correct lighting and surface finishes.
Adoption and maintenance – Agreement between the developer and managing authority about finishes and clear identification of management and maintenance roles.

Home Zones: Challenging the future of our Streets – Department for Transport (UK)

Following the IHE guidance document the Department for Transport produced a complimentary document (Department for Transport UK, 2005a), which also stressed community involvement an integrated design process. This document provides the following design guidance;

Designing for people - Designing so that cars are seen as a guest in the space.
Gateway – The creation of gateway features to alert users that they are entering a different environment to a traditional street.
Movement – Restrict speeds through horizontal deflections and the use of Shred Surfaces to encourage drivers to slow down.
Delineation – This document recognises that Shared Surfaces may be problematic in certain circumstances and acknowledges that there might be a need for the creation of specific defensible spaces and delineation of carriageway and footway.
Parking – Like the previous document this guide discusses the need to identify areas where people can and cannot park.
Lighting – Appropriately placed lighting to delineate space and provide suitable visibility at night to increase comfort and safety
Accommodating Play – Providing formal and informal play areas which can be observed but not creating a nuisance for neighbours

Designing for Disabled People in Home Zones - JMU Access Partnership (UK)

This report outlines the difficulty that some people with disabilities have with Home Zones, mostly through Shared Surfaces and lack of delineation between the carriageway and the footway (JMU Access Partnership, 2007). Among a set of comprehensive findings this document sets out the following guidance;

Complementary delineated pedestrian area – Providing a safe route for more vulnerable pedestrians using tactile paving, visual contrast, intermittent objects such as planters, bollards or tree, or continuous features such as long planters or railings.
Appropriate crossing points or crossing routes – adequate provision and appropriate location.
Gateways – Detectable by all users including pedestrian through the use of tactile paving which does not impede those with mobility difficulties.
Informing users **–** All users to fully understand the nature of the space and how it should be used.
Appropriate street furniture, lighting and surfaces –The document also contains a number of findings in relation to the provision of adequate lighting, the avoidance of clutter and trip hazards and the need for smooth, level and well drained surfaces.

The three UK based documents reviewed above provide comprehensive design guidance and recommendations in relation to Home Zone design. In all cases stakeholder consultation and community participation is seen as a key aspect to a successful Home Zone. The Department of Transport document acknowledges the concerns of people with visual difficulties while the JMU document reinforces these issues and recommends additional design measures to deal with these problems. The following examples highlight some of these challenges in the context of existing built Home Zone examples.

3.5.2. Home Zones – Existing Examples

This section will briefly examine two UK based Home Zone examples which have been analysed and reported on in the Designing Home Zones for Disabled People document as mentioned in the previous section and as published on the The Disabled Persons Transport Advisory Committee (DPTAC) website (insert ref) This is useful as it directly addresses any issues that may be experienced by people with mobility, sensory or cognitive difficulties.

Morice Town, Plymouth, UK

The incentive behind the Morice Town Home Zone design was to regenerate the area and improve the resident's quality of life. An evaluation of the finished scheme published by the

Institute of Highway Engineers (Institute of Highway Engineers, 2005), states that the redesign has given the area a unique character where all road users equally shared the streets due to predominantly Shared Surfaces. The scheme includes nine distinct gateways which, it is argued in the evaluation, make it very clear that the user is entering a different space. Overall it is reported that the Home Zone design, illustrated below in Figure 3.20, has changed the perception and feel of Morice Town in a positive way.

Figure 3.20 – Morice Town Home Zone (JMU Access Partnership, 2007)

An evaluation of Morice Town Home Zone carried out by TRL Limited which was commissioned by the Department for Transport, states that 74% of resident adults found the Home Zone redesign had made the area 'better', while 93% found it more attractive. Further to this 90% of children reported that the street looked nicer and was more welcoming. Overall there as a perceived and actual reduction in traffic speeds, improved aesthetics, reduced fear of crime, no problems with injury and 22% of adults spent more time outside (TRL Limited, 2005). There were also positive crime statistics which show that recorded crimes dropped from ninety two before works started to just nine after the Home Zone was completed (Department for Transport UK, 2005a).

The 'Designing for Disabled People in Home Zones' report selected Home Zone sites in the UK to analyse the issues around navigation and use of these spaces by people with disabilities. Of the eleven sites visited, the Morice Town Home Zone as considered to be in the top three in terms of easy navigation, with 100% of participants describing the space a "easy" or" very easy" to navigate.

Albany Street, Hull, UK

Albany Street is approximately 1km northwest of Hull City Centre and is comprised of terraced housing with a mixture of owner occupiers, students and an ethnic mix of short term tenants. This retrofit Home Zone, seen below in Figure 3.21, retains a 2m wide

footway with a kerb at the request of local groups of blind and partially sighted people. A Conservation kerb with a 450mm splay and 50mm upstand was used and the footway itself was kept free of any street furniture. (JMU Access Partnership, 2007)

Figure 3.21 – Albany Street Home Zone (JMU Access Partnership, 2007)

The Designing for Disabled People in Home Zones report also used Albany Street Home Zone as one of their case studies and visited the site with a mixed focus group design professional and end users in 2006 to carry out an appraisal of the street in terms of accessibility for people with disabilities. Of all the Home Zones visited, it had the highest proportion of users describing it as "difficult" or "very difficult" to navigate (JMU Access Partnership, 2007). The report stated that the kerb restricts movement for some users, while according to Appendix C of the report, users commented on the swirling pattern, which some users could use to orientate themselves, others found it confusing and a hindrance. The large number of cars parked on the footpath was also considered a major nuisance, completely blocking the progress of some wheelchair users.

This section on Home Zones has outlined some key issues, advantages, challenges and guidance relating to the Home Zone design. From the literature reviewed it is clear that more vulnerable pedestrians support the concept of Home Zones and agree with the objective of creating more liveable, pedestrian and child friendly residential environments. However, there are consistent issues around the lack of delineation of safe zones for pedestrians use only and any Shared Surfaces which are shared with motorists. However, as stated in the Designing for Disabled People in Home Zones report (JMU Access Partnership, 2007), the challenges faced by people with disabilities in Home Zones are design issues and therefore are solvable with due proper consultation, user participation and careful design.

3.6. Universal Design, Shared Space, Shared Surfaces and Home Zones

This section examines whether Shared Space, Shared Surfaces and Home Zones are consistent with the theory, practice and the principles of universal design. Universal Design is guided by seven principles as set out by the Centre for Universal Design (Smith and Preiser, 2011), these principles are detailed below and discussed further in appendix 1:

1. Principle One: Equitable Use - The design is useful and marketable to people with diverse abilities
2. Principle Two: Flexibility in Use - The design accommodates a wide range of individual preferences and abilities.
3. Principle Three: simple and intuitive - Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.
4. Principle Four: Perceptible Information - The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.
5. Principle Five: Tolerance for Error - The design minimizes hazards and the adverse consequences of accidental or unintended actions.
6. Principle Six: Low Physical Effort - The design can be used efficiently and comfortably and with a minimum of fatigue.
7. Principle Seven: Size and Space for Approach and Use - Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

Universal Design (UD) is variously referred to as an approach to design, a process or a critical theory – or combinations of the three. The process of Universal Design is contingent on continuous feedback from people that interact with constructed or envisaged solutions, and in this way analyze and synthesise the mistakes and successes of previous design incarnations. For Sandra Manley (2011), local public involvement in decision making is vital to implementing universal design principles in the streetscape, in order to achieve the most inclusive result possible – and within a specific cultural context (Steinfeld 2010; Steinfeld & Danford 2007).

The critical approach of Universal Design involves a continuous conscious evolution of the streetscape through the evaluation of preceding approaches to its design and construction (Preiser 2011). Making use of the knowledge of different types of user in evaluating existing streetscapes has been utilised by universal design practioners in the past (Manley 2001). This is consistent with universal design practice which aims toward a distant, though it is hoped not completely utopian, goal of making the public realm available and attractive for all people (Ostroff 2011).

One of the drivers of an *evolutionary* approach to universal design within the context of built environments is the need for these environments to complement the increasing requirements of assistive technologies that aid the mobility of more and more people every

day. This leads to the two central roles of the streetscape: firstly, as a route to buildings and amenities (the successful implementation of universal design within buildings and other amenities is immaterial if they are not easily reached). Secondly, the street should be a destination in itself, which is particularly important for children who can appropriate the use of a street for an infinite number of possibilities. The ability for parents to let go of kids must be considered a litmus test for success in this regard (Manley 2011).

The first principle of Universal Design calls for equitable use in design, and sets out an overarching value judgment that binds the six other principles together (Steinfeld 2010; Erlandson 2007). Ideally, a street design would allow all users to approach and use the street in a similar or equal fashion, and will avoid segregating people with different abilities or needs, or stigmatising individuals who rely on certain design features in order achieve comfortable mobility in these spaces. In traditional streetscapes, the priority is split between two crude groupings of "pedestrian" and "motorist", with each group either allocated "space" (footpaths, carriageways, pedestrian zones), or "time" (controlled crossings over carriageways) which belongs to "them". This bestows a sense of ownership and feelings of possession to these groups of street users for their own space, who will resent transgressions of this contract. However, the relationship between different types of users within their own space and time is already a negotaition, with tacit, and mutable, agreements as to appropriate social behaviour. Therefore, suggestions that negotiation is a new and totally unfamiliar experience is not entirely accurate.

The *Shared Surface* ideal, which fully breaks down the traditional delineations between drivers and other people in the streetscape, would from one perspective appear to recognise an increased equality of all street users – after all, many motorized vehicles often function as a form of assistive technology to aid in transporting typical items and people that would not otherwise be achievable under normal circumstances. However, the universal design guidelines that accompany the equality principle recognise the need for "safety", feelings of "security" and design solutions that "appeal" to all users. The Shared Surface approach, while having gained much support, also has critics both within literature (see Section 3 and 8 of this report) and by the stakeholders and participants involved in this research, on the basis of a reduced sense of security and a lack of appeal for this approach – people with visual difficulties and their advocates in particular have questioned how applicable principle three (Simple and Intuitive Use), principle four (Perceptible Information) and even principle five, (Tolerance for Error), are considered, due to the removal of kerbs which represent reliable navigational cues, and safe delineators between pedestrians and traffic. The comfort zone would appear to answer this concern, but would need to be designed in such a way that other cues in the streetscape automatically lead toward this area to ensure vulnerable users are allowed to feel safe.

3.7. Conclusion to Part 1

Part 1 seeks to outline the rationale for this research in the Irish context and provide an overview of current Shared Space, Shared Surface and Home Zone thinking, best practice and guidance. Beyond specific reference to Shared Space, Shared Surface and Home Zones, this part of the report also attempted to place the concept of Shared Space design in the overall urban design context in Ireland. This helps to outline the aims and objectives of current Irish urban design initiatives to see where Shared Space design fits into the overall equation. The research has found that many Local Authority and national design guidance documents support the introduction of Shared Space and Home Zones in Ireland and in some areas such as Ballymun and Adamstown in Dublin, Home Zones have been constructed. However, this preference for Shared Space design is not supported by any national guidelines or support documentation. As witnessed in the UK, the introduction of Shared Space design is a complex issue and the interests of people with disabilities, especially those with visual difficulties must be taken into account as a core principle of shared space design. Across all shared space design, there is a consistent concern for people with visual difficulties in relation to navigating Shared Surfaces where this is minimum segregation between pedestrian and vehicular traffic. From the Shared Spaces in Brighton in the UK and Drachten in the Netherlands, to the Home Zones examined in the UK, the same issues arise around the lack of delineation between safe spaces and spaces that are shared with vehicles. Yet much of the literature suggests that it is this very desegregation and sharing of the street equally among all users that contributes greatly to traffic calming and a positive change in driver behaviour. The main question seems to be around achieving the right level of 'sharedness' while creating comfort or safe zones for more vulnerable pedestrians. In order to strike this balance between different user needs it seems imperative that shared space design is guided by the seven principles of Universal Design.

While there is now more comprehensive guidance for Shared Space, Shared Surface and Home Zone in the UK, there are still many outstanding concerns being expressed by people with disabilities which do not seem to have been fully resolved in the guidance documentation. In Ireland, there is a move towards Shared Space, Shared Surface and Home Zones, but this is still at a very early stage. Therefore there is the opportunity to learn from the experiences in the UK, which shares many characteristics with Ireland in terms of urban design, pedestrian behaviour and expectations. There is also the opportunity to fully engage with all Irish stakeholders to resolve any key issues associated with shared space design and to create a shared and Universally Designed approach to Shared Space, Shared Surface and Home Zones which could be seen as an exemplar for the rest of the world.

Part 2

Understanding Users, Providers & Urban Space

Part 2 of the report, includes chapters 4, 5, 6, 7, 8 and 9, and provides an overview of how different users engage with both traditional and Shared Space design. This information has been gathered through extensive stakeholder engagement via interviews, field studies, workshops, as well as literature reviews and case studies.

4. Users and Providers

Understanding Needs, Practices and Challenges

To fully understand the needs, practices and behaviours of both end users and providers, it is necessary to engage with stakeholders on a number of levels and in a variety of contexts. This research has sought to engaged stakeholders in structured interviews, on-street observation and two workshops where the various issues relating to Shared Space design were analysed and debated. Chapters 5, 6 and 7 detail this process while chapter 8 draws together the main issues highlighted during the engagement process along with the literature reviewed to outline a set of main findings in relation to the needs of each key stakeholder.

4.1. Introduction

Many of the principles of Shared Space, Shared Surfaces and Home Zones align with the priorities of Universal Design such as reduced clutter, slower traffic and more civilised and equal urban spaces. However, the removal of kerbs and other navigational cues creates a problem for independent mobility for many vulnerable road users (Disability Alliance, 2008, Imrei and Kumar, 2010). Research by the UK Guide Dogs Association (2006) and the Disability Alliance (2008) showed that people with visual difficulties feel intimidated by

Shared Space environments and often chose to avoid them altogether, rather than placing themselves in potentially dangerous situations.

Much of the feedback relating to Shared Space Design that to date has informed the debate in Ireland comes from the UK. While there are many similarities between the streets and street users of Ireland and the UK, it is nonetheless vital to directly consult with and understand the specific needs of Irish road users and to analyse the Irish urban condition in the context of Shared Space, Shared Surfaces and Home Zones.

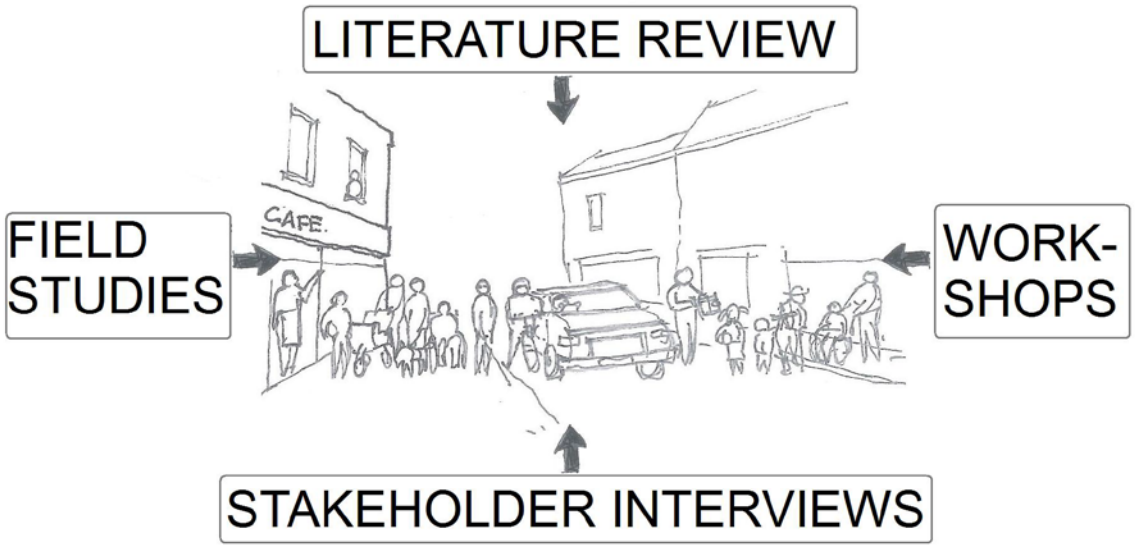
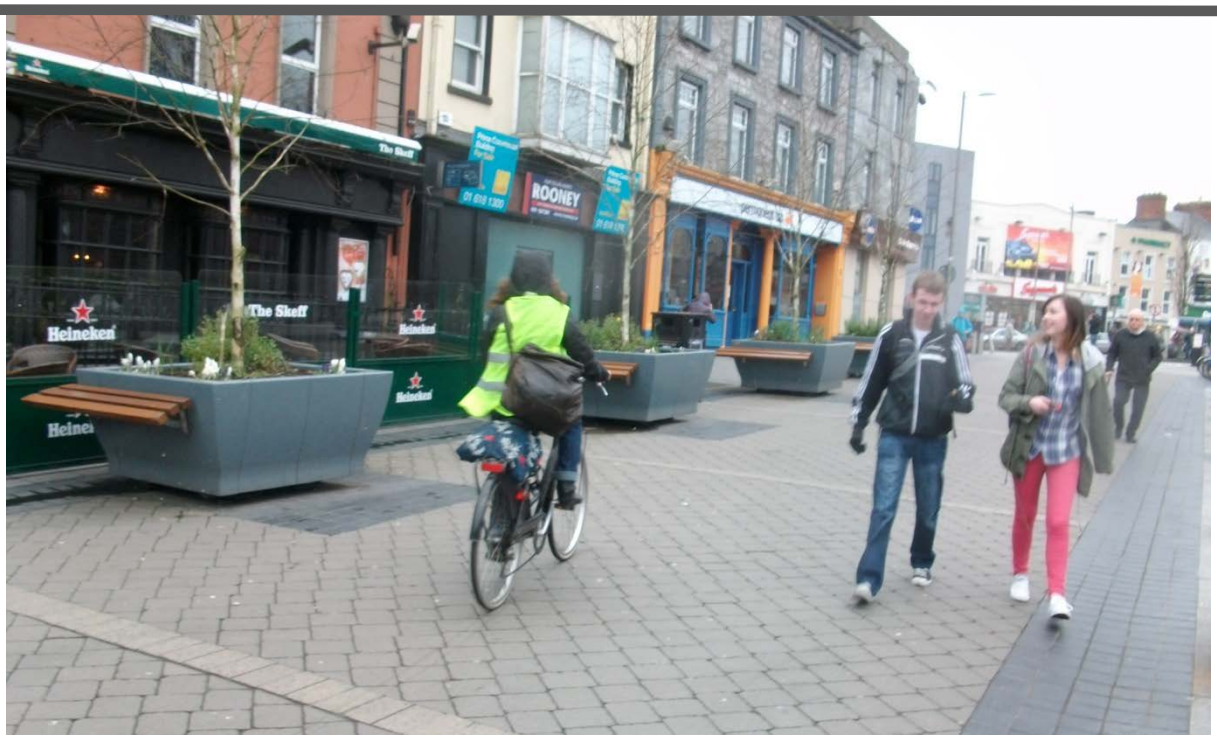


Figure 4.1 – Diagram illustrating the process used to determine the needs of individual stakeholder groups in relation to Shared Space, Shared Surfaces and Home Zones

Figure 4.1 above illustrates the process undertaken throughout this research to engage relevant Irish Stakeholders and understand the context in which they operate. Chapter 5 outlines the feedback from the structured stakeholder interviews; Chapter 6 details a series of field studies in which 11 stakeholders of various ages, gender, size and ability were shadowed along a selected inner city route to understand how they navigate a typical street; Chapter 7 outlines the first workshop in which stakeholder representatives were given persona exercises and Chapter 8 sums up the main feedback from the overall engagement process and couples this with the literature reviewed to set out a set of key findings in relation to the needs, practices and behaviour of the main stakeholder groups.

5. Stakeholder Interviews

A view from the ground



This chapter highlights the main feedback from interviews which involved over thirty stakeholders. Each interview was guided by the same set of questions, but there also the freedom for each participant to discuss any issues they felt were relevant to the research. The interviews produced a wealth of information and insight and are only very briefly described here.

5.1. Introduction

The main focus of this research was to engage with the users of Irish streets and provider groups to determine how best to engage with Shared Space, Shared Surfaces and Home Zones in an Irish context. This engagement included detailed interviews with all stakeholders, which were guided by a set of targeted questions to further gain a wider appreciation of the issues surrounding shared space design. The stakeholders include key user groups, considering both general users such as the Dublin Cycling Campaign and those with specific user needs, such as National Council for the Blind Ireland, Irish Guide Dogs for the Blind, Irish Wheelchair Association, in collaboration with critical expert groups such as the National Disability Authority (NDA) and the Centre for Excellence in Universal Design at the NDA. This consultation process also included pivotal provider groups such as local authorities, the National Transport Authority, the Department of the Environment, urban business interests and the appropriate Engineering, Architectural and Urban Planning

representative bodies, a full list of the interviewees is provided in appendix 2. The outcomes of the interviews are presented below.

5.2. Interview questions and interviewees

The stakeholder interviews were conducted in person and were guided by a set of predetermined interview questions provided below. These questions were used as guide, however, the interviewees were free to discuss other issues that they believed to be relevant to the research. Throughout the interviews written notes were taken, no audio recording device was used as it felt that this allowed interviewees to express their opinions more freely.
These questions, along with a briefing document outlining the aims of the research, were supplied to the interviewees in advance of the interview, see Appendix 3 and 4. The first set of questions were concerned with the quality of the urban environment, and in particular which features of the urban space enhanced users' enjoyment and which features acted as a hindrance. The second set of questions was more targeted towards Shared Space, Shared Surfaces and Home Zones and their viability in the Irish context. The questions used to guide the interviews are as follows:

Quality of the urban environment

1. Name five elements about street environments that contribute to your safety, comfort and enjoyment.
2. Name five elements about street environments that you don't like.
3. Name a place/street in your locality that you like and feel meets your needs well, how does this place meet your needs?

Shared Spaces, shared surfaces and Home Zones

1. What is your understanding of the terms Shared Space, Shared Surfaces and Home Zones?
2. Do you feel that Shared Space, Shared Surfaces or Home Zones are viable in the Irish context?
3. If so, why? If not, why not?
4. Are you aware of problems or difficulties surrounding such methods of street design? If so, for which users?
5. Are you aware of design methods that can be used to overcome these problems or difficulties while still facilitating the Universal Design of Shared Space, Shared Surfaces and Home Zones?

5.3. Key difficulties and recommendations from the stakeholder interviews

Key problems or difficulties surrounding such method of shared space design- The interviewees identified the following Key problems or difficulties surrounding such Shared Space, Shared Surface and Home Zone design;

- The removal of certainty in terms of clear motorist, cyclist, or pedestrian separation can cause confusion, anxiety, disorientation and fear for many pedestrians, and cyclists and motorists.
- This conflict can often be most pronounced between cyclists and pedestrians especially on Shared Surfaces.
- Shared Surfaces without the traditional kerb can often lack the clear delineation required to safely navigate through spaces by many users; such as long cane users, guide dog users, those with low vision, elderly people and children.
- The removal of controlled junctions where pedestrians are sure of their right to cross, can cause apprehension among many users.
- Many Shared Space schemes allow far more and freer occupation of open spaces, and while this can create a pleasant convivial environment, it can create much confusion and place obstacles in the way of people with visual difficulties, wheelchair users, the elderly, parents with prams, cyclists and in some cases motorists.
- Successful sharing requires pedestrians to be more visible to motorists to facilitate the awareness and give-and- take required for cars to safely negotiate through a space. This visibility is difficult for wheel chair users, people of small stature, or children as they are often below the eye line of the motorist
- To a limited extent, sharing is also helped by pedestrians being able to hear vehicles, or bikes approaching and therefore this can cause some problems for people with hearing difficulties.
- Many elderly people prefer to have safe zones to walk in and controlled crossings, as in many cases their mobility, reactions, vision, hearing, and in some cases due to dementia, their cognitive ability, is impaired.
- Some parents and experts in child safety and well-being have expressed the fear that the removal of certainty, such as the provision of controlled crossings and kerbs, would cause difficulty for children in understanding how to behave and thus putting them in danger.
- The lack of clear transition zones for all pedestrians, especially people with visual difficulties, to alert them to the fact that they are entering or leaving a Shared Space or Home Zone.
- The potential for residents in Home Zones to abuse the shared space design and conduct themselves in an anti-social manner.
- General management and maintenance issues not associated with traditional street design.
- Drainage issues when kerbs and gullies are removed and problems with drainage covers.
- Uncontrolled parking due to lack of traditional demarcation of footpath and carriage.
- Shared space design needs to be developed in appropriate locations, which ensure the continued access to and protection of underground services.

Key recommendations to overcome problems - In response to the key problems or difficulties surrounding shared space design, the interviews suggested the following recommendations:

- Create a better appreciation of the importance of the public realm for improvements in quality of life.
- Allow proper consultation with local community and businesses to fully understand key issues and to develop a sense of community ownership of the space.
- Develop trial sites and pilot schemes to evaluate and refine specific design measures that could be widely used in various contexts.
- Use mock-ups to demonstrate on site the impacts of the proposed shared space designs.
- Ensure that the real objectives as developed in consultation with the community drive the process, Shared Space, Shared Surfaces, or Home Zones should not be objectives in themselves.
- Ensure decision makers and design practitioners are fully educated in terms of best practice, design guidelines, and potential challenges for certain users.
- Proper awareness, understanding and definition of key terms and concepts for both users and providers.
- Ensure that local context and culture of locality is understood and integrated into any redesign
- Implement a clear legislative framework, ensure proper enforcement and maintenance while fostering self regulation and a sense of stewardship.
- Create comfort zones and safe crossing points where there are no uncontrolled crossings.
- Where appropriate, retain kerbs until an equally identifiable delineator is developed.
- In addition to motorist transition zones, create pedestrian transition zones with clear gateways or thresholds.
- Use Sustainable Urban Drainage Systems (SuDS) where feasible to deal with water run-off.
- Carry out before and after evaluation studies to identify common problems and test design solutions.

5.4. Overall findings from the stakeholder interviews

Overall the stakeholder interviews raised a number of important issues in relation to street design in Ireland and in particular Shared Space, Shared Surfaces and Home Zones in the Irish context.

5.4.1. Positive and negative aspects of street design

There was clear opinion on the positive and negative design features of traditional streetscapes. In general the stakeholders felt that smooth, wide, clutter free pavements with clear navigational tools such as kerbs, tactile paving and controlled crossings all improved the comfort safety and enjoyment. However, features such as fast traffic speeds,

streets dominated by cars and inconsistent and cluttered street designs acted as a hindrance to street navigation for many users. Many stakeholders mentioned either fully or partially pedestrianised streets as examples of good street design.

It was also notable that most people really struggled to identify places in Ireland that they would consider to be a high quality urban environment. Rightly or wrongly, many interviewees believed that unfortunately the Irish do not do urban design very well and this may be attributed to any of the following: the Irish are not historically an urban people, are not inclined towards urban living, do not recognise the public realm as a major contributor to their quality of life, or that there is a dysfunctional relationship between the private and public domain in Ireland.

5.4.2. Understanding of the terms Shared Space, Shared Surfaces and Home Zones

The interviewees had varied understanding of the terms Shared Space, shared surfaces and Home Zones. However, several commented that their engagement with the current research project had improved their understanding of such design concepts.

5.4.3. The need to define the terms but not let the terms define the process

Many interviewees stressed that improved quality of life, enrichment of the public realm, greater inclusiveness, safety and comfort should be the drivers for changes made to the streetscape. Only after the specific objectives for each location are agreed should terms such as Shared Space, Shared Surfaces and Home Zones be introduced as means to the communally agreed goals. While it is very important to define the terms, as this alleviates confusion and suspicion, these should never become an ideological issue.

5.4.4. Viability of Shared Space, shared surfaces and Home Zones in an Irish context

In general there was good stakeholder support for the viability of Shared Space, Shared Surfaces and Home Zones in the Irish context, however many interviewees suggested caveats to their support. There is a need for legislative change to support, guide and enforce shared space design in Ireland. Evidence based design guidance, provider and user education, public awareness and practitioner training are essential to the successful implementation of shared space design. A full cost-benefit analysis should be completed to facilitate informed decision making surround such designs.

5.4.5. Universal Design features for Shared Space, Shared Surfaces and Home Zones

Many interviewees highlighted the risk that vulnerable road users may be excluded from Shared Space, Shared Surfaces and Home Zones. In order to ensure that these designs are accessible for all it is necessary to full embrace the Universal Design process from the inception of such projects. Any Shared Space project should full engage stakeholders in a consultative process at the outset and allo for evidence based decision making informed by pilot studies. It was generally accepted by most interviewees that the preservation of a comfort zone would increase the accessibility of any shared space design to most users.

5.4.6. Evidence based decision making

The need for post-construction data gathering, both qualitative and quantitative, to allow the measurement of benefits and negative aspects of Shared Space, shared surfaces and Home Zones was also highlighted. Several stakeholders, particularly those representing the needs of people with visual difficulties, discussed the importance of further research into a viable delineator to be used in place of traditional dropped kerbs. Until such a delineator is identified it was agreed by many interviewees that kerbs should not be removed. Many stakeholders were aware of research that outlines problems people with visual difficulties when kerbs are removed such as study carried out in 2010 which failed to identify any reliable tactile delineators that effectively replaced traditional dropped kerbs (Childs et al., 2010). However, there is also more recent studies that show more positive results for tactile paving. Research carried out by the MVA Consultancy in the UK that looked at newly laid tactile paving on Shared Surfaces on Exhibition Road in London and concluded that corduroy paving 800 mm wide was reliably detected by participants with visual difficulties (MVA Concultancy, 2011a). This illustrates the importance of evidence based design as part of any design process or creation of guidelines.

5.5. Conclusion

In general the stakeholders who were interviewed supported the objectives of shared space design but were concerned about the level of ambiguity created in Shared Space, Shared Surface and Home Zone Schemes and time after time the lack of segregation between pedestrians and motorists was seen as the biggest challenge. Overall the participants were more supportive of Home Zones and felt that the residential environment where all users would have a high level of familiarity with area is more suitable for shared space design.

6. Field Studies

Understanding Street Practices and Behaviours

Accompanying a person as they make their way through the street provides an ideal opportunity to directly observe the manner in which they interact with their built environment. This chapter describes the field studies carried out with 11 very different users to gain an insight into how a typical street facilitates or hinders a person's everyday movement.

6.1. Introduction

The field studies were carried out to enable the research team to record the day-to-day issues in relation to travelling through some typical and not so typical Irish streets for a range of users including a typical motorist, cyclist, parent and child, an older person and a number of people with sensory and mobility difficulties. Each person was shadowed by two members of the research team who recorded the journeys and discussed any issues as they arose with the participants.

6.2. Field study methodology

The field studies were carried out on Mondays and Tuesdays between 10am and 12.30pm or 2.30pm and 4pm during November and December 2011 and took place along a route between Abbey Street Luas stop and Talbot Street in Dublin city centre. A plan of the field

study area is shown in Figure 6.1. and illustrates the main sections of the journey. The dates and times were chosen to ensure that the streets were not overly crowded with Christmas shoppers and were intended to be representative of other times of the year.

At numerous points along the field study route (labelled as A to J on figure 6.1) the participants were stopped by the researchers and asked to comment on their experience of the section of the journey covered. Participants were given an opportunity to comment on design featur4es that both helped and hindered their navigation of the space.

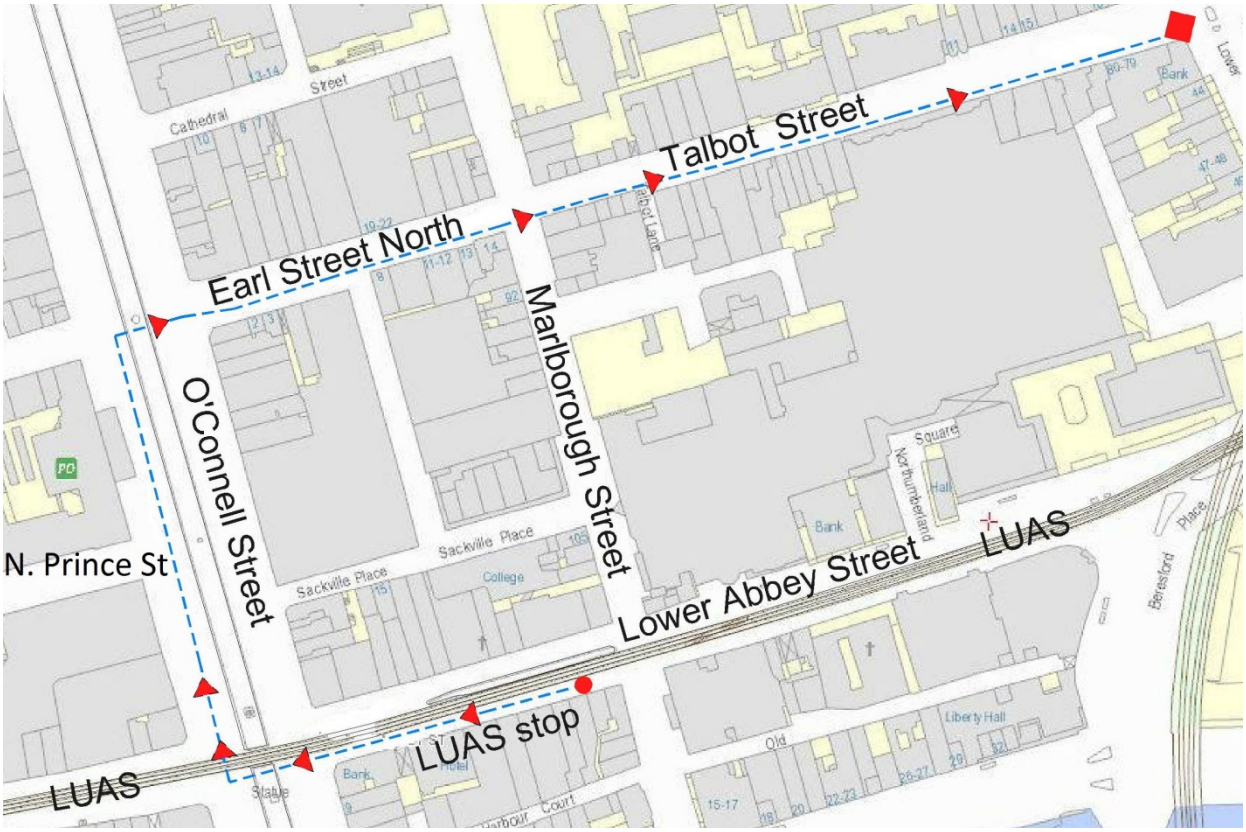


Figure 6.1 - Plan of Field Study Area

The field study was conducted with eleven different end users. The end users included the following range of ages, sizes, abilities and disabilities along with four different modes of transport. The methods employed to record observations and identify navigational needs were field notes, photographs and videos. In addition the end users were interviewed during the field study. The field study participants were as follows:

1. A powered wheelchair user
2. A manual wheelchair user
3. A person with hearing difficulties
4. A long cane user
5. A guide dog user
6. A motorist
7. A cyclist
8. A person of small stature

9. An older person
10. A parent with a child in a buggy
11. A parent walking with a small child

Figure 6.2 – Images of some of the field study participants

The first section of the journey shown as orange in Figure 6.1 represents the Lower Abbey Street which contains two Luas stops and corresponding Luas line (see Figure 6.3 below)

Figure 6.3 – Lower Abbey Street Dublin 1

The next section is highlighted in light yellow and this represents O'Connell Street which is a wide boulevard that has recently been extensively upgraded to include dark smooth granite

paving, tactile paving in the form of stainless steel metal studs and other upgrading measures (see Figure 6.4 below).

Figure 6.4 – Lower Abbey Street Dublin 1

The green section of Figure 6.1 shows Earl Street North which is a short pedestrian Street connecting O'Connell Street to Talbot Street (see Figure 6.5 below).

Figure 6.5 – Earl Street North Dublin 1

The darker yellow section on Figure 6.1 represents Talbot street which is a more traditional street with dropped kerb and bollards.

Figure 6.6 – Talbot Street Dublin 1

6.3. Findings from the field study

The field study identified several positive and negative features that either aided or obstructed the end users when attempting to navigate the field study area. This information will need to be taken fully into account when developing a tool box for shared space design in an Irish context. The main issues are as follows:

6.3.1. Clear delineation between the pavement and the carriageway

Vulnerable road users require certainty as to the location of the pavement and clear delineation between the pavement and the carriageway. The majority of the users, including those with mobility difficulties, commented that they were in favour of kerbs and it greatly increased their certainty regarding safety.

6.3.2. Crossing intersections safely

There is also a need for certainty about when it is safe to cross intersections, this is easier at controlled crossings and arose as more of a problem at uncontrolled junctions such as North Prince Street and the junction of North Earl Street and Marlborough Street.

6.3.3. Uncontrolled crossing

The uncontrolled crossing at North Prince Street posed a problem for many users as they often were unaware that they were at an intersection, and those that noted the junction were unaware of which road user had right of way. However, from the perspective of the cyclist and the motorist this junction was easier to navigate due to lack of clear right of way of any one road user, which created a greater sense of negotiation of use of the space and forgiveness of other road users.

6.3.4. Surfaces

Smooth, even surfaces that were well maintained were needed by a wide number of users to ensure a lack of trip hazards. However, most users, including those with mobility impairment, were in favour of tactile paving as it clearly signalled the presence of an intersection and helped to increased certainty about the interpretation of the streetscape. Colour changes associated with tactile paving were also appreciated and several participants in the study were critical of the metal stud tactile paving (Fig. 6.7) used on certain sections of O'Connell Street. There were several issues with accurate design of tactile paving which sometimes left the long cane user and guide dog user confused as to the message intended by the design.

Figure 6.7 – Detail of metal tactile paving used on O'Connell Street

6.3.5. Navigational cues

While most users appreciate wide open spaces such as those found on O'Connell Street, the lack of navigation cues in such a space posed a navigational difficulty for the long cane user.

6.4. Conclusion

These field studies provide a vital opportunity for the research team to observe how the selected stakeholders interact with their built environment and with other the users they encounter such as pedestrians, motorists and cyclists. It also clearly illustrates the many contradictions that can often be observed in terms of various stakeholder needs. Some users found the wide and open footpaths along O'Connell Street very comfortable and allowed much manoeuvring space whether they were pushing a child in a buggy or using a wheel chair. Some other users such as those using a long cane or a guide dog found these spaces disorientating and difficult to navigate.

7. Workshop 1

Personas to investigate users experiences

The first workshop was used primarily to present the research that had been completed up to that point including some agreed definitions for Shared Space, Shared Surfaces and Home Zones. However the main reason was to gather a range of stakeholders representing both providers and end users of various abilities together in one place to discuss the opportunities and challenges associated with shared space design. The use of personas to investigate user experience is a powerful tool to help all stakeholders understand the needs of other users. This workshop facilitated this process and produced some very interesting insights for both the research team and the workshop participants.

7.1. Introduction

The first stakeholder workshop on Shared Space, Shared Surfaces and Home Zones in an Irish context was held on Monday the 16th January 2012 in the Long Room Hub, Trinity College Dublin. The workshop was attended by 22 stakeholders, for full list of attendees please see Appendix 5. The workshop started out with an introduction to the terms Shared Space, Shared Surfaces and Homes Zones and a discussion of the positive and negative aspects of such urban design. This was followed by a review of some Irish examples as well as an overview of Shared Space and Home Zone guidelines in operation in the UK. The attendees

were then given an overview of the field study work conducted by the research team during November and December 2011, as detailed in Chapter 6 of this report.

The stakeholders were then divided into groups and tasked with two exercises, during the first exercise each group was assigned a persona and asked to examine a journey through a number of existing streetscape through the experience of their specific persona. They were asked to consider which aspects of the street assisted the journey and where barriers arose.

During the second exercise the stakeholders were asked to complete the same journeys again through the experience of the same persona, this time through streetscapes that had been modified following some current UK based guidelines for Shared Space and Home Zones depending on the context. The stakeholders reported the same information as in the initial exercise and commented on which street design was easier to move through.

7.2. Overview of the workshop exercises

The workshop attendees were divided into seven groups at the start of the first exercise, each group was assigned a different persona. The personas were as follows: a long cane user; a guide dog user; a manual wheelchair user; a child; an older person; a cyclist and a motorist. Each persona description included details about the individuals age; gender; work status; ability and a description about their objectives as they moved through the space, as well as what specific aspects of urban design they find helpful and where barriers might arise. These detailed persona descriptions were written to help the stakeholder empathise with their particular persona; full descriptions are provided in appendix 6.

Figure 7.1.A: Persona images – Long cane user, Guide dog user and Wheelchair user

Figure 7.1.B: Persona images - Child with parents and older gentleman

Figure 7.1.C: Persona images - Cyclist and motorist

The exercises completed during the workshop asked the stakeholders to consider their specific persona as they hypothetically walk a journey that started at the GPO plaza, on O'Connell Street, and ended at the junction of Talbot Street and Gardiner Street. (see Figure 7.2) The stakeholders were asked to visualise this journey with the help of street plans and

photographs. The participants were asked to carefully consider the various elements of the street environments that help or hindered their personas navigation of the space.

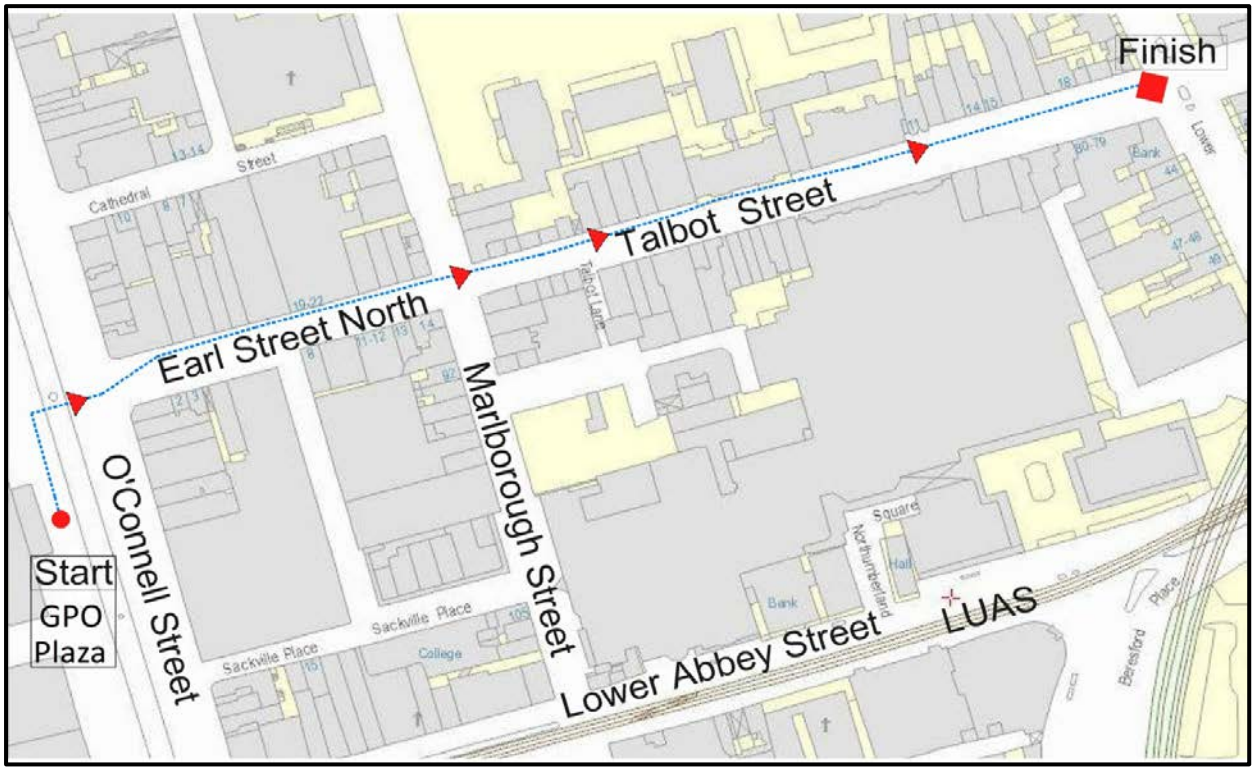


Figure 7.2: Plan of city centre case study route

Once each group had completed the city centre section of their journey they were asked to consider a journey through a typical residential street through the eyes of their persona. The stakeholders were asked to refer to the street plans and photographs and consider the impact of the street design on their persona's journey.

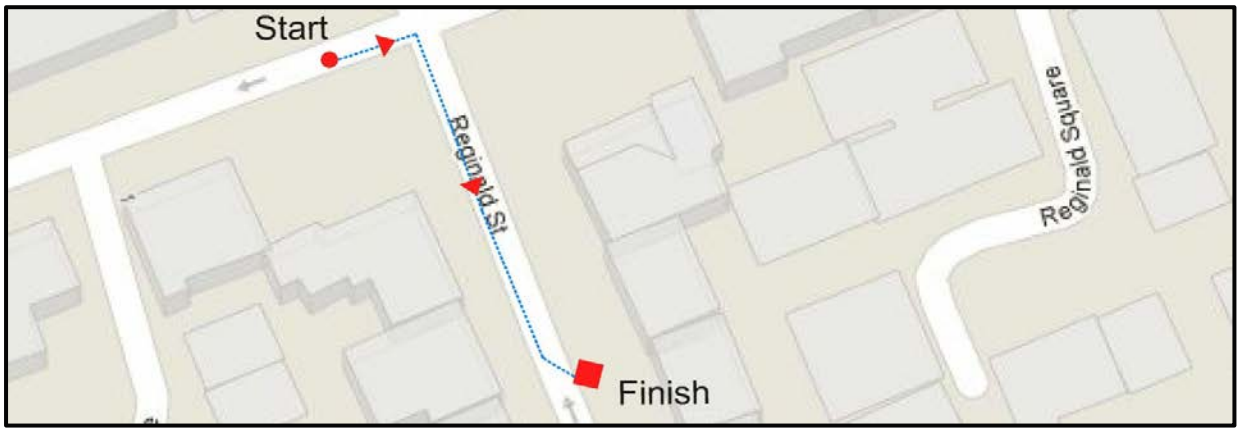


Figure 7.3: Plan of residential street case study route

7.2.1 Exercise 1

In the first exercise the workshop attendees considered their persona's journey from the GPO Plaza to Talbot Street route as the streetscape is currently designed. Each group was

provided with plan drawings of the route as well as photographs to illustrate the various different physical street features of the case study site. (See Figure 7.4 and Appendix 7).

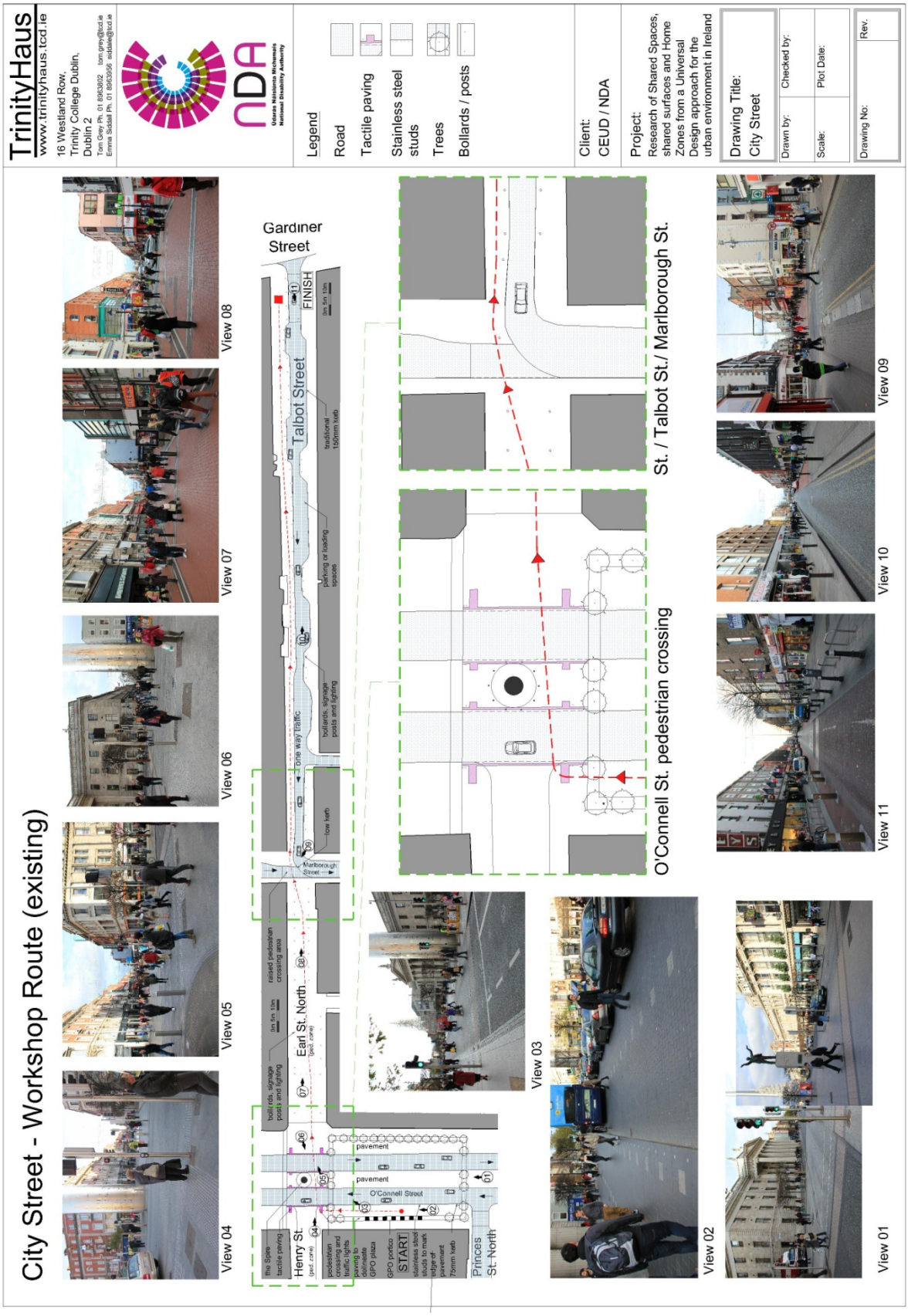


Figure 7.4: Plan drawing and photos of the traditional city street route (exercise 1, route 1

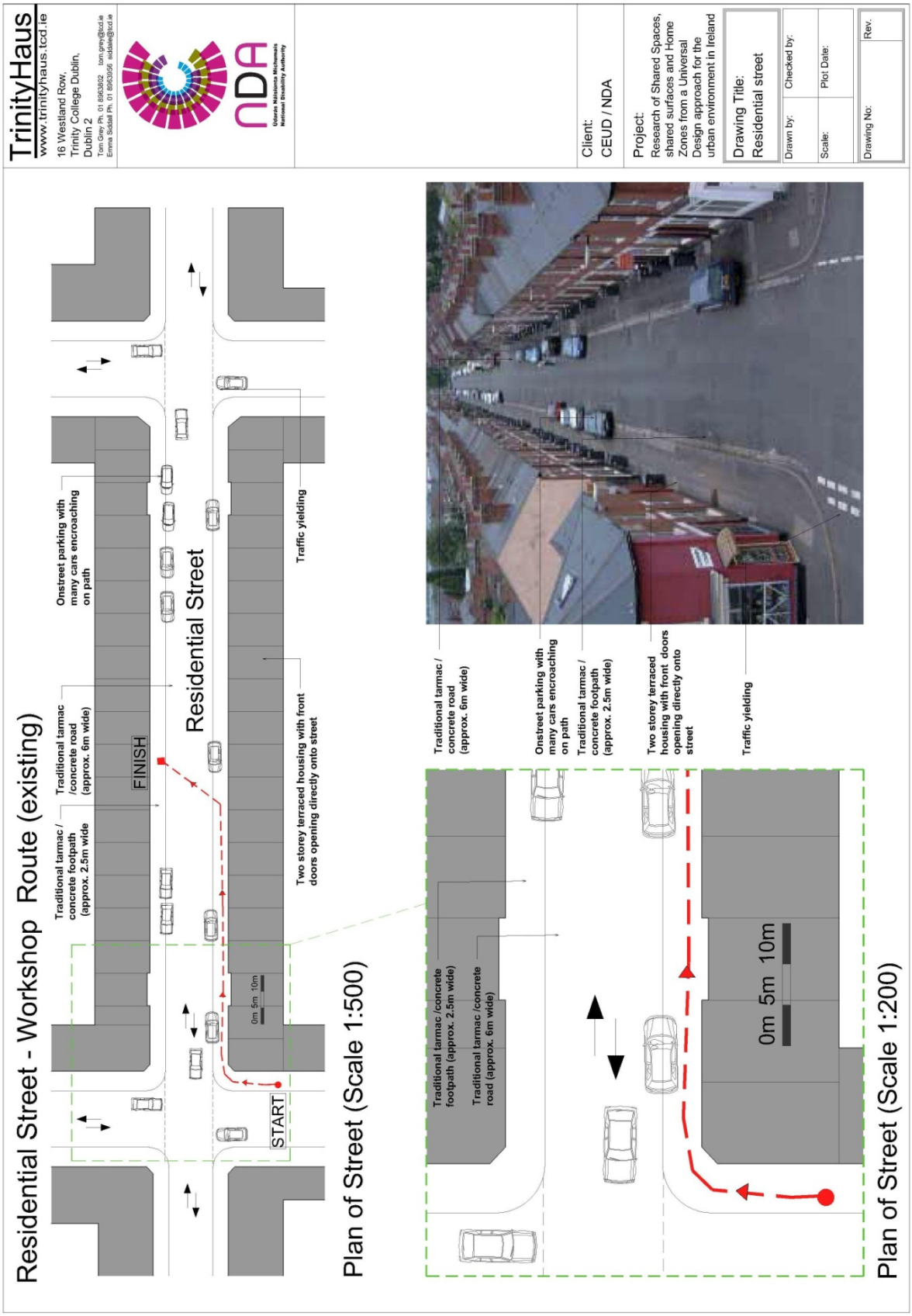


Figure 7.5: Plan drawing & photos of the traditional residential street route (exercise 1, route 2)

The second part of the first exercise provided the attendees with a plan drawing and photographs of a typical residential street with terraced houses opening directly onto the pavement. For this exercise the workshop participants were asked to consider a short journey which starts on a street perpendicular to the case study street, takes the participants around the corner onto the street and then gets them to cross the carriageway to one of the houses approximately half way up the street. Figure 7.5 above and appendix 8 illustrates the maps and photographs supplied for this section of the exercise

During both parts of the exercise each group was asked to consider between three to five physical features of the route that were helpful in completing the journey, and three to five design features that may pose a difficulty for their persona.

7.2.2. Exercise 2

The second exercise followed a similar format to the first; however in this exercise the GPO Plaza on O'Connell Street to Talbot Street route had been modified to represent Shared Space in accordance with the UK Shared Space guidelines (Department for Transport UK, 2011c). Details of these modifications were provided via plan drawings and photographs, please see Figure 7.6 and Appendix 9.

The design of the street in the second exercise handout had been modified to follow Home Zone guidelines (Department for Transport UK, 2005b), again drawings and photographs illustrated the changes. (See figure 7.7 and appendix 10 of this document.)

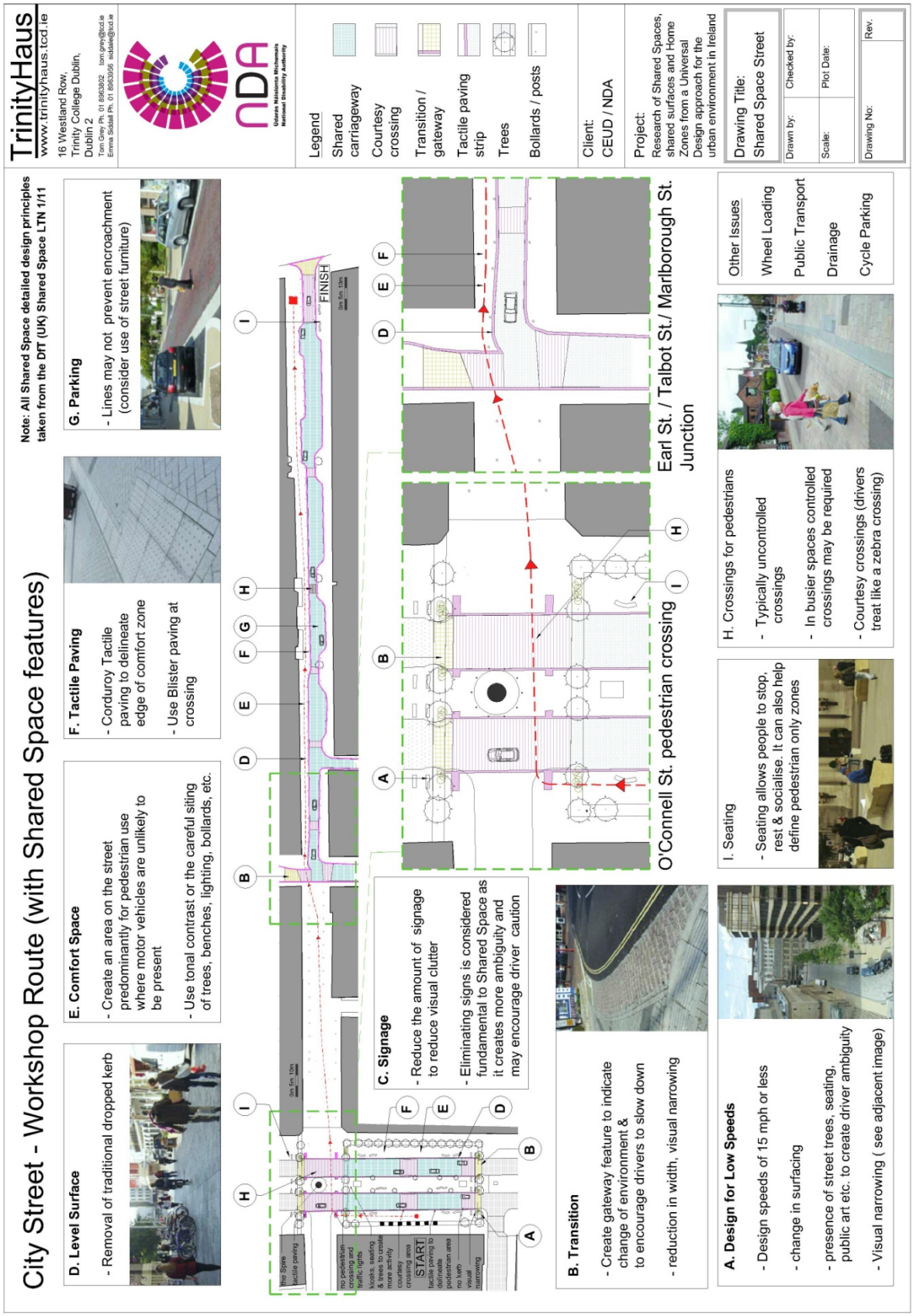


Figure 7.6: Plan drawing & photos of the Shared Space city street route (exercise 2, route 1)

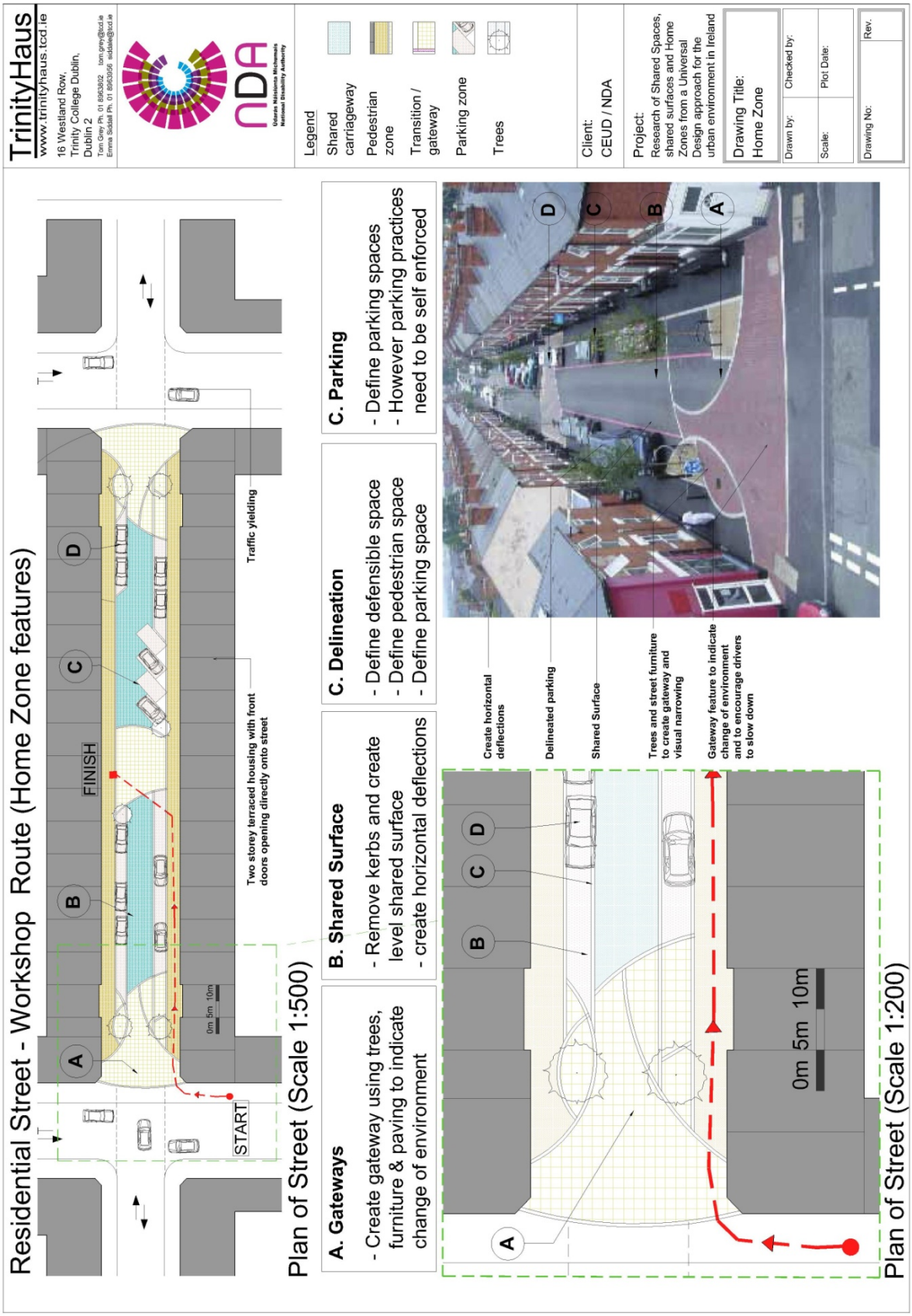


Figure 7.7: Plan drawing & photos of the Home Zone route (exercise 2, route 2)

7.3. Summary of workshop findings

Both the research team and the stakeholders who attended the workshop found it a useful event. From the discussions during and after the workshop several issues became clear regarding the implementation of Shared Space, Shared Surfaces and Homes Zones in Ireland.

- The overriding issue that arose was whether the benefits of Shared Space require the total removal of dropped kerbs; it became evident that there was greater support for Shared Spaces than Shared Surfaces. It was also suggested that any Shared Space project needs to maintain a comfort zone to ensure vulnerable users are not excluded from the space.
- The location of any Shared Space project needs to be given careful consideration as it was suggested that such designs are much more likely to be successful in areas with low traffic volumes and no bus routes.
- There was general support for Home Zones, however again it was suggest that the benefits of such design could be achieved without kerb removal.
- For any form of Shared Space or Home Zone it is essential that the implementation of the project includes proper driver, cyclist and pedestrian education on how to use these spaces, as well as adequate transitions zones designed into the space to alter user behaviour when they enter and exit.
- The economic implications of Shared Space design are multifaceted and both positive and negative. It emerged from the workshop that further discussion and consideration needs to be given to this aspect of the research including discussions with the Irish Society of Quantity Surveyors.
- Before any guidelines regarding the development of Shared Space, Shared Surfaces and Home Zones can be developed for Ireland there needs to be a greater period of pilot studies completed to facilitate the collection of unbiased quantitative data on the experience of various users in such street design to facilitate evidence based decision making.

8. User and Providers

Findings from Research and Engagement Process

"Moving elements in a city, and in particular the people and their activities, are as important as the stationery physical parts. We are not simply observers of this spectacle, but are ourselves a part of it, on the stage with other participants" (Lynch, 1960). This chapter takes a closer look at the key participants and seeks to understand some of their key individual needs.

8.1. Introduction

This chapter draws on the work outlined in the previous chapters and seeks to provide an overview of the needs of a range of stakeholders who have an interest in the functioning and quality of the built urban environment. A major challenge in achieving a high quality and fully accessible built environment is balancing the various and oftentimes conflicting interests of all stakeholders.

8.2. Street Users

In discussing general pedestrian needs Methorst (2011) states that mobility, including walking is related not just to the opportunities offered to people, but also to their abilities and needs. He suggests that pedestrian activity is complex and needs to be treated carefully in terms of urban policy.

"Behaviour takes place on several planes: on the general lifestyle level (where to live, employment, holiday decisions, etc), on the day-to-day strategic level (where to go, when and how), on a tactical level (which route to take, attention level, how quickly to move) and at an operational level (how to walk and react to traffic and others in the environment). All these levels need policy attention." (Methorst, 2011)

This complexity is often hidden from policy makers as generally they are male, between 25 and 50 years of age, healthy, earn a good income, and are often are car owners. Methorst (2011) calls for "Comprehensive analysis is needed to uncover (partially) hidden matters. With regard to abilities and opportunities, children, the elderly, persons with mobility handicaps and low-income people often are captive walkers, meaning that they have no alternative other than to go on foot".

The following sections seek to examine a range of specific street users, including pedestrians, cyclists and motorists to determine their particular needs and understand how various users interact with their urban spaces and each other.

8.2.1. People with visual difficulties

The most vocal disability groups campaigning against the shared space concept and commissioning further research into the issues surround such design tend to be those organisations that represent the needs of people with visual difficulties. However, there are other users for which Shared Space, Shared Surfaces and Home Zones may also raise concerns such as people with hearing and mobility difficulties especially those that use rollators or crutches, children and people with cognitive difficulties (Guide Dogs, 2006).

People with visual difficulties have a variety of different wayfinding techniques depending on the navigational aids they use, the different methods are clearly outlined by Atkin (2010). People with residual sight tend to rely on what sight they have, as well as sound and memory of the streetscape or urban space. For these users tonal contrast between the pavement and carriageway is important, meaningless colour changes can be confusing, and sudden level changes without indication via colour changes can cause trip hazards.

Long cane users rely heavily on tactile paving, audible information from directional traffic movement, and audio pedestrian lights. They tend to use the building line as an

orientational cue but will avoid the kerb line as they feel unsafe walking so close to traffic; wide open spaces without good navigational cues can cause disorientation. Level surfaces with no height differences between the path and carriage way can pose difficulties for long cane users as there is no way to detect movement from the path onto the road (Atkin, 2010).

Finally, Atkin (2010) considered navigational methods used by guide dog users, he found that they rely on tactile paving, signals received from the dog and audible information such as traffic noises. Guide dogs are trained to orientate themselves using the kerb line and the building line. Guide dog users can use tactile paving to differentiate between the path and carriageway, however if the tactile paving is missed for whatever reason, and the surfaces are level, a person with visual difficulties has no way of correcting the dog's mistake, and may be placed in a dangerous situation.

People with visual difficulties can often find Shared Space difficult to navigate as much of the traditional navigational cue are removed such as kerb lines, tonal changes between path and carriageway and clear creation of car free safe zones (Atkin, 2010). As previously mentioned this can lead to vulnerable road users deliberately avoiding the Shared Space or Shared Surface. It has been suggested that the statistics on the reduction of vulnerable road users involved in accidents in areas converted to Shared Space may in fact reflect the reduced number of such users in the space, rather than increased safety of these users (Imrei and Kumar, 2010).

As a potential solution to the concerns raised above the creation of a "safe space" within the Shared Space has been suggested. This would create a guaranteed car free zone in which vulnerable road users could walk with confidence. However, if such "safe space" was to be created in a shared surface where there are no changes in level then alternative delineators are required (Thomas and Wood, 2006).

In 2010 University College London were commissioned by Transport for London to carry out research to examine alternative delineators which could potentially be used to delineate "safe space" in a Shared Space or Shared Surface. This study tested a variety of tactile paving forms such as blister paving, corduroy paving, sloped surfaces and ridged rumble paving. A sample of users with visual difficulties and other users with mobility impairments were allowed to cross the different surfaces and comment on their effectiveness as alternative delineators. However, the research concluded that none of the paving surfaces detected were suitable for use by people with visual and mobility difficulties and that further research was needed to find a suitable delineator for "safe spaces" within Shared Space (Childs et al., 2010).

8.2.2. Wheelchair User and Physical Disability

The Shared Space Local Transport Note (2011c) provides some discussion on the needs of vulnerable pedestrians and describes how people with mobility difficulties find streetscapes free of clutter, with even surfaces and limited crossfall easy to navigate. Those with limited mobility, arthritis suffers, and cane or rollator users need plenty of well placed seating to afford resting points. The UK based Manual for Streets (Department for Transport UK, 2007) suggest that seating should be provided at 100 metre intervals along key pedestrian route and should be located where there is good natural surveillance. The UK Inclusive Mobility (Department for Transport UK, 2005c) guidance, refers to recommended walking distances for people with various mobility difficulties and points out that while a typical wheelchair user my need to rest approximately every 150m, a person with a mobility difficulties who uses a stick would need to rest every 50m. This document therefore suggests that suitable seating should be provided at internals no greater than 50m.

During the interviews carried out for this research many people with mobility difficulties also spoke about other issues they experience when moving over certain types of tactile paving, including the blister paving formed by stainless steel studs embedded in granite slabs. Some participants complained that this became quite slippery after rainfall. There were also some issues such as overcrowding and short crossing times at certain signal controlled pedestrian crossings.

8.2.3. People with hearing difficulties (Deaf People, those hard of hearing and the deafened)

People with hearing difficulties also have associated balance issues and therefore even street surfaces with appropriate crossfall also assist their ease and comfort when using streets (Department for Transport UK, 2011b). During the field studies for this research one participant with hearing difficulties who also represented the Irish Deaf Society, spoke about the need for wider footpaths to allow two people walk comfortably side by side to facilitate lip reading or communication through sign language. The issue also arose about the inability to hear oncoming traffic or emergency vehicles which were out of direct view or approaching from behind. This was highlighted as an issue when the individual needs to cross a street in moving traffic or navigate through a space where there is a certain mix of motorists and pedestrians.

8.2.4. Intellectual Disability or Cognitive Disability

For users with cognitive difficulties, developmental difficulties or dementia, clear legibility of the streetscape greatly improves ease of use, comfort and perception of safety. Burton and

Mitchell (2006) discuss the need for dementia friendly streets and outline how those with dementia can often suffer from cognitive decline that effects memory and spatial abilities. This will cause disorientation and forgetfulness often causing people to get lost, not remember where they are going and forget the names of streets and key landmarks.

During discussions with Irish Autism Action, it was pointed out that many people with autism and or other disorders from the Autism spectrum experience many challenges in the urban environment. People with autism have difficulties processing normal communication signals and body language from others and can therefore cause difficulties when navigating through public spaces and crowds. Hypersensitivity in the form of; hypervision, being disturbed by bright or flickering lights, hypertactility, heightened sense of touch and discomfort from physical contact, or hypersensitive hearing, where sound and noise causes are hard to handle. Such hypersensitivity can cause many obvious problems for people in public spaces or streets where noise, crowds and bright lights are part of everyday life.

On the other hand people with autism can also suffer from hyposensitivity where their vision, hearing or sense of touch is diminished. Again those suffering from such conditions can be in danger of not perceiving typical challenges such as pedestrian stop lights, the sound of oncoming traffic, emergency sirens or public announcements. People with hypotactility may also fail to notice or understand tactile paving.

8.2.5. People of small stature (People of restricted growth)

A representative of the organisation Little People of Ireland, who were founded to raise awareness and support people of restricted growth, engaged in this research in the form of an interview, participation in the field study and attendance at a workshop. In relation to the built environment the main concerns are around reaching such facilities as ticket dispensing machines, public telephones, ATMs or certain door handles to public buildings. When travelling through urban spaces, the participant typically experiences difficulty in completing long walking journeys due to restricted limb length and also remaining visible to motorists and cyclists. This is particularly an issue if the person is forced to cross a street where there is no signal controlled pedestrian crossing or in an area where there is a greater sharing of the carriageway by vehicles and pedestrians.

8.2.6. Older People

The quality of the built environment and of neighbourhoods has been shown to contribute to older people's health through opportunities to be active and through the provision of spaces where people can socialise (Sugiyama and Ward Thompson, 2007). However many of these activities require a certain level of physical strength and fitness and often times the

built environment presents barriers that older people find difficult to negotiate (Sugiyama and Ward Thompson, 2005)

Research carried out by the Inclusive Design for Getting Outdoors (I'DGO) research consortium has examined the many issues that affect older people in the built environment and they have published a set of findings and guidelines (I'DGO, 2010). This research which involved focus groups, interviews and onsite audits and found a number of common preferences and concerns for older people. Most of respondents preferred wide, uncluttered footpaths with minimum temporary obstacles and for the parking of cars on footpaths to be discouraged. The research also found that typically the respondents favoured traditional kerbs and dropped kerbs where required to clearly differentiate the carriageway from the footpath. Many found the presence of tactile paving at the dropped kerb uncomfortable and some reported that they felt like they could twist their ankle. In relation to pedestrian crossings, most felt that a signal controlled crossing suited them best while the least favourite was informal or uncontrolled crossings. Most of the older people interviewed also welcomed the presence of seating as rest points at appropriate distances but would also use informal objects such as low walls or seating in bus shelters to rest.

While researching this project the authors spoke with a representative of CARDI (Centre for Ageing Research and Development in Ireland) and also interviewed and carried out a field test with a man of eight-seven years. Aging represents the onset of many disabilities, to a greater or lesser extent, and the concerns voiced by all other groups are relevant to older people. In addition to the concerns raised by the I'DGO research, there is also an issue around providing a legible and clearly understood environment for older people with cognitive decline and especially dementia. The work of Burton and Mitchell (2006) as mentioned earlier, suggest a number of design principles which they believe would help address the problems faced by those with dementia . According to these principles, streets should be designed to take account of; familiarity, legibility, distinctiveness, accessibility, comfort and safety.

8.2.7. Children

In discussing the needs of children and the design of streets with representatives from the Children's Research Centre in Trinity College Dublin and Sugradh, a charity that promotes play opportunities for children in Ireland, it became apparent that these organisations felt that the needs of children were not given sufficient attention in terms of the urban built environment. The Irish National Children's strategy (Government of Ireland, 2000) states that children should benefit from a built environment that supports their physical and emotional well-being. Research carried out into Irish Government policy on the built environment for children shows that the streets and road close to a child's homes are the

most important locations for play (Kerrins, 2011) yet children's mobility range is decreasing due to parental fear and perception of risk. This research also points to the concept of Home Zones as good practice in terms of providing a safe outdoor environment for children.

When discussing children's needs in the built environment with a representative from the Children's Research Centre, in Trinity College Dublin, it was stated that children are rarely directly engaged with regarding their needs. It was agreed that some method to capture the opinions, voice and needs of children would inform the design process and create a more child friendly city.

8.2.8. Cyclists

Cyclists are also considered to be vulnerable road users who tend to try to avoid heavy traffic flows, however increased pedestrian traffic can also pose a collision hazard for cyclists. Cyclists need smooth surfaces over which to ride, and sufficient bike locking facilities at convenient locations. According to the UK Manual for streets, cyclists prefer direct, barrier free route which allow them to keep moving without having to stop. (Department for Transport UK, 2007). This document also states that in areas of low traffic volume and speeds that cyclists should be accommodated on the carriageway, without the need for additional cycle lanes.

The 'Irish National Cycle Manual' was published in 2011 (National Transport Authority, 2011b) and along with a wide range of guidelines for the planning and design of cycling facilities it also sets out five key requirements for cyclists including; road safety, coherence, directness, attractiveness and comfort. The guidance states that conflict arises where different modes of transport share the same space and goes on to provide detailed guidance to reduce this risk especially at junctions.

Within a Shared Space cyclists tend to have a heightened awareness of pedestrians and tend to cycle around them, or give way to them, rather than the other way around (Department for Transport UK, 2011c). The development of Shared Space increases the route choice for cyclists as they are permitted to use such space while they are prohibited from using pedestrianised areas (Department for Transport UK, 2011c)

8.2.9. Motorists

Hamilton Baillie (2008a) discusses the segregation of traffic from pedestrians and points to the seminal report 'Traffic in Town' as prepared by Colin Buchannan. In this 1963 report, Buchannan states that the two principle functions of streets and public spaces were for

movement and social interaction and that as traffic volumes increased that the two function would have to be separated and this has become common practice in urban areas ever since. However Hamilton-Ballie argues that in today's cities traffic journey times improve at lower steady speeds (Hamilton-Baillie and Jones, 2005) and that achieving lower speeds is not necessarily a traffic engineering issue, but more an exercise in making drivers appreciate risk and interact more fully with other road users such as pedestrians. (Hamilton-Baillie, 2008b). Engwicht (1993, Engwicht, 1999) discusses the "psychological retreat" from the street and how street design needs to reverse this phenomenon in order to populate the street with people and activity.

During the field studies and interviews for this research it was stated by many of the participants that they believed drivers were quite accommodating to pedestrians. Observations on the street suggested this to be the case and many drivers were seen to give way to pedestrians at uncontrolled crossings or even when the driver had a green light at pedestrian crossings. The MVA research referred to earlier in this document (MVA & Department for Transport UK, 2009) looks at driver / pedestrian interaction and points to studies carried out in the UK and Sweden which show in both cases that motorists give way to pedestrians at courtesy crossings and in Shared Spaces.

Many participants spoke about driver expectations and pointed out that while driving in areas with high concentrations of pedestrians drivers proceeded with more courtesy and caution. It was stressed that driver awareness, expectations of behaviour in certain locations and education are critical to road safety and would play an integral role in shared space design.

8.3. Businesses

The previous sections have looked at the specific needs of street users in terms of socialising or travelling through the street. This section looks briefly at business owners who also rely heavily on the attractiveness and usability of the street to maintain their business.

All businesses depend on an efficient road network for service and goods delivery but retail, hospitality, tourist attractions and other urban based businesses mostly rely on direct customer footfall to remain economically viable. To gain some insight into the business perspective, the research team spoke with a representative of the Dublin Business Association who spoke about the importance of an attractive urban public realm to businesses in the city.

Research carried out by CABE, the UK Commission for Architecture and the Built Environment, (2007) demonstrated that investment in design quality brings quantifiable financial returns and that people value improvements to their streets. The report titled

'Paved with gold: the real value of good street design' shows that better streets result in higher market prices for both retail properties and residential units.

While many business owners are understandably nervous about major upgrades which may impact on their day-to-to activities, research by Sinnett et al. (2011) shows that improvements in the walking environment have the potential to increase economic value and activity in a local area. In addition it is worth pointing out that the importance of pedestrian traffic is often undervalued by business owners and Sinnett et al. point to a Sustrans study in Bristol which shows that business owners overestimate the proportion of customers arriving by car by almost double (Sustrans, 2006).

8.4. Providers and Designers

A broad range of providers and designers were consulted during this research including the Royal Institute of Irish Architects, Engineers Ireland, the Irish Landscape Institute, the Irish Planning Association and the local authorities in Dublin, Cork and Galway. These organisations represent building professionals and providers of public space who design, construct, maintain or manage the streets and public spaces of Irish cities and towns.

Beyond best practice and design quality issues which are obviously the primary concern, these organisations also focused on the need for robust and low maintenance materials. Concerns about ongoing maintenance, drainage, street cleaning, rubbish collection, and the facilitation, protection and access of underground services were also highlighted as critical to the success of good public spaces.

In respect to Shared Space and Home Zones, representatives from these organisations stressed that Shared Spaces often require a shared responsibility. In Home Zones this is often a critical issue where residents are encouraged to colonise their communal spaces. In some cases anti-social practices can negatively affect the quality of these spaces and lead to tensions and conflict in a community.

The one concern that all designers and providers expressed was the current lack of a legislative frame to support Shared Space, Shared Surfaces or Home Zones in terms of legal definitions, best practice and design guidelines.

8.5. Universal Design Principles in the Streetscape

The Universal Design approach aims to "take into the account the needs of all people regardless of their age, size, ability or disabiliy", and is guided by the seven design principles discussed in Section 3.5 of this report and detailed in Appendix 1. It seeks to protect

vulnerable users, and to recognise that all people can be vulnerable at different times (this is specically referred to in Principle 2, "Flexibility in Use"). This advocates design approaches that ensure people feel their presence in the streetscape not to be of ancillary concern, but rather provides them the space and support to be mobile, to understand their environment, and to access and use street-based amenities.

Cues for orientation and navigation should be available and obvious so that the environment is "Simple and Intuitive" (Principle 3) in use, and these various cues need to be comprehensible and consistent ("Perceptible Information", Principle 4). As discussed in section 6 and 7, all participants and stakeholders in this study have been shown to make use of a variety of environmental cues such as surface colour, surface texture, landmarks, signs and visual/audible signals, sound reflections, kerbs, columns, bollards, buildings lines and many other items – and their commenting also touches upon their absence or inadequecy.

The commentary from many of the participants welcomed the breadth of space provided at and around the O'Connell Street plaza, and within the pedestrianised elements of the journey, but the long cane user commented on the absence of reliable navigational aids in these this area ("Size and Approach for Space and Use" Principle 7). In the stakeholder workshop, the groups who took on the persona of a wheelchair user and the guide dog user felt the need for space to negotiate passage when meeting oncoming pedestrian traffic, whereas the group considering the child persona were hopeful of letting her loose in certain areas without fearing for her safety. Within these spaces, subtle conditions such as cross - falls can place much higher physical demands on manual wheelchair users – yet be unnoticeable by other users ("Low Physical Effort", Principle 6). A similar situation arose with tactile "bubble" paving, which was challenging both for the mother with her buggy, and the older user (as envisaged by the workshop attendees), but was considered vital for the users with visual difficulties, and useful by the wheelchair user. From these observations it is clear that different types of users can have conflicting needs, yet they seek similar levels of provision, but for diverse reasons. This highlights the importance of seeking design partners, (uers of various ages, sizes, abilities and disabilites) who can work directly with designers and with each other to provide the optimum desigh solution.

It is clear that in order to ensure that Shared Space, Shared Surfaces and Home Zones meet the needs of all users that a Universal Design approach should be adopted which focuses on early engagement with users in the design and planning stage of the street, see figure 8.1. There needs to be regular feedback of user experiences into the design via a cyclical process and the evolution of such streetscapes to ensure the most inclusive street environment possible. This is in contrast to the current design process for most streetscapes in which users are only brought into the consultation process after detailed designs have been agreed, and therefore their concerns are often viewed as oppositional and fail to be incorporated into the final streetscape produced (Atkin, 2010).

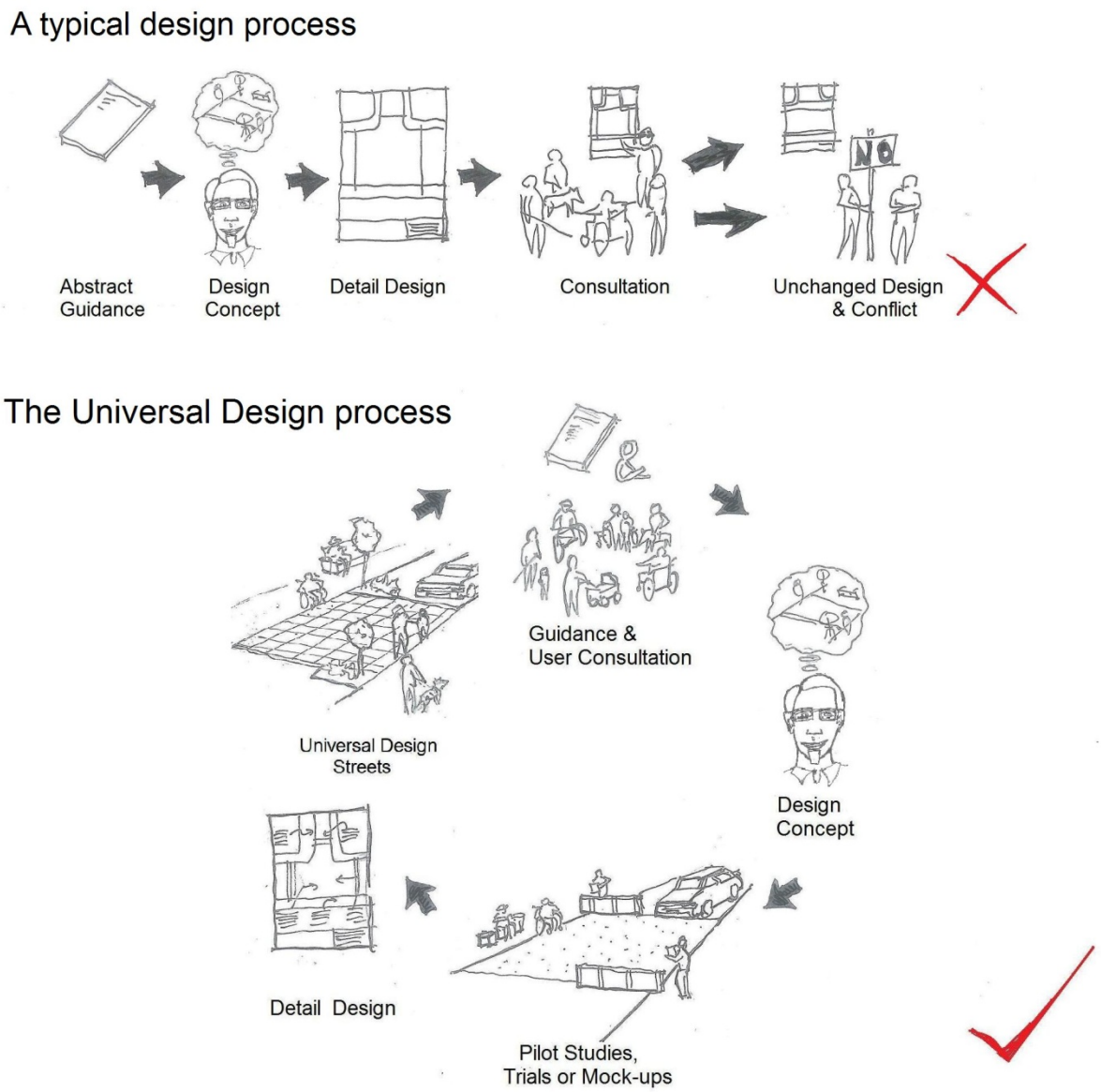


Figure 8.1: Comparison of current and Universal Design processes - adapted from (Atkin, 2010)

8.6 Conclusion

The stakeholder needs outlined in this chapter demonstrate the complex and often conflicting requirements of various end users. It highlights the challenges presented to designers, building professional and local authorities in attempting to achieve a built environment which is acceptable to all. It also stresses the need for comprehensive stakeholder consultation and end user participation in order to build consensus, mutual understanding and to capture the natural intelligence that exists in the community.

9.Case Study Urban Spaces

Key Urban Spaces in Ireland and Home Zones

Having outlined a range of user and provider needs in Chapter 8, this chapter briefly looks at some key urban spaces in Ireland and also examines a number of existing Home Zones. This brief examination puts the user and provider needs in context and illustrates some of the urban spaces in which these needs are played out.

9.1. Introduction

The following sections look at two distinct kinds of spaces. The first examples relate to two major inner urban public spaces in Ireland's largest cities, while the second group focuses on a two recently completed Home Zones in Dublin. These examples provide a flavour of the urban spaces and residential areas discussed in this research.

As part of this project the research team visited a large number of sites in the Dublin area, Cork City and Galway City including the recently upgraded Eyre Square and some Home Zones in the Ballybane area to the east of Galway city. In each case key people from the local authority were contacted and interviewed to understand more fully the main aspects of the urban spaces or Home Zones being examined. This section of the report selects two urban areas and two Home Zones to illustrate the research carried out.

9.2. Irish case studies

9.2.1. GPO Plaza, O'Connell Street, Dublin City Centre

The GPO Plaza is a recently created area on O'Connell Street in Dublin. It aims to create a better sense of place outside the General Post Office and to introduce some traffic calming and rebalance the pedestrian and motorist relationship on O'Connell Street. Figure 9.1 below shows a map of the O'Connell Street area with the GPO Plaza area highlighted in red, while Figure 9.2 provides a typical image of the street.

Figure 9.1 – Map of O'Connell Street, Dublin, highlighting the GPO Plaza in red.

Figure 9.2 – Photograph of O'Connell Street, Dublin.

Overall the area in front of the GPO has been defined using dark granite paving slabs which cover both the footpath and carriage way areas in an effort to create coherence across the full plaza to visually form one large space without too much differentiation between pedestrian areas and vehicle area, see Figure 9.3 below.

The main pedestrian areas to either side have been widened and are segregated from the carriageway by 75mm high kerbs. The dark grey paving material extends to the carriageway but the edge of the paving is marked with stainless steel studs as indicated below in Figure 9.3. The overall effect is that people tend to use the overall plaza space to cross the street and there is less definition between the pedestrian footpaths and the carriage way.

Figure 9.3 - Photographs showing junction of footpath and kerb at the GPO Plaza, O'Connell Street, Dublin

Most users and stakeholders interviewed agree that the upgrade has improved the area and it is now a more pleasant place to use because of the wider footpaths, the smoother surfaces, the higher quality materials and an overall better sense of place. However, there were still specific concerns, including:

- Lack of clear distinction between the footpath and the carriage way due to the low kerb and the lack of colour differentiation between the pedestrian and traffic areas. This was particularly an issue for those with visual difficulties and older people.
- The use of stainless steel studs set in the granite slabs, as a form of tactile paving, was considered slippery when wet and may cause glare under certain light conditions.
- Tactile paving used to signal crossing stopped short of building lines and therefore was absent in the building line zone used by long cane users.
- Lack of seating or resting spaces

9.2.2. Patrick Street, Cork City Centre

Patrick Street in Cork forms one of the main shopping thoroughfares in the city and was upgraded in 2008 to improve the overall space and provide a higher quality pedestrian environment. Figure 9.4 below shows the location and general layout of the street while Figure 9.5 provides a typical image of the street.

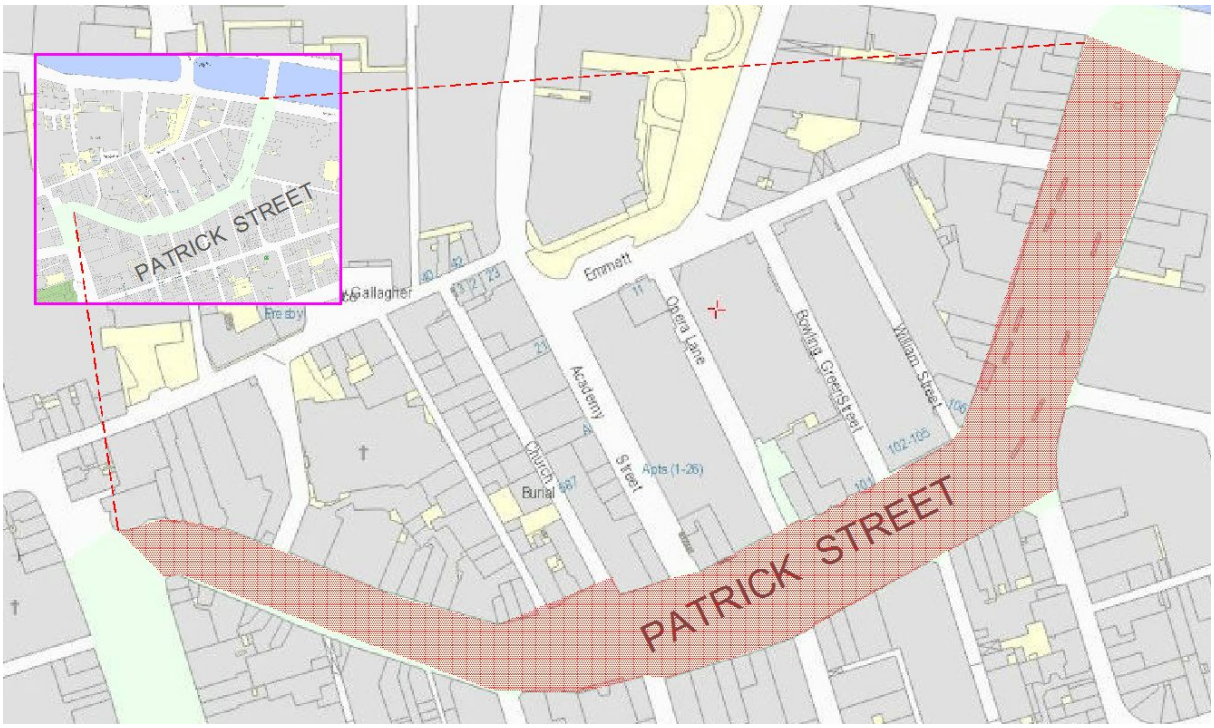


Figure 9.4 - Map of Patrick Street in Cork City.

Figure 9.5 - : Photographs of Patrick Street in Cork City

The pedestrian area on the north side of the street was significantly widened and the kerb was mostly removed along the junction between the carriageway and the footpath.

However asphalt was used for the carriageway in the main with only the crossing points having paving similar to the footpath. Large blocks of stone and 'standing seats' were introduced as resting places while large feature lighting was placed along each side of the street. Significant amounts of tactile paving were utilised to provide some warnings and demarcation along the street.

Figure 9.6 . A - Patrick Street in Cork. Tactile paving spine.

Figure 9.6. B - Patrick Street in Cork. Image 1 – Kerbless edge / level surface . Image 2 – lighting stands

Similar to the O'Connell Street upgrade, many users and stakeholders interviewed agree that the upgrade has been a great improvement to the overall quality of the pedestrian experience because of the wider footpaths, the smoother surfaces, the higher quality materials. However, some users now find the space very difficult to navigate and a few have reported that they now avoid using the space altogether. There were some strong concerns about specific aspects of the upgrade as follows:

- Multiple finishes and paving types causing confusion with the tactile paving (see Figure 9.6.A).
- Lack of consistency with the tactile paving. A spine of corduroy paving runs up the pedestrian area on the north side of the street but it is broken, inconsistently located and often leading directly into obstacles (see Figure 9.6.A).
- Lack of clear distinction between the footpath and the carriageway along the north side of the street due to the lack of kerbs, especially for those with visual difficulties and guide dog users (see image 1 Figure 9.6.B).
- The stands for the street lighting along the south side of the street are X-shaped and therefore meet the ground in two places. This greatly reduces passage width and is very confusing for people using a long cane or a guide dog (see image 2 Figure 9.6.A).

9.2.3. Home Zone 1 - Castlegate Downs, Adamstown, Co. Dublin.

Adamstown is a Special Strategic Development Zone in South Dublin County Council and is located to the west of Dublin City. The master plan for the new development, parts of which are still under construction, has a specific street network composed of the Adamstown Boulevard, avenues, side streets and back streets. Castlegate Downs is in one of the completed parts of Adamstown and forms one of these back streets. Figure 9.7 below shows the location and general layout of the street while Figure 9.8 provides a typical image of the street.

Figure 9.7 - Location and general layout of Castlegate Downs, Co. Dublin

Figure 9.8 - Entrance to Castlegate Down, Co. Dublin

The Adamstown Master Plan and the Adamstown Design Guide permit the creation of Home Zones on the back streets of the development and provide specific guidance in terms of design and construction details. The Castlegate Downs Home Zone contains a Shared Surface to the front of the residential units where sloped, slightly raised kerbs are used to delineate defensible space in front of each unit. The Home Zone is clearly identified with signage (see Figure 9.8. above) and a raised table of different coloured paving to form the entrance.

Figure 9.9 – Design features of Castlegate Down Home Zone. Image 1 – Shared Surface. Image 2 – Home Zone signage.

Castlegate Downs is a recently occupied development and there is little feedback in terms of resident satisfaction. In terms of the overall success of the space in relation to Home Zone best practice, the research team has drawn the following conclusions:

- The entrance to the Home Zone is well defined by a raised table and signage but there is little horizontal deflection or visual narrowing to further slow motorists (see Image 1 Figure 9.9).
- The Shared Surface integrates the housing with the street and therefore should encourage greater colonisation of the space (see Image 1 Figure 9.9).
- The car parking areas, while traditional in layout, are clearly designated and therefore should avoid reckless parking (see Image 1 Figure 9.9).
- The street in front of the houses is very much a Shared Surface but some more vulnerable pedestrians might find the lack of comfort space disconcerting (see image 1 Figure 9.9).

- The signage provided at the entrance is explicit and leaves the motorist in no doubt as to who has priority within the space (see Image 2 Figure 9.9).
- The 10 km/h speed limit within the Home Zones should create a very safe pedestrian environment and provide a secure place for children to play (see Image 2 Figure 9.9).

9.2.4. Home Zone 2 - Dolmen Lane, Ballymun, Dublin 11

Dolmen Lane was completed in the last few years as part of the Ballymun Regeneration Programme. This is a social housing development and lies parallel to Balbutcher Lane which is a reconstructed street in Ballymun west. Figure 9.10 below shows the location and general layout of the street while Figure 9.11 provides a typical image of the street.

Figure 9.10 - Location and general layout of Dolmen Lane, Dublin 11

Figure 9.11 - Entrance to Dolmen Lane Home Zone, Dublin 11

Dolmen Lane has been designed as a Home Zone in an attempt to integrate the dwellings with the adjacent public spaces and create a safer play environment for children directly adjacent to their homes. Dolmen Lane has two vehicular entrances, both of which have a change in materials and signage to indicate that the driver is entering a Home Zone. There are also a number of pedestrian access points.

Figure 9.12.A – Design features of Dolmen Lane Home Zone.– Pedestrian area.

Figure 9.12.B – Design features of Dolmen Lane Home Zone.– 1 – planting. Image 2 – Horizontal deflection

While visiting the site the researchers had the opportunity to talk with some of the residents who had a number of observations and some concerns, mostly to do with anti-social behaviour in the space. The following points outline the main observations from the site visit and some of the residents comments:

- The entrance to the Home Zone is defined by a change in materials and some signage but there is little horizontal deflection or visual narrowing to further slow motorists (see Figure 9.12 B).
- The Shared Surface integrates the housing with the street only to a limited extent as the houses are provided with low walls and railings to clearly delineate defensible space (see Image 2 Figure 9.12.B).
- There are some pedestrian only spaces which provide some shared comfort space for pedestrians (see Figure 9.12.A).
- The car parking spaces are indicated using surface materials and if adhered to would provide horizontal deflection (See image Figure 9.12.B).
- The lane is a Shared Surface and some vulnerable pedestrians might find the lack of comfort space disconcerting (see image 2 Figure 9.12.B).
- The residents spoken to had a number of concerns about the Shared Surface and reported that while the large planting boxes restricted cars the lane was often used as a rat run by speeding motorcyclists.
- The other concern expressed was common to other Home Zones in Ballymun and those visited elsewhere, and related to children being perceived as a nuisance. The lack of defensible space or front adequately sized front gardens allow children to play right up against neighbours housing and this is causing some level of conflict.

9.3. Conclusion to Part 2

Part of this research report has outlined the stakeholder engagement process undertaken to fully explore various end user and provider needs in relation to the use, design, provision and management of streets and related public spaces. This process also educated many users about Shared Space, Shared Surfaces and Home Zones and managed to bring the various stakeholders together to form a shared understanding of each other's needs and agree some key definitions and terminology central to the research.

In addition to this stakeholder engagement a number of locations were visited in Dublin, Cork and Galway to examine the physical context for the activities of the stakeholders. This onsite analysis provides a better understanding of how people interact with their urban environment on a day-to-day basis and thus greatly informs the overall research.

The activities described in Part 2 illustrates the process undertaken to achieve a deeper understanding of user needs and a better knowledge of the streets, squares, residential areas and existing Home Zones, that provides the physical Irish urban context in which Shared Space, Shared Surfaces or Home Zones may be implemented. This research was used to create a set of key findings that were presented to the various stakeholders for their comments and feedback. The amended findings formed one of the main outputs from this

research and inform a set of evidence based recommendations, which are further discussed in Part 3 of this report.

Part 3

Research Findings & Recommendations

Part 3 of the report, which include chapters 10 11, 12 and 13, discusses the findings of the research and breaks them into seven themes. These research findings were reviewed during the second stakeholder workshop and the final research findings and associated recommendations are provided in detail at the end of this section of the report.

10.Key Research Findings

Key Findings from the Engagement process

10.1. Identification of key research findings

Following the extensive interviews with a wide variety of stakeholders, the first stakeholder workshop and review of EU and UK guidelines on Shared Space, Shared Surfaces and Home Zones a list of positive and negative features of Shared Space, Shared Surfaces and Home Zones were compiled, and are detailed in appendix 11. Based on these positive and negative attributes a list of key research findings were developed. It became apparent early on in the consultation process that the individual research findings tended to cluster around seven main themes. The themes are as follows: 1) Evidence based decision making 2) Legislation, design guidelines and enforcement 3) Education, awareness and training 4) Consultation and planning 5) Design and appropriate locations 6) Economic implications and 7) Maintenance, management, durability and sustainability. These themes are illustrated below in Figure 10.1.

Figure 10.1: Recommendation themes for Shared Spaces, Shared Surfaces and Home Zones.

Following the first stakeholder workshop, a second workshop was held on the 28th February 2012, and was again attended by broad range of representatives. This workshop provided the stakeholders with an opportunity to work through the key research findings in a structured way and provide feedback to the research team. Following the workshop the research team processed this stakeholder feedback, along with final interview and research findings, and amended the original findings accordingly. This workshop is described next in Chapter 11 and each theme along with each associated amended research finding is outlined in Chapter 12.

11.Workshop 2

Discussing Research Findings with Stakeholders

Go with the grain of local cultures and their distinctiveness, yet be open to outside influences. Balance local and global. Involve those affected by what you do in decision making. It is astonishing how ordinary people can make the extraordinary happen, given the chance. (Landry, 2006)

11.1. Workshop 2 - Stakeholder Feedback on Key Research Findings

The second workshop was held on the 28th of February 2012 and was attended by twenty three attendees, and again there was a range of representatives from various user groups, local authorities, government bodies and building professional institutes, for a full list for attendees please see Appendix 12. It should be noted, that while all the attendees from the first workshop were invited, not all could attend the second workshop due to prior engagements. There was also a number of attendees at the second workshop who similarly could not attend the first workshop, however all attendees at both workshops were sent the report from the first workshop and were therefore fully appraised of the process and feedback leading up to the second workshop.

Figure 11.1: Photographs of workshop attendees running through the findings in groups.

At the workshop the attendees were divided up into five pre-organised groups, each group had stakeholders representing both user and provider groups. During the course of the four hour workshop, the individual attendees were given a series of seven worksheets, each containing one theme and the set of associated research findings. Depending on the theme, the participants had a set period of fifteen, twenty or thirty minutes to write out their comments in response to each finding on the worksheet provided. Each attendee was invited to consult with others in their group but was asked to fill out their own individual worksheets. Where required, some participants were assisted by a scribe provided by the research team to read out the findings and transcribe feedback from the participants onto the worksheet. In another case a participant preferred to use their laptop and the JAWS screen reader program to read and respond to the themes and findings which had been provide electronically. See Figure 11.2 for a sample image of a typical worksheet.

Theme 1: Evidence based decision making	Name: .....
Description: This theme deals the gathering of quantitative and qualitative data on the impacts of Shared Space, shared surfaces and Home Zones through the development of pilot studies and post construction assessment.	

Please consider whether the key research findings are most relevant at a national, regional or local authority level, and how they might influence the drafting of professional design guidelines and enforcement.

Key research findings	Comments
3.1.1 Shared Space, Shared Surfaces and Home Zones concepts have come about through the desire for people friendly, safer and more liveable urban environments with less car dominance. These are the primary objectives. Any process, guidelines or education associated with Shared Space, Shared Surfaces and Home Zones should keep these objectives to the fore and the process should never be driven by specific design measures or technical features.	
3.1.2 There is a need to create pilot studies of Shared Space, Shared Surfaces and Home Zones to allow all user groups an opportunity to experience and interact with built examples of Shared Space, Shared Surfaces and Home Zones in order to develop a set of acceptable and inclusive design and construction details.	
3.1.3 These consultation and design process for these pilot studies should include onsite mock-ups to test various solutions; and critically to involve both end user and provider groups in the design and onsite assembly.	
3.1.4 There is a need for comprehensive pre and post-construction data gathering on user experiences of altered streetscapes with Shared Space, Shared Surfaces or Home Zone features. It has been suggested that the reduced accident rates observed in Shared Space, Shared Surfaces and Home Zones may be due to the exclusion of vulnerable road users from such spaces. Therefore, the data gathered should include qualitative measures of enjoyment and sense of safety, as well as quantitative data such as number and types of users in the space, traffic speeds, and accident rates.	

Figure 11.2: Sample image of a typical worksheet

In addition to providing direct feedback to each key research finding via worksheets, each participant was asked to write down one key idea per theme on a post-it, whether it was already included in the existing findings or whether it was something new to the research. These key ideas were collated by the research team and presented to the groups during the workshop to give the attendees an overview of the priority areas coming through in each theme.

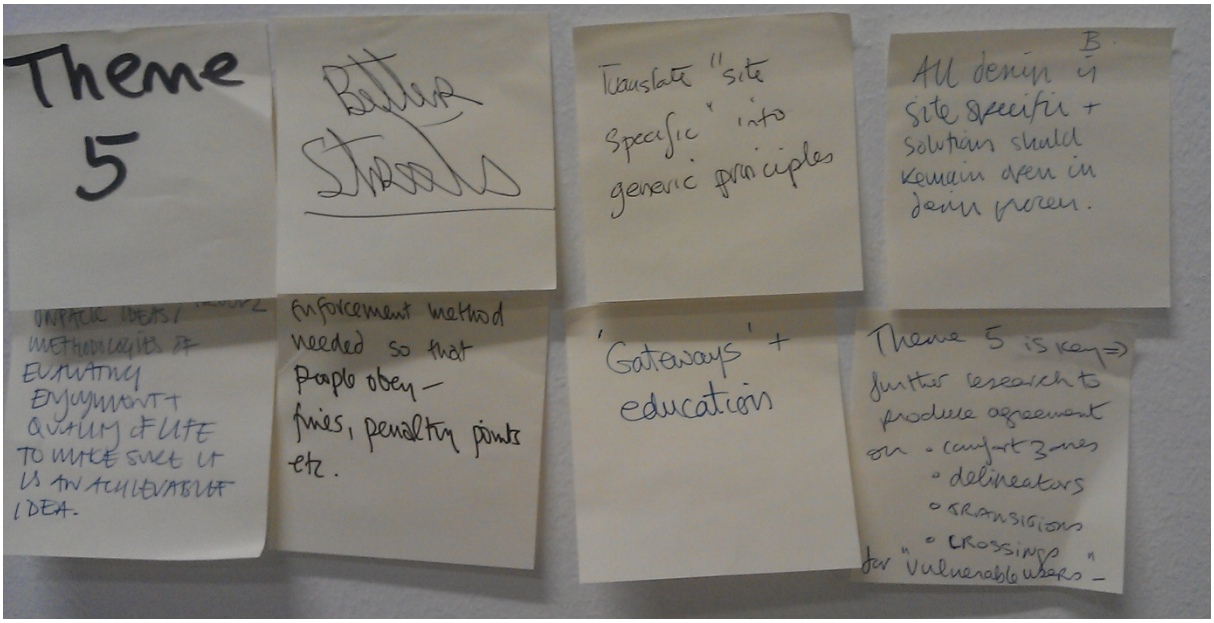


Figure 11.3: Some key ideas put forward for each theme

At the end of the workshop, all participants were invited to email through any further comments that they may have in the days after the workshop.
Following the workshop the research team processed all the stakeholder comments from all the completed worksheets and any other comments that were received via email or in any post workshop interviews, see Appendix 13. This feedback was used to amend, or add to the original findings.

12. Final Research Findings

Findings from stakeholder engagement process and key recommendations

This chapter presents each theme with a comprehensive set of revised and up to date research findings from the overall consultation process. Each section also contains a list of keywords and evidence based recommendations for how shared space design should proceed in Ireland. These research findings are the result of over four months of research, numerous case studies, two workshops and over thirty in depth interviews with a broad range of key stakeholders.

12.1. Evidence based decision making

12.1.1. Key Finding 1: Primary objectives of shared space design - Shared Space, Shared Surfaces and Home Zones concepts have come about through the desire for people friendly, safer and more liveable urban environments with less car dominance. These are the primary objectives. Any process, guidelines or education

associated with Shared Space, Shared Surfaces and Home Zones should keep these objectives to the fore and the process should never be driven by specific design measures or technical features**.**

There also needs to be a debate about what constitutes a 'people friendly environment' as it cannot be taken for granted that there is currently a shared consensus on what defines a high quality people friendly built environment.

12.1.2. Key Finding 2: Pilot studies - There is a need to create pilot studies of Shared Space, Shared Surfaces and Home Zones, in conjunction with local authorities, to allow all user groups an opportunity to experience and interact with built examples of Shared Space, Shared Surfaces and Home Zones in order to develop a set of acceptable and Universal Design and construction details.

12.1.3. Key Finding 3: Pilot study locations - These pilot studies need to be located in both urban and rural locations to fully understand the contextual and local cultural differences that may influence how differently people might use, and react to Shared Space in both urban and rural settings.

12.1.4. Key Finding 4: Pilot study awareness - The pilot studies need to be well advertised across all media sources (TV/Radio/Web/Newspaper) in an accessible format in order to alert users to the location and purpose of the pilot studies and to educate them about the use of shared space design in practice from the perspective of pedestrians, cyclists and motorists.

12.1.5. Key Finding 5: Pilot study guidelines - A national set of preliminary consultation and design guidelines need to be in place to inform the pilot studies and ensure consistency of detailing. Location appropriate guidelines may also be required depending on the rural or urban nature of the pilot study.

12.1.6. Key Finding 6: Pilot study mock-ups - The consultation and design process for these pilot studies should include onsite mock-ups to test various solutions. The design and onsite assembly of these mock up needs to involve both end user and provider groups in a bottom up and top down manner. These pilot studies need to specifically involve vulnerable pedestrians to ensure that they fully understand.

Figure 12.1: On street mock-ups to represent proposed changes to street design (Department for Transport UK, 2005a)

12.1.7. Key Finding 7: Pilot study methodology - Further investigation will be needed determine existing best practice for developing methodologies for mock-up and pilot study testing to ensure all user needs are examined. The pilot studies and mock-ups must ensure that all appropriate vehicles, whether they are emergency or waste collection vehicles, can be easily facilitated in terms of manoeuvring and parking.

12.1.8. Key Finding 8: Pre and post evaluation - There is a need for comprehensive pre and post-construction evaluation of user experiences of altered streetscapes with Shared Space, Shared Surfaces or Home Zone features. It has been suggested that the reduced accident rates observed in Shared Space, Shared Surfaces and Home Zones may be due to the exclusion of vulnerable pedestrians from such spaces rather than improved safety. Therefore, the data gathered should include qualitative measures of enjoyment and sense of safety, as well as quantitative data such as number and types of users in the space, traffic speeds, and accident rates. There has been some preliminary work carried out in this area in the Shared Space in Auckland's Central Business District, and Reid et al. (2009) suggest potential Key Performance Indicators for Shared Space,. However, there is a need for internationally standardised approach, and a national set of methodologies and indicators that are appropriate in the Irish context.

12.1.9. Key Finding 9: Standardised performance indicators - In addition there needs to be standardised national methodology for pilot studies, data gathering and standard indicators used to ensure accurate comparison across the various shared space design sites on a national scale.

12.1.10. Key Finding 10: Long term impacts - Longitudinal analysis will be required to understand which impacts or behavioural patterns, safety and quality of life issues, whether negative or positive, are sustained over a longer term.

Key recommendations

At national level Shared Space pilot studies are required in association with selected local authorities in a number of urban and rural locations. These pilot studies need to be guided by a set of national level preliminary site selection and assessment criteria, local stakeholder consultation and design guidelines to ensure consistency of site selection and research findings at all test sites.

Examine international examples of pre and post construction design assessments along with Key performance Indicators and develop an appropriate national assessment methodology and indicator suite to measure the impact of shared space design on specific locations in line with international best practice and standards appropriate to the Irish context. This assessment procedure should follow Universal Design principles and also include a range of selected end users including older people, children and those with visual, mobility and cognitive difficulties to be involved with pre and post construction on-site assessments.

Such assessment could be conducted presently in selected existing Home Zones to determine the usability and success of such spaces in terms of Universal Design. This assessment could provide initial feedback and help inform the preliminary guidelines used in connection with the pilot studies.

Key phrases and ideas from Theme 1

Consultation especially with vulnerable users, consistency over all levels, careful data collection (best practice), legislation, different for each site

12.2. Legislation, design guidelines and enforcement

12.2.1. Key Finding 1: Use of shared space design concepts in Ireland- This research demonstrates that many elements of shared space design are being implemented in Ireland, whether it is through Level Surfaces, such as those constructed in Adamstown (see section 9.1.3) or Home Zones in place in Ballymun (see section 9.1.4). In addition to the implementation of shared space design features on specific sites, shared space design is frequently referred to in various Irish, national level, urban design, road design and traffic management guidelines (see section 2). At a local authority level, shared space design is also being promoted. For example; South Dublin County Council's 'Adamstown Street Design Guide', refers to the use of Home Zones and Shared Surfaces (South Dublin County Council, 2010), while Dublin City Council's Development Plan 2011-2017, when referring to design

standards for mews dwellings, states that "All mews lanes will be considered to be shared surfaces, and footpaths need not necessarily be provided" (Dublin City Council, 2011a).

The forthcoming 'Design Manual for Urban Streets' which is due for publication in the coming months by the 'Department of Environment, Community and Local Government' and the 'Department of Transport, Tourism and Sport', is set to be Ireland's first national level design guide for urban streets (see section 2.2.8). This document contains many references to Shared Streets, Shared Surfaces, and Home Zones, yet these terms have currently no basis in Irish law or regulations, nor support through specific shared space design guidelines.

In Ireland, shared space design is being constructed, promoted in multiple national and local authority design guidelines, and most importantly being referenced in the forthcoming 'Design Manual for Urban Streets'. Therefore, it is critical that this concept, and related features such as Shared Space, Shared Surfaces and Homes, receive the appropriate legislative and regulatory attention required to ensure the safe, accessible, ordered and successful application of shared space design in Ireland.

12.2.2. Key Finding 2: Legal definition of terms - The current Irish definitions of a footpath versus a carriageway and the legally acceptable behaviour that can occur on each is very black and white (Office of the Attorney General, 1993). This may cause designers to worry about their liability in the design of any form of shared space design. Therefore there is a need to develop clear legislation in the Irish context, to differentiate the key terms. This research has generally referred to **Shared Spaces, Shared Surfaces and Homes Zones.** In addition to the use of these specific terms it would seem appropriate to coin a general term that encompasses all of the above such as **shared space design**.

However, there are some cases in Ireland, where a street had been redesigned to provide a **Level Street**. In this scenario the traditional dropped kerb has been removed in favour of a level carriageway and footpath. Drainage channels, paving stones and bollards are used to define the footway from the carriageway. The image below shows one such scenario in Clondalkin village, County Dublin where there is clearly no intention to 'share' the carriageway between pedestrians and vehicles yet a Level Street is provided. This suggests that the phrase **Level Street** must also be incorporated into the terminology to differentiate it from a Shared Surface which is intended to be shared by all road users.

Figure 12.2: Level Street in Clondalkin village, Co.Dublin.

While the terms outlined above may provide greater clarity around shared space design they are not included in any Irish legislation. The Road Act 1993 (Irish Government, 1993) provides the following definitions pertinent to this research:

"footpath means a road over which there is a public right of way for pedestrians only, not being a footway."

"*footway*" means that portion of any road associated with a roadway which is provided primarily for use by pedestrians."

"*public road*" means a road over which a public right of way exists and the responsibility for the maintenance of which lies on a road authority."

In order to incorporate shared space design into any Irish legislative or regulatory framework terms such as Shared Space, Shared Surface, Home Zones, Level Street, or shared space design will have to be defined and included where appropriate.

12.2.3. Key Finding 3: Legislative framework – In addition to the above, it is vital to implement a clear legislative framework to regulate usage, right of way, design and to ensure proper enforcement. This legislation also needs to deal with issues of liability, responsibility and both professional indemnity and general insurance.

Currently in Ireland, the 1993 Road Act (Irish Government, 1993) already beholds the driver to behave responsibly to other road users through article 67 of the Act ' Road users' duty of care. The 1961 Road Traffic Act (Irish Government, 1961) refers to 'Careless driving' and also to 'Dangerous driving' which is prohibited as follows:

"A person shall not drive a vehicle in a public place at a speed or in a manner which, having regard to all the circumstances of the case (including the nature, condition and use of the place and the amount of traffic which then actually is or might reasonably be expected then to be therein) is dangerous to the public"

This section of the act is interesting as it requires drivers to take account of the context in which they are driving rather than merely obeying the rules. Another important document in terms of road user behaviour and conduct is the RSA 'Rules of the Road' (Road Safety Authority, 2012). The section relating to the rules for pedestrians and cyclists states that if there is a footpath it must be used, while if there is no footpath the pedestrian must walk as near to the right-hand side of the road as possible facing the oncoming traffic. The rules also state that pedestrians must walk no more than two people abreast. However, in relation to drivers respecting pedestrians, the rules outline circumstances where the driver must give way to pedestrians including at junctions and when pedestrians are crossing the road, if the driver is moving from a stationary position.

Notwithstanding the above, shared space design introduces a new concept where sharing of the road is central to the success of the space. Such sharing is not catered for currently in Irish legislation nor in the rules of the road and as such
requires inclusion in all key documents if it is to be successfully implemented in Ireland.

In other countries the concept of road sharing has been in existence for decades. As discussed earlier in section 3.4, the Woonerf concept originally developed in the Netherlands and was controlled by a set of minimum design standards and traffic regulation. The Woonerf was legalized by the Dutch government in 1976 and was similarly adopted and implemented on a legal basis in many other countries, including Israel where the 'shared street' concept was legislated for in 1987 (Ben-Joseph, 1995) . According to Appleyard (1981) The real power of the Woonerf lies in the rules applied within the space and he provides the following excerpts, translated into English, from the Traffic Regulations for Woonerfs to illustrate his point;
"Article 88a – Pedestrians may use the full width of the highway within the area defined as a 'Woonerf', playing on the roadway is permitted'

Article 88b – Drivers within a 'Woonerf' may not drive faster than a walking pace. They must make allowance for the possible presence of pedestrians, including children at play, unmarked objects and irregularities in the road surface , and the alignment of the roadway.

Article 88c-….. traffic approaching from the right (at whatever speed) always has priority.

Article 88d – 1) Drivers may not impede pedestrians within a 'Woonerf' 2) Pedestrians may not unnecessarily hinder the progress of drivers."

These legally defined road conduct rules removed any ambiguity and clearly defined the responsibilities of road users within the official 'Woonerf' space which was a new concept at that time. In the UK, Section 268 of the 'Transport Act 2000' allows Local Authorities to designate Home Zones in their area (Department for Transport UK, 2005a). As discussed in Chapter 3, the 'Quiet Lane and Home Zone (England) Regulations 2006' permit English Local Authorities to make 'use orders' and 'speed orders' determining the manner in which the road can be used. A Department for Transport circular (Department for Transport UK, 2006) informing Local Authorities about the regulations states that;

"The intention should be to ensure that, for example, children can play games or that people can stand and talk in safety, even though they may need to move occasionally to allow vehicles to pass. Home Zone entry and exit signs remind drivers that they are entering or leaving a Home Zone, a place where they may expect people to be using the whole of the road space for a range of activities, including children playing. "

Section 268 of the 'Transport Act 2000' and the 'Quiet Lane and Home Zone (England) Regulations 2006' help define and clarify some of the issues around Home Zones and give a clearer idea about the expected behaviour and responsibilities within a Home Zone.

Unlike the legal and regulatory framework in place for Home Zones in the UK, the MVA Consultancy Report (MVA & Department for Transport UK, 2009) states that such a legal framework is not yet in place for prioritising pedestrian right of way in Shared Space. In contrast, the authors point to Swiss and French laws which permit the legal definition and enforcement of a pedestrian right of way in certain zones where pedestrians have legal priority and traffic speed is restricted to 20 kpm.

In other countries however, this issue is being dealt with. For example, the recent Western Australian 'Planning and designing for pedestrians: Guidelines' (Department of Transport Western Australian Government, 2012) as discussed in Chapter 3 of this document, proposes the use of 'Shared Zones'. In these zones pedestrians and vehicles mix but motorists must give way to pedestrians. This right-of-way for pedestrians in 'Shared Zones' is enshrined in legislation through the Western Australian Road Traffic Code 2000 (Western Australian Government, 2011) which are recently updated regulations under the 1974 Road Traffic Act. Rule 64 of these regulations titled – 'Giving way to pedestrians in shared zone' clearly defines the right of way for pedestrians and prescribes the penalties for infringement in terms of the minimum number of penalty points (modified penalty) and the maximum penalty (PU). Rule 64 states the following:

"A driver in a shared zone shall give way to any pedestrian in the zone." Points: 3 Modified penalty: 4 PU

It would appear that such definitive legal definitions and regulation as implemented in the Netherlands in the 1970's or more recently in the UK in relation to Home Zones, or in Western Australia in terms of 'Shared Zones', is giving clarity to shared space design schemes and clearly defining the rules and liabilities within Shared Space or Home Zones. In Ireland such clarity is needed to legally define responsibilities and liability within shared space design schemes. Regulation is also required to provide certainty and consistency for Local Authorities and designers in terms of statutory requirements and compliance.

12.2.4. Key Finding 4: National design guidelines - Based on trial sites, research in the field, and wide ranging consultation; create a set of Irish shared space design guidelines to be issued firstly at national level and then at local authority level. These guidelines must acknowledge the fact that shared space design will be heavily influenced by the local context and that any guidelines must be flexible enough to manage this variation and facilitate creativity. It should be noted that Section 28 of the Planning and Development 2000, states that "The Minister may, at any time, issue guidelines to planning authorities regarding any of their functions under this Act and planning authorities shall have regard to those guidelines in the performance of their functions" (Irish Government, 2000). Section 28 thus provides an existing facility for introducing Shared Space Guidelines in an appropriate and expedient manner.

12.2.5. Key Finding 5: Self enforcement - Shared space design is predicated on the idea of 'sharing' and therefore must be understood and operated as a self policing space. Strong aspects of self enforcement must be built into any legislation or guidelines to ensure the concept of sharing and equality is carried through.

Key recommendations

Use of the term 'shared space design' as an overall term when referring generally to design which includes specific terms; Shared Space, Shared Surfaces and Home Zones.
National level legislative change to define the specific terms Shared Space, Shared Surface, Level Street and Home Zones in the appropriate Irish road traffic or development acts.

Legislative and regulatory changes at a national government level to incorporate shared space design measures to provide Local Authorities with clear consultation and design guidelines as well as clarity around the function of shared space design, permitted uses,

permitted road user behaviour and liability and responsibility for designers, Local Authorities and users.

Create a national level shared space design guidance document built around the principles of Universal Design, and the Universal Design process. This document could support the forthcoming 'Design Manual for Urban Streets' which is currently being finalised by the Department of Transport, Tourism and Sport and the Department of Environment, Community and Local Transport. It could also support other existing national level design guidance such as the recently published 'Building for Everyone: A Universal Design Approach. This document should provide detailed best practice design and construction detailing guidance to include Shared Space, Shared Surfaces and Home Zones. The guidance should include advice on local consultation and the carrying out of local pilot studies and mock-ups as part of the community consultation.

The adoption of guidance by local authorities could be expedited through the use of Section 28 of the Planning and Development 2000, which allows the minister to issue guidelines directly to local authorities.

Key phrases and ideas from Theme 2
Legislation, insurance, Irish context, regulation, planning

12.3. Education, awareness and training

12.3.1. Key Finding 1:Training - Training needs to be provided to all designers of Shared Spaces, Shared Surfaces and Home Zones, to ensure that they are aware of the diverse needs to different users of such space and how careful design can ensure the Universal Design of future plans. As part of any local consultation process, it is essential that the local authority or design team make the locals fully aware of the key issues to ensure a shared design process. This training should also extend to the third level professional degree courses and any further education associated with institute membership.

12.3.2. Key Finding 2: Continuous Professional Development - The training programmes for local authorities and design professionals could be supplied through existing CPD (Continuous Professional Development) programmes.

12.3.3. Key Finding 3: Needs of vulnerable pedestrian - There also needs to be adequate training and education provided to all local authorities considering

implementing any form of Shared Space, Shared Surface or Home Zone to ensure there is full appreciation of the needs of more vulnerable pedestrians.

12.3.4. Key Finding 4: Local representatives- Since Shared Space and in particular Home Zone design requires an in-depth local consultation process, it may be appropriate for the community to select locals to represent the views and needs of the community. It may be beneficial for these representatives to receive additional training from the local authority so they understand all the key issues and can advocate fully in an informed way for the community.

12.3.5. Key Finding 5: Installers - The onsite installers of tactile paving, signage, street furniture and any other item that has a physical impact on the built environment must be appropriately trained to understand the key needs of all road users and in turn the significance and logic behind the items they installing.

12.3.6. Key Finding 6: Manufacturers - Manufacturers of street furniture, lighting and signage for shared space design must be aware that their products are being used in this context to enable them to optimise their products for this environment.

12.3.7. Key Finding 7: Training for users - Training also needs to be provided to all users of Shared Spaces, Shared Surfaces and Home Zones, which include drivers, cyclists and pedestrians. This needs to involve the Road Safety Authority as well as user groups such as the National Council for the Blind Ireland, the Guide Dogs Association and the Irish Wheelchair Association. Schools could provide a key role in educating children about appropriate behaviour in Shared Space environments and specific parts of the curriculum such as SPHE (Social, Personal and Health Education), road safety programmes, or cycling training would provide the ideal forum to teach children about shared space design.

12.3.8. Key Finding 8: Accommodating vulnerable pedestrians - Beyond driver or cyclist training for the use of shared space design schemes, drivers and cyclists must be trained to understand and accommodate the needs of vulnerable pedestrians.

Key recommendations

At a national and local authority level training should be provided to key design professionals in private practice and those working with local authorities. This training should educate practitioners about the necessary consultation process associated with Shared Space design, end user needs and the specific design requirements of Shared Space design. This training should also extend to key contractors who will carry out the

construction work as correct detailing and consistency are vital to successful shared space design.

Relevant government authorities and departments such as the Road Safety Authority (RSA) to undertake an education and awareness campaign to extend to all road users to fully explain how shared space design has been implemented are supposed to work. The campaign should instil in all road users an understanding that in Shared Space there is a different set of priorities, that the carriageway is to be shared and that a greater level of communication, negotiation and courtesy is required.

Any rules of the road, safe cross code, or similar road safety guidance prepared by the RSA to include information and instructions about shared space design and responsibilities of each user within such spaces. The road safety campaigns currently run by the RSA in partnership with the Department of Education and local community groups would also need to include information about shared space design schemes.

Where shared space design pilot schemes or redevelopment takes place, the local authority need to provide accessible information onsite, online and using other relevant media to inform and educate the street users about the intentions of shared space design or the aims and objectives of the pilot study

Key phrases and ideas from Theme 3

Education and training, courtesy by drivers and cyclists, who is the authority?, international best practice.

12.4. Consultation and planning

12.4.1. Key Finding 1: Stakeholder engagement - The planning of any Shared Space, Shared Surface or Home Zone should include in-depth stakeholder engagement from the outset. This creates a shared vision with agreed objectives, allows a site specific design and includes user needs as part of the design. A structured consultation process must be developed to ensure maximum engagement is achieved with all stakeholders to reap the full benefit from the process. Therefore the planning and consultation of such designs should follow the Universal Design process outlined below in figure 12.3. This has been adapted from Atkin (2010) to represent the optimum consultation process for any Shared Space proposal.

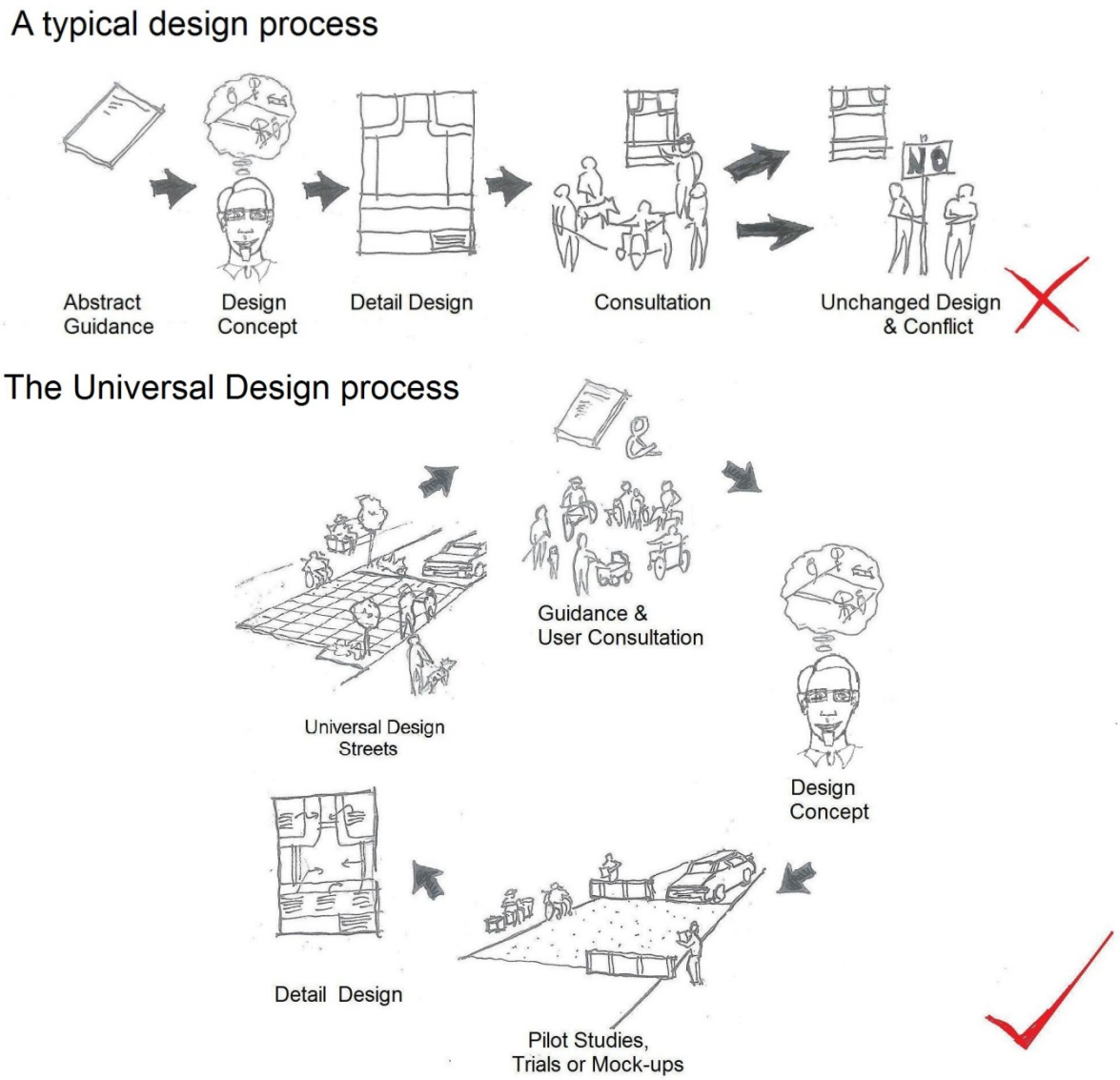


Figure 12.3: Comparison of current and Universal Design processes (adapted from (Atkin, 2010)

12.4.2. Key Finding 2: Primary objectives - The site specific vision and objectives for the street should be agreed first and only then should any discussion take place around the need for shared space design or any other technical issue. It is paramount that the technical features do not drive the design as this may lead to early conflict over terminology. The ultimate goal of developing a people friendly environment must be kept in focus.

12.4.3. Key Finding 3: Engage with all stakeholders - Ensure all relevant stakeholders are engaged with fully. It has been suggested that partially sighted people are often missing from the consultation process as they are often not as obvious a group as other disability stakeholders. People with partial sight also represent the needs of many older people and have distinct needs as opposed to people who are blind.

12.4.4. Key Finding 4: Children - Methods for consulting directly with children and young people must be devised to capture their voice and ensure their needs are fully incorporated into the process. Representatives for children's needs such as the Children's Research Centre in Trinity, or Sugradh, an Irish organisation that advocates for healthy play provision for children, have suggested that children are rarely asked directly about their needs. Such direct consultation will provide greater insight into their needs and may also create a greater sense of ownership in children and encourage them to care more for their environment.

12.4.5. Key Finding 5: People with cognitive difficulties - Users with cognitive difficulties or developmental difficulties such as autism have very specific needs in relation to navigating through the built environment. Representatives from Autism Action Ireland have expressed some concern about the level of negotiation and communication signals required for pedestrians, cyclists and motorists in shared space design. People with developmental disorders do not effectively process typical communication signals and therefore it is vital to fully consult with experts in this area to cater successfully for people with autism and similar conditions.

12.4.6. Key Finding 6: Balance needs - A very real challenge in shared space design is to balance the needs of the various users and providers which often conflict. The urban environment is used by the widest variety of stakeholders and it is paramount that this environment enables all users to live healthy lives and participate fully in society. The Universal Design approach will therefore prove critical to providing for all users in an equitable manner.

12.4.7. Key Finding 7: Experts - The complexity of this consultation and design process, which must facilitate a myriad of user needs, requires the constant support of appropriately trained and experienced design experts to keep the process on track.

12.4.8. Key Finding 8: Project Focus - Finally, it is important to keep the consultation process focused on the key issues directly related to the improvement of the street and associated quality of life.The design team and local stakeholders must ensure that the process is not used as a forum to raise unrelated issues as this will confuse and potentially derail the process.

Key recommendations

The consultation process and stakeholder engagement must be seen as one of the central components of shared space design. All national guidelines should make this explicit and provide guidance to design practitioners and local authorities on how to best engage with

end users, carry out local pilot studies or on site mock-ups. Beyond the national level guidelines, all local authorities must make the stakeholder consultation central to their process of implementing shared space design.

Any guidance must stress that the objectives around improved quality of life and increased liveability must be kept to the fore and that the process must focus on the key local issues and not get sidetracked by unrelated issues.

Key phrases and ideas from Theme 4

Details (e.g. weather conditions on surfaces), stakeholders - complexity of needs, consultation, design needs to be cyclical and iterative.

12.5. Design and appropriate locations

12.5.1. Key Finding 1: Appropriate locations - The introduction of Shared Space, Shared Surfaces and Home Zones is viable in Ireland; however this viability must be considered on a site by site basis. Careful consideration needs to be given by the local authority to the impact of such design on the proper functioning of public transport and it was suggested throughout the research that in areas with a high motorised vehicle volume, particularly high bus volume, such designs may not be appropriate. Smaller and lighter forms of public transport may be suitable in shared space design, as long as the vehicles are audible and there is full public awareness (including tourists) that public transport moves through these spaces.

12.5.2. Key Finding 2: Proximity to public transport - In general it was deemed important for Shared Space and Home Zone areas to be close to public transport in order to reduce the dependency on private transport and thus creating the opportunity for lower traffic volumes.

12.5.3. Key Finding 3: Traffic hierarchy -Careful consideration must be given to the balance between movement function and the place function of certain streets. In order to minimise traffic speed and volume on one street, it may be necessary to maintain traffic flow through another street. This hierarchy of higher and lower trafficked street networks must form part of any shared space design.

12.5.4. Key Finding 4: Service vehicles- Consideration must be given to access for service vehicles, especially emergency services, waste disposal and street cleaning.

12.5.5. Key Finding 5: Selection and evaluation criteria - National selection and evaluation criteria must be developed for the selection of appropriate sites with sufficient built-in flexibility to cater for varying site conditions.

12.5.6. Key Finding 6: Tactile paving - Current street design relies heavily on tactile paving and this research has discovered that shared space design implemented internationally places additional emphasis on the use of tactile paving to help delineate pedestrian zones and traffic zones and to clearly mark pedestrian and vehicle crossing areas. Typical tactile paving includes: (1) Blister paving to indicate a pedestrian crossing, (2) Corduroy paving to convey the message of a hazard ahead and to proceed with caution, and (3) Platform edge warning surface to alert users that they are approaching the edge of an on-street light rail platform. In certain circumstances, such as in historic areas, stainless steel studs set in granite paving slabs (4) are used as blister paving. These typical tactile paving types are illustrated below in Figure 11.4.

Figure 12.4: Typical tactile paving types. 1 – blister paving, 2 – corduroy paving, 3 – warning paving and 4 – metal stud blister paving. (long description to be included)

The key issue for all stakeholders was that tactile paving needs to be very carefully located, properly installed, and there needs to be absolute consistency in its use to avoid confusion. This consistency of design language was stressed as a major requirement for the successful implementation of shared space design and should be determined at a national scale.

12.5.7. Key Finding 7: Pedestrian gateways - Existing Shared Space and Home Zone guidance documents discuss the need to create transition zones and gateways to alert users to the fact that they are entering or leaving a specific environment. Such gateways are typically aimed only at drivers, where a raised surface, change of materials or carriageway narrowing alerts the driver to the fact that they are entering a different environment. However, it is equally important to notify

pedestrians and especially those with visual difficulties, that they are entering or leaving a Shared Space or Home Zone. Thus the creation of pedestrian thresholds and gateways through tactile surfaces or some other design mechanism may deal with this issue. The implementation of these transitions zones needs to be carried out in conjunction with an extensive user education campaign as discussed in section 12.3. These transition zones must also be universally understandable by children, those with visual and cognitive difficulties and tourists.

Figure 12.5: This transition zone alerts drivers to the fact that they are entering or leaving the Home Zone, yet on the footpath to the right there is not such notification.

12.5.8. Key Finding 8: Comfort zones - The creation of a comfort zone was also deemed to be an important design feature for the Universal Design of Shared Space, Shared Surfaces and Home Zones, especially for more vulnerable or nervous pedestrian. This comfort zone can be delineated using a traditional dropped kerb, or possibly the combination of tactile paving and well placed street furniture such as seating, lighting or bike locking facilities. It is important that such comfort zones are clearly delineated for pedestrians with gateway or threshold features to alert them that they are leaving or entering a comfort zone. Such gateways could include tactile paving, changes in colour, changes in surface material and in some appropriate cases, signage.

Figure 12.6: Pedestrian comfort zone

12.5.9. Key Finding 9: Alertness zones - It was also suggested that the Shared Space anywhere outside the comfort zone be considered as an alertness zone so that all users are fully aware of their environment and the expected behaviour within each zone. As suggested in theme 3, this must be coupled with appropriate education and training of all users.

12.5.10. Key Finding 10: Surface treatment - Many stakeholders referred to the need for a consistent surface colour scheme to be used throughout the country to identify comfort zones and Shared Surface or alertness zones.

In addition to tactile paving, the use of differing colour, tonal and texture differences over the full extent of comfort zones and alertness zones can help to identify one area form another. However overly complex designs can cause visual confusion for certain users (Department for Transport UK, 2011b), while parallel tonal contrasts may be mistaken for steps by certain people with visual difficulties.

York et al (2007) examine the speed reducing effects of block pavers as opposed to tarmac and state that pavers reduce vehicle speed by approximately three to eight kmh. Pavers and stone setts can also produce greater noise as the vehicle crosses over it which can provide an audible reference for those with visual difficulties (Department for Transport UK, 2011b), especially in areas where the low traffic speed generates little engines or tyre noise. Such increased tactile experience for the driver can also be use as a cue to alert them that they are driving in an area with different characteristics to a normal road.

12.5.11. Key Finding 11: Kerbs - Throughout the research there were questions raised as to the need for complete kerb removal from shared space design, there was greater support for Shared Spaces that did not incorporate Shared Surfaces. As discussed previously, some of the main arguments in support of kerb removal suggest that removing the strict differentiation between the footpath and the carriageway will lead users to think differently about the street with a Shared Surface compared with a typical street. Removing such segregation and delineation is meant to remove the priority of the vehicle and to encourage pedestrians to occupy the entire street thus forcing motorists to adapt their behaviour accordingly, reduce speed, drive with more caution and give way to other road users. (MVA & Department for Transport UK, 2009). While recent Shared Space guidance from the UK (Department for Transport UK, 2011b) argues that kerb removal and Level Surfaces are not appropriate for all Shared Space, it does suggest that kerb removal is one of the features that helps break down the demarcation between vehicles and pedestrians and thus increases the level of ‘sharedness’ experienced on the street.

There is still a question over the actual onsite level of sharing that can be achieved with the retention of kerbs. To date this research has not come across any conclusive data about the level of sharing experienced on a fully designed Shared Space street that has retained the kerbs. In Cork city centre, on Oliver Plunkett Street (see Fig. 12.7) has been recently upgraded and the kerbs have been removed on one side and retained on the other. This street is typically pedestrian only, but allows vehicle access up until a certain time in the morning. During these temporary morning shared sessions the street could be considered a Shared Space and there appears to be a certain amount of sharing regardless of the presence of kerbs. The scope of this research did not permit an in-depth analysis of the 'sharedness' of this street and would suggest that further research would be useful to examine the level of sharing the takes place on temporarily shared or fully designed Shared Spaces that have retained kerbs.

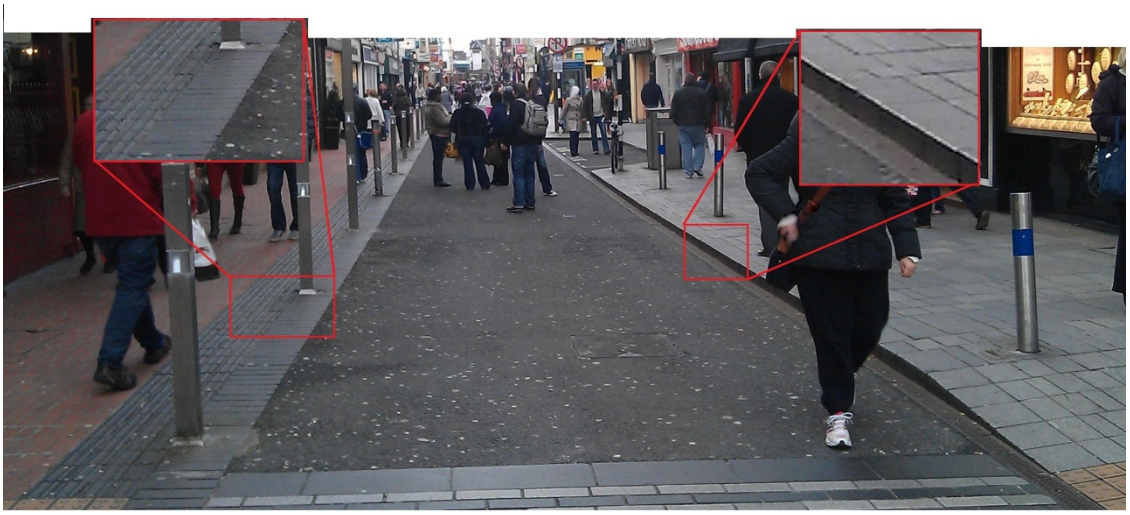


Figure 12.7: Oliver Plunkett Street, Cork

12.5.12. Key Finding 12: Delineators to replace kerbs -If the removal of kerbs is deemed appropriate for selected locations, then further research will be needed to identify viable replacement delineators which can be used in the absence of traditional dropped kerbs; this is of particular importance for people with visual difficulties. Many stakeholders were aware of research that outlines problems for people with visual difficulties when kerbs are removed such as study carried out in 2010 which failed to identify any reliable tactile delineators that effectively replaced traditional dropped kerbs (Childs et al., 2010). However, there is also more recent studies that show more positive results for tactile paving. Research carried out by the MVA Consultancy in the UK that looked at newly laid tactile paving on Shared Surfaces on Exhibition Road in London and concluded that corduroy paving 800 mm wide was reliably detected by participants with visual difficulties (MVA Concultancy, 2011a). This illustrates the importance of evidence based design as part of any process or creation of guidelines.

Figure 12.8: Testing of 800mm wide corduroy paving on Exhibition Road in London (MVA Concultancy, 2011a)

12.5.13. Key Finding 13: Crossings - Controlled crossings are considered by many to offer safety and comfort, so their elimination needs to be carefully considered. The use of courtesy crossings may help many users in a Shared Space or Home Zone but this must be based on field research and pilot studies. It was also expressed by many stakeholders that such courtesy crossings would rely on the education of motorists and cyclists, proper public awareness and a change in driving culture.

Figure 12.9: Raised traffic islands like the one pictured here provide a level crossing, a narrowing of the carriageway and an crossing point where drivers typically give way to pedestrians crossing. This functions in a similar way to the courtesy crossing discussed here.

However, many participants felt that controlled crossings were also necessary for vulnerable pedestrians to maximise safety and comfort.

12.5.14. Key Finding 14: Way-finding at crossings - Where courtesy crossings are appropriate some form of way-finding techniques, or directional tactile paving may be required to direct people with visual difficulties or those with cognitive difficulties towards the crossing. Such way-finding elements were also discussed by many stakeholders in terms of directing certain pedestrians towards entrances, exits and other key parts of the environment.

Figure 12.10. Example of a tactile strip as a way-finding device

12.5.15. Key Finding 15: Traffic - Traffic volume and traffic speed is critical to the sharing of a space. Shared Space guidelines from the UK suggest that a maximum design speed of 15 mph is preferable within shared space design. However, this translates to 24 km/h which some stakeholders consider to be too fast. Some Irish examples of Home Zones such as in Adamstown the required speed is 10 km/h and this provides a very safe pedestrian environment in these residential areas. Many stakeholders spoke about the need to balance pedestrian safety with traffic movement, especially in relation to goods deliveries and other service vehicles. A maximum speed limit needs to be agreed and included in the national shared space design guidelines.

Figure 12.11: Adamstown Home Zone

12.5.16. Key Finding 16: Large vehicles - Ideally shared space design should not be trafficked by large buses or excessive heavy vehicles so public transport routes need to be carefully considered. Referring back to the points made in 3.5.1., lighter and smaller public transport vehicles may be suitable if well integrated into the design. The Luas currently operates very successfully through busy parts of Dublin with high

levels of pedestrian activity; therefore the issue is around careful and integrated design.

12.5.17. Key Finding 17: Village and rural areas - Currently there is an emphasis on urban settings when Shared Space, Shared Surfaces and Home Zones are discussed, however throughout the research it has become clear that the implications for various forms of Shared Space in rural and semi-urban settings needs to be considered, especially in the Irish context. Many stakeholders pointed out that many country roads and villages have de-facto Shared Space, but further design could make it safer. However, in rural and suburban locations there may be less of an opportunity to exclude heavier vehicles or separate traffic in the same manner as in urban areas.

As discussed earlier in section 12.2, legislation in the England has attempted to deal with the shared nature of many rural roads. The Transport Act 2000 allows Local Authorities to designate Quiet Lanes and Home Zones in their area (Department for Transport UK, 2005a), while The 'Quiet Lane and Home Zone (England) Regulations 2006' permit English Local Authorities to make 'use orders' and 'speed orders' determining the manner in which the road can be used. In relation to 'Quiet lanes' the aim is to maintain the rural character of the road which is typically shared by walkers, cyclists, horse riders and other vehicles. A circular from the Department for Transport (UK) in relation to 'Quiet Lane' designation advises the following;

"There are three key elements to a Quiet Lanes scheme: community involvement to encourage a change in user behaviour; area-wide direction signing to discourage through traffic; and Quiet Lane entry and exit signs to remind drivers that they are entering or leaving a Quiet Lane, a place where they may expect people to be using the whole of the road space for a range of activities." (Department for Transport UK, 2006)

These regulations enable local authorities to partner with local communities to protect and enhance these de facto Shared Spaces, while also providing sufficient information to all road users about the nature of the space and therefore the road behaviour expected.

12.5.18. Key Finding 18: Historic areas - In relation to historic areas, architectural heritage areas and areas of conservation any alteration of the built environment must be carefully considered to maintain the visual and historic integrity of the local area, whether it is an urban, suburban or rural locality. Recent documents such as 'Access: Improving the accessibility of historic buildings and places' offers much guidance on how to provide access for all in historic environments (Architectural Heritage Advisory

Unit et al., 2011). This guidance addresses both the principles of Universal Design and the principles of architectural conservation and illustrates that, through careful design; accessibility can be achieved while respecting the historic nature of the built environment.

Figure 12.12: Recently installed level paving in Trinity College Dublin

In relation to Shared Space, additional tactile paving, the removal or embedding of historic kerbs or the introduction of threshold or gateway features will need to be carefully detailed in order to align with architectural conservation principles. It must also be pointed out that Shared Space is not exclusively reliant on elimination of kerbs or the creation of Level Surfaces, therefore Shared Space is still achievable, if appropriate in historic locations.

12.5.19. Key Finding 19: Information Communication Technology and Assistive Technologies

- During interviews a number of stakeholders suggested that Information Communication Technology could be used as a means of communicating the safe navigation of Shared Space environments. Indeed, Atkins (2010) suggests that Radio Frequency Identification (RFID) or Global Positioning Systems (GPS) technology could be used to imbed information in the streetscape which could then be read by vulnerable pedestrians using a detection device such a smart phone.

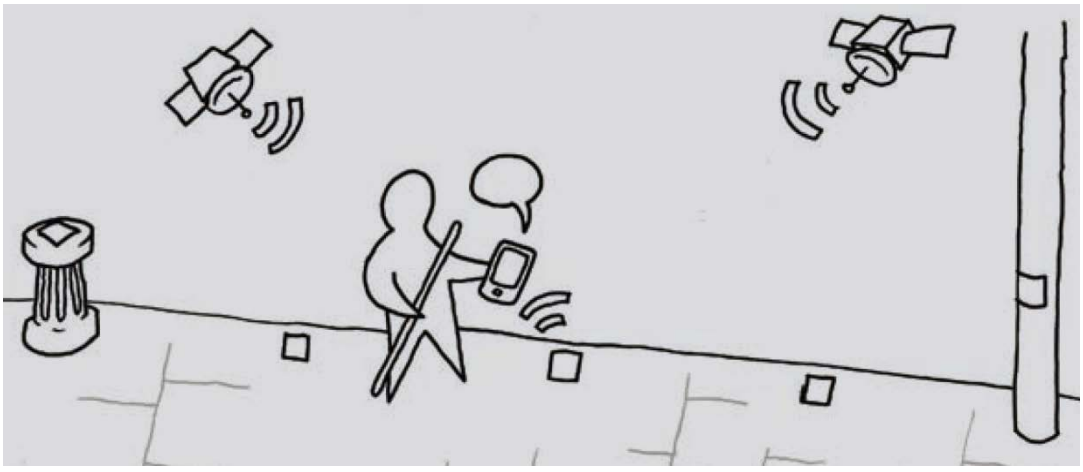


Figure 12.13: RFID and GPS technology as a navigation aid to those with visual difficulties (Atkin, 2010)

Mobile smart phone applications (apps) such as Navigon already exist in the market place and are popular with people with visual difficulties. This app transforms a smart phone into a mobile navigation device, providing text-to-speech voice guidance, pedestrian navigation, turn-by-turn route guidance and a take me home function (Leibs, 2012). Other smart phone apps such as NavPal are currently under development by researchers at Carnegie Mellon University, it combines GPS technology with audio and tactile cues to facilitate navigation (Pittsburg Post Gazette 2012).

Such technical devices are increasingly being employed as a navigation aid for people with visual difficulties. A device recently developed by the Cork Institute of Technology in Ireland identifies the presence, distance and description of 3D objects and presents the information to the user via an innovative tongue display unit. The 'Real Time Interactive Obstacle Detection and Navigation Aid for the Visually Impaired' or the VisionRETM device enables users to avoid obstacles and to identify their surroundings (Cork Institute of Technology, 2012).

These technological advances will inevitably benefit many users with sensory, mobility or cognitive difficulties as they will enable users to navigate through their environment with greater ease, comfort and safety. Whether it is through RFID or GPS technology directly linked to embedded technology in the street surface, walls or objects, or assistive devices such as VisionRETM, users will be able to detect obstacles, dangers and safe routes in a far more reliable manner. Such technologies may be employed in areas functioning as Shared Space to help vulnerable pedestrians identify comfort zones, gateways to and from Shared Space, courtesy crossing points or street furniture and planting associated with shared space design.

However Atkins (2010) also acknowledges, as did several stakeholders from this current research, that technology such as this could only be used to provide additional information rather than replacing traditional hard infrastructure way-finding mechanisms. If technology were the primary way-finding tool it would need to be unrealistically reliable or run the risk of leaving vulnerable pedestrians stranded in an unfamiliar and unsafe environment.

12.5.20. Key Finding 20: Quiet vehicles such as electric cars and hybrids –There has also been significant developments in terms of vehicle technology which has potential impact on the interaction between motorists and pedestrians. The introduction of electric cars, while providing many benefits in terms of more sustainable transport, zero emission of vehicle pollutants and little engine noise, can also present difficulties issue for many pedestrians. The typical engine noise from

vehicles will often alert pedestrians to the approach of a vehicle while this audible cue has much greater significance for those with visual difficulties or those positioned at a lower level and therefore unable to make direct visual contact with the vehicle. In an article in The Independent, a British Newspaper, it was reported that The Guide Dogs for the Blind Association claimed that the silent nature of electric cars made such vehicles undetectable to those with visual difficulties (Chorely. Matt, 2011). The suggestion has been made that artificial noise should be added to these cars, however the article also points to research which shows that at low speeds of 7-8kph, that an electric car is just one decibel quieter than petrol cars and that petrol and diesel cars are also becoming increasingly quieter thus creating some of the same problems. Indeed, some car manufacturers have already added an artificial noise to their vehicles, for instance the Nissan 'Leaf' emits an artificial noise below 30 kph and stops emitting the noise above this as the natural sound from the car at this speed is enough to warn pedestrians (Cunningham. Wayne, 2010).

The research reported on in 'The Independent' article referred to above was carried out by the UK Transport Research Laboratory (TRL). This research concluded that, while there may be some risk associated with electric vehicles, the scale of the problem is currently very small. However, in terms of shared space design, the issue may be more relevant as the TRL found that the;

"Audibility of these vehicles is only a problem at low speeds, where tyre/road noise is not the dominant noise source, and particularly in urban environments where background noise can potentially mask the noise of the vehicle." (Morgan. P A, 2011)

Unfortunately low speeds, urban environments and greater activity which might mask the sound of a vehicle, are some of the key features of many shared space design schemes. Therefore quiet vehicles, while attractive in many respects, may cause issues for vulnerable pedestrians in street environments where all users are encouraged to share the space. In these circumstances the provision of comfort zones reserved for pedestrians and gateways, transition zones and alertness zones with careful surface treatment which creates an audible warning for other users about the presence of a vehicle, becomes more critical.

12.5.21. Key Finding 20: Driver assistant technology – The US company Google have recently tested their self driven test cars which is currently a modified Toyota Prius. The state of Nevada has become the first American state to licence these vehicles, and while the concept may still be at the development stage, one of the test cars has already completed 140,000 miles without mishap. Responding to this development and its viability in the UK, Robert Gifford, the executive director of the Parliamentary Council for Transport Safety, believes that while such a car would not be currently

permissible on UK roads, the need exists for drivers to be assisted by technology (Millward. David, 2012). While driverless cars may seem like a distant reality, the fact is that driver assistance technology is becoming more common. BMW have developed a 'left hand drive assistant' which uses a combination of three laser scanners, a video camera and a GPS to tell the driver whether the left hand manoeuvre they are about to undertake is safe or not (Nguyen. T C, 2011).

Figure 12.14: Google's self drive car (Henry. Alan, 2012)

When driverless technology, or in the shorter term, driver assistance technology, becomes more commonly used, it will have an impact on pedestrian – motorist interaction. In a shared space design environment, where traffic is moving at low speeds, such technology could warn the driver about possible pedestrian or cyclist collision and therefore make the sharing of spaces a safer experience. In addition to this, the potential interaction of vehicle technology with devices embedded in the streetscape, or with smart phone apps or pedestrian assistive technologies such as navigation devices, the combination of such technology, if properly coordinated could provide safer interaction between all road users.

Key recommendations

The appropriate location of Shared Space design schemes is critical to the success of these designs and this often includes avoiding areas trafficked by heavy vehicles or excessive volumes of traffic. A set of national level selection criteria must be defined in order to guide local authorities and design practitioners in selecting appropriate locations for the implementation of shared space design.

Any national guidance developed should be based on the principles of Universal Design and the Universal Design process should be employed throughout any shared space design process. Emphasis should be placed on key shared space design measures such as gateways, comfort zones, delineators or crossings points. Surface treatments should also be used where appropriate to provide audible warning for quieter vehicles, electric cars and hybrids.

Further research is required to fully understand the impact of raised kerbs or dedicated comfort zones on the level of 'sharedness' within a Shared Space or Home Zone and to what extent this has a negative or positive impact on the quality of the space. In line with this further research should be conducted by relevant government departments in conjunction with local authorities to examine acceptable delineators other than kerbs that could be used to demarcate comfort space and space shared with vehicles.

Recent guidance from the UK in relation to shared space design makes it clear that kerb removal and Shared Surfaces are not compulsory in achieving Shared Space or Home Zones. Therefore, until satisfactory evidence exists, through data gathered from national pilot studies or verification from rigorous international research, which demonstrates successfully the operation of an alternative delineator to kerbs, shared space design, in the short term should maintain an appropriate kerb to indicate the comfort zone for vulnerable pedestrians.

Key phrases and ideas from Theme 5

Education, General principles for 'site specific' design, research about what makes better streets (delineators, crossings etc.), enforcement.

12.6. Economic implications

12.6.1. Key Finding 1: Construction costs- The economic implications of the introduction of Shared Spaces, Shared Surfaces and Home Zones needs to be fully considered as street work associated with these concepts may involve more expense in terms of paving, trees and additional street furniture. However Hamilton-Baillie and Jones (2005) claims that the key to successful Shared Space is simplicity and suggests that the elimination of traffic management features such as barriers, traffic lights or speed bumps could reduce the overall costs of constructions. They claim that while Home Zones may prove more expensive to build, Shared Space could represent savings for local authorities. Sutcliffe refers to the difficulty in providing enough conventional crossing points for those with visual difficulties due to cost of lights and signals, but believes the lower vehicle speeds and more courteous behaviour of drivers in a Shared Space should be beneficial for all. Kennedy (2005) reinforces this point and suggests that the application of psychological traffic calming measures may be more effective than conventional traffic measures.

Two undergraduate research thesis from Australia and New Zealand looked at the cost of implementing Shared Space as part of their overall analysis. Gillies (2009) looked at some case studies form the UK, including Exhibition Road which has been

costed at £25 million and Ashford Shared Space which cost £15.9 million. While these upgrades proved extremely costly, much of the expense could be attributed to the choice of very high quality designer street furniture (KentOnline, 2009) rather than the upgrade itself. In addition there is no breakdown available as to the additional cost of the specific Shared Space design elements over and above the cost of a more traditional upgrade, which was planned regardless. While analysing Shared Space for the New Zealand context, Shearer (2010) carries out a theoretical calculation on a hypothetical 100 metre stretch of newly constructed street to estimate total construction costs. His first calculation is based on a newly built the conventional road layout with parallel parking, grass margin and footpaths. While the second example uses a range of shared space design measures including a level surface, a chicane and the same amount of parking. Shearer shows the Shared Space being 1.5 meters narrower due to the elimination of footpaths and considers that this extra land could be added to the housing plots along the road and therefore increase the value of these plots This reduced width is taken into account the value of the extra land is built into the Shared Space calculations. Basing his calculations on standard material costs, Shearer calculates that the total cost of constructing the conventional street and the Shared Space street both cost approximately the same , in the order of NZD 38,000.

12.6.2. Key Finding 2: Cost effective research - Any pilot studies, data collection or further research proposed in order to inform guidelines should be carefully designed in order to maximise any return on investment in terms of research funding. These pilot studies should be standardised with a set of key performance indicators to allow comprehensive assessment of the economic implications of any Shared Space or Home Zone design.

12.6.3. Key Finding 3: Cost of kerb replacement - If kerbs are removed then there is the cost of levelling the street surface and providing a larger quantity of tactile paving to delineate safe zones. Although discussions with a Quantity Surveyor representing the Society of Chartered Surveyors Ireland has suggested that the cost involved in filling and level of streets to create a level surface is minimal as part of the upgrading of an entire street.

12.6.4. Key Finding 4: Accurate costing - Many stakeholders have pointed out that the cost of street upgrading is often inflated by the cost of carrying out additional infrastructure works such as laying of underground services and upgrading telecommunications. It is essential that any such costs not specific to the shared space design measures are accounted for to accurately reflect the actual costs of shared space design.

12.6.5. Key Finding 5: Shared space design as part of larger upgrade - While there is a cost associated with street improvements, it has been argued that Shared Space or Home Zone design is typically carried out as part of a larger upgrade and therefore any additional costs associated with Shared Space design is largely subsumed into the overall cost of the street refurbishment.

12.6.6. Key Finding 6: Value of a high quality public realm - There have been suggestions that a higher quality public realm with a more attractive and people centred built environment has a positive impact on retail footfall and the value of retail and residential properties in general. Research by Sinnett et al (2011) shows that improvements in the walking environment have the potential to increase economic value and activity in a local area. Their research also points to the fact that pedestrian traffic is often undervalued by business owners and that a Sustrans study in Bristol shows that business owners overestimate the proportion of customers arriving by car by almost double (Sustrans, 2006).

Further to this, research carried out by CABE (Commission for Architecture and the Built Environment) demonstrates that investment in design quality brings quantifiable financial returns and that people value improvements to their streets. The report titled 'Paved with gold: the real value of good street design' shows that better streets result in higher market prices for both retail properties and residential units (Commission for Architecture & the built Environment, 2007). The aim of the 'Paved with gold' research was to calculate the "extra financial value that good street design contributes, over average or poor design". Ten London high streets were chosen based on a certain criteria to ensure the sites were comparable. One of these criteria included the stipulation that the street should not have been upgraded since the last 2001 UK census. Higher market prices for retail and residential units within the test sites was used as a measurement for the monetary value of good street design. The study acknowledges that higher unit prices may also have a negative impact in terms of restricting access and reducing retail diversity. However, this does not take away from the fact that users of the case study streets placed a value on a higher quality street environment, which was the central aim of the study.

This CABE study first used the 'Pedestrian Environment Review System' or PERS developed by TRL limited (TRL Limited, 2012) to assess the design quality of each of the ten streets. PERS evaluates both the place function and the link function of a street based a set of categories. For the CABE research the following headline PERS categories were used; 1) Effective width (of the footpaths), 2) Dropped Kerbs / gradients, 3) Obstructions, 4) Permeability, 5) Legibility, 6) Lighting, 7) Personal security, 8) Surface quality, 9) User conflict, 10) Maintenance, and 11) Quality of

Environment. In PERS, the 'Quality of Environment' criteria is related to elements such as, aesthetics, sense of place through high quality materials, frontages or soft landscaping, and the presence of enjoyable activities and features. PERS uses a seven point scoring system between -3 and + 3. Using ''Quality of Environment' as an example, – 3 would indicate harsh or uncomfortable surroundings, with excessive traffic and noise and would not be pleasant for a pedestrian to spend any length of time within the space. 0 would represent a reasonably well maintained space which would not be an unpleasant place to be. +3 is given to a public place which is aesthetically pleasing, quiet and enjoyable to use. While these qualities can be subjective and difficult to quantify, the CABE study scrutinised all ten sites using the same criteria, therefore it can be argued that the rating system provides a useful basis for comparison between the sites.

Having rated the streets using PERS, the following data was also collected as part of the project;

"Socio-economic – measures of population, employment, deprivation, incomes and spending power.
Retail – the mix and number of shops and data on the comparison goods spend [1], the size of the retail catchment and the extent of retail competition.
Accessibility – how many people were within specific travel times by public and private transport.
Prices – analysis of flat prices on the high street, surrounding streets, retail rents and value of sales.
Pedestrian data – counts of pedestrian activity at various points along each high street and throughout the day" (Commission for Architecture & the built Environment, 2007).

The researchers then used regression analysis to interrogate the data collected to establish whether there was a connection between the quality of the street, as rated using PERS, and the variations in retail rents and property prices across the ten sites. Multiple regression is a data analysis technique used whenever a quantitative variable (known as the dependent or criterion variable) is to be examined in relationship to any other factors (expressed as independent or predictor variables). The relationships may be nonlinear and the independent variables may be quantitative or qualitative. (Cohen, 2003)

The results from the regression analysis show that there is a relationship between the design quality of the street and the property values in these locations. The 'Paved with Gold' report states that for every point increase on the PERS scale,

[1] Comparison goods spend is the expenditure on 'comparison goods' rather than expenditure on convenience goods. Comparison goods are typically more expensive goods where the customer usually compares a few prices in different stores before making a purchase decision.

there is a corresponding increase of £13,600 in residential prices, and an increase of £25 per square metre in retail rent per year.

Therefore, across the ten streets, which are comparable in terms of socioeconomics, location, access and pedestrian activity, the streets with a higher quality urban environment generate greater monetary value for the business and residential properties in these areas, thus proving the economic value of a high quality public realm.

Growing out of this research, Transport for London (TfL), along with a range of partners including TRL Limited, Colin Buchanan and others, has developed the 'Valuing Urban Realm (VUR) Toolkit' to monetise the benefits of any proposed urban space improvements (Transport for London, 2012). The VUR Toolkit uses PERS and the associated categories listed above and provides a web based tool to "provide a complete user-friendly interface for local authorities, developers, academics and private individuals to evaluate proposed streetscape improvements, undertake cost-benefit analysis, develop a robust business case and justify investment in public realm projects" (ibid). The web tool allows individuals to enter baseline data about the project (existing pedestrian numbers, rental prices etc.) and also scenario / measured data in relation to the proposed/completed works. From this baseline and scenario/measured data the 'VUR Toolkit' provides feedback on a range of impacts including; Climate change, Economic Impact, Equality of opportunity, Quality of life and environment and , Safety, security and health. The toolkit also calculates total economic benefit from improving the public realm, total social benefits, total project costs and a benefit to cost ratio, among other calculated impacts.

12.6.7. Key Finding 7: Return on investment – In line with the above, stakeholder feedback suggests that further analysis of the economic implications of street upgrading, pedestrianisation and the presence or absence of traffic and public transport directly in a specific space would cast further light on the benefits or challenges of Shared Space in the Irish context. Has the street upgrade improved retail footfall and thus has justified the cost and disruption associated with the upgrade? Or does an area experience the 'confounding factor' where footfall transfers from adjoining areas without providing an overall retail improvement?

12.6.8. Key Finding 8: Imaginative use of inexpensive materials - The material costs associated with Shared Space and Home Zone projects need not be expensive. In many cases coloured tarmac, or concrete can be used for the main areas of the street or road surface, while more expensive materials such as block paving or tactile materials can be used sparingly to delineate or mark out special features.

12.6.9. Key Finding 9: Lighting costs - Lighting of shared space design may need some extra investment as typically lighting is concentrated on to the more limited pedestrian areas and footpaths, rather than the carriageway. In a Shared Space environment, there is an expectancy that pedestrians will use the entire surface therefore more extensive lighting may be required.

12.6.10. Key Finding 10: Value of road safety - A cost benefit analysis needs to be conducted regarding the cost of creating Shared Space, Shared Surfaces and Home Zones versus the savings due to increased road safety and economic activity in the area. The Road Safety Authority (RSA) suggest that the cost benefit analysis of road safety should be major part of road and street design calculations. The RSA use a model that calculates that the cost to the state for the average road fatality is approximately €2.5 million, when one considers a range of issues including emergency services, medical treatment, burial costs, insurance, and loss of tax to the state and other hidden costs.

12.6.11. Key Finding 11: Quality of life - Beyond footfall and property values, stakeholders stressed that there is a quality of life issue that needs to be considered and that this is hard to quantify in monetary terms. If equality and access for all is achieved in more liveable, people friendly streets with less car domination then this is likely have a positive impact on the quality of life in a locality. Over the past few years there has been many international initiatives to improve the liveability and quality of life in cities including; the WHO (World Health Organisation) Healthy cities project (www.euro.who.int/en/home),the WHO Age friendly cities (www.who.int/ageing/age_friendly_cities), or the Child friendly cities initiative (www.childfriendlycities.org). All of these initiatives acknowledge the profound impact that the urban environment has on human health and well being. In the 1960's Jacobs (1961) outlined the importance of sidewalks in terms of social interaction while two decades later Appleyard (1981) focused on the negative impact of excessive vehicle traffic on the quality of life for residents on streets. More recent studies further illustrate the correlation between spatial planning and urban design in relation to physical, social and emotional health (Kerrins, 2011, Lavin and Institute of Public Health in, 2006). In recent years the influence of the city on people's happiness has received greater attention and many researchers identify design of the city and conditions experienced in urban areas as key predicators of human happiness (Leyden et al., 2011, Florida, 2008).

The streets and roads of any country constitute a significant portion of the public realm and serve a key role in terms of movement and transportation. Therefore, the quality and liveability associated with, and influenced by the streets and roads of a city are critical the quality of life of any urban or rural environment.

Key recommendations

This research has found that while a better quality street environment and pedestrian experience has positive implications for the local economy, the economic value of a high quality urban environment is not appreciated by many businesses. In fact British research shows that many businesses overestimate the value of vehicular access while underestimating the value of pedestrian traffic to their business. Using tools such as 'PERS', or the 'VUR Toolkit' or a similar methodology developed for the Irish context, a cost-benefit analysis is required to help quantify the economic implications of improvements to the urban environment in the Irish urban areas. Whether existing tools are used, or a new Irish specific tool is developed, a consistent set of evaluation criteria is needed, similar to those outlined in 12.6.5. If a scoring system similar to PERS is employed then the PERS score of the existing street can be used as baseline in terms of judging the proposed, or completed improvements. While the 'VUR Toolkit' automatically monetises the benefits of urban space improvement, rental values, property prices, or pedestrian footfall can also be used as a indicator proxy for the economic benefit of improving the public realm.

Further to this, as part of any pre-and-post assessment of the implementation of shared space design, a local cost benefit exercise, along the lines of that outlined above, should be carried out by an objective team of multidisciplinary experts to quantify the affect of shared space design on local businesses. Any such team should be composed of professionals such as; retail experts, architects, landscape architects, roads or civil engineers, and quantity surveyors. Depending on the complexity of the project, the project team may also need to include a traffic or transport engineer.

Key phrases and ideas from Theme 6

Research – pilots, case studies and similar projects, cost assessment, quantifying quality of life, cost benefit analysis not transferable across sites

12.7. Maintenance, management, durability & sustainability

12.7.1. Key Finding 1: Drainage - Traditional street drainage uses kerbs and gullies to deal with rainwater and prevent flooding of pedestrian areas and buildings, especially in the Irish context. Shared Surfaces require adequate gradients and appropriate drain covers and grates which allow water to drain through without causing issues for pedestrians or children playing in Home Zones. However, these issues are no different than any pedestrian area and the necessary design details and appropriate products are available. Again this seems to reiterate the need for consistent national design guidelines. The photographs below in Figure 12.13

illustrate this point. Image 1 shows a grate commonly used for a number of Home Zones in Ireland but allows many objects to fall through including children's toys. The drainage solution seen in images 2 and 3 shows a continuous drainage channel with permeable paving and a sealed drain cover which provides a better solution in this pedestrian environment.

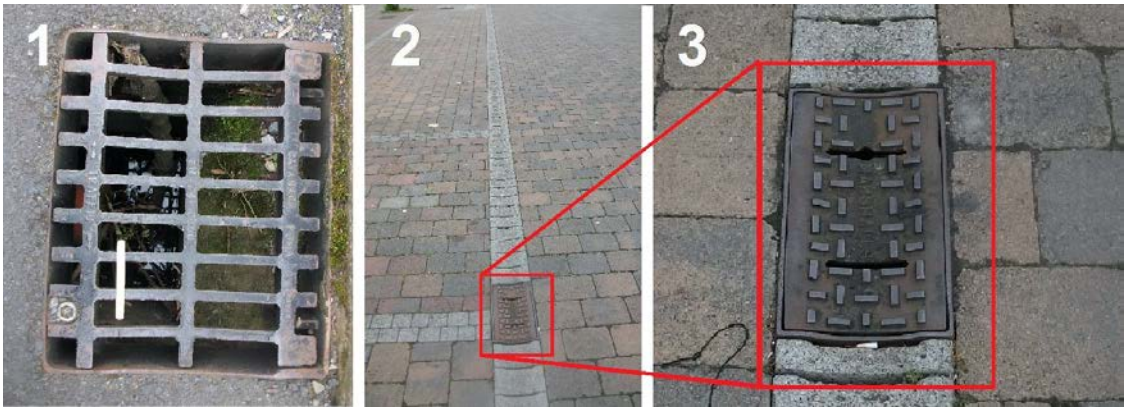


Figure 12.13: Typical drainage solutions used in Irish Home Zones. Image 1 shows a drain cover with large openings that allows many items to fall through. Image 2 & 3 shows a continuous covered drainage channel with permeable paving and sealed drain cover that is more appropriate to a pedestrian and child friendly environment.

12.7.2. Key Finding 2: Sustainable urban drainage schemes - To alleviate drainage problems caused by the removal of kerbs and gulleys, it is recommended to explore the greater use of sustainable urban drainage schemes (SuDS) for a more sustainable solution to water management. This may not be appropriate or feasible for all urban areas but may be possible in residential areas with larger Shared Surface areas or those adjacent to green areas (see Fig. 12.14).

Figure 12.14: Shared Surface area adjacent to green area

12.7.3. Key Finding 3: Underground services - The introduction of shared space design raises engineering issues with regard to underground services. In particular there may be practical design issues involved such as the requirement for straight service runs versus meandering carriageways; potential wheel loading over a wider area and service access areas suitable for vehicle and pedestrian traffic. However, many experienced stakeholders have pointed out that these situations can be readily overcome with careful planning and integrated design.

12.7.4. Key Finding 4: Community stewardship - In Home Zones, residents are encouraged to colonize the public space but this can sometimes result in conflicting views of what constitutes proper usage, or in certain cases residents abusing the space such as littering, abandoning cars, or other anti-social behaviour. Local authorities and property management companies may need a well enforced management plan to maintain the quality of these spaces. The residents also need to be involved from the earliest stages to engender a sense of participation and stewardship.

The danger that 'everyone's space' may become 'nobody's space' and thus suffer from neglect needs to be carefully considered in Home Zone design. Oscar Newman (1972) developed the 'Defensible Space' theory having studied high crime rates in New York high-rise public housing. According to Newman, 'territoriality' or "the capacity of the physical environment to create perceived zones of territorial influences", is critical to successful residential communities as it gives the residents a sense of control and guardianship over their immediate environment. Reynald and Elffers (2009) outline the many criticisms of Newman's theory yet acknowledge its significant influence, rightly or wrongly, on the development of programs such as 'Crime Prevention through Environmental Design' (Jeffery, 1971) or 'Secured by Design' (Association of Chief Police Officers of England et al., 1993). These programs use 'defensible space' theory as part of their guidelines for crime prevention in new developments. Reynald and Elffers (2009) argue that the 'accessibility' of an area to 'outsiders', or non residents, is central to the 'defensibility' of a residential area. However, they claim that further research is needed in this area as there is conflicting findings regarding the advantages or disadvantages of accessibility for non residents within any community. The authors also refer to the importance of 'the routine activities of place' (Cohen and Felson, 1979) which they define in the context of 'defensible space' as "the social organization of behaviour at a particular place, which is affected by the accessibility of the place and, in turn, affects the efficacy of guardianship therein." The design and layout of semi-public or public space, combined with its accessibility and local social ties influence the type of routine activities that occur in these spaces. The nature of these activities determines the image that the place projects, which in turn impacts on the

resident's attitudes to their territory and their sense of territorial guardianship. Reynald and Elffers (ibid) contend that "Residents' ability to create defensible space by acting as capable guardians who discourage crime is, therefore, directly influenced by these routine activities." The complex relationship between 'defensible space', 'accessibility' and 'routine activities of place' needs to be carefully considered when designing the shared space within a Home Zone. In order for public or semi-public spaces to be fully shared, respected and protected by all residents, a sense of guardianship, or stewardship is required.

12.7.5. Key Finding 5: Community awareness – Some of these issues may be overcome through resident education and awareness, Home Zone Charters with clear rules of behaviour so residents have greater sense of ownership and control and through passive surveillance designed into any redevelopment. In certain areas which have experienced socio-economic deprivation, this will be especially relevant as some residents have reported that they are unwilling to let their children play in Home Zone areas due to anti-social behaviour such as youths on motorcycles using the area to avoid visibility and detection by the Gardai on the main roads.

12.7.6. Key Finding 6: Perceived anti social behaviour - Anti-social behaviour is often an issue of perception in terms of youth hanging-out or lack of adequate play areas and activities for children. Case studies of a few representative Home Zones has revealed that many residents are unhappy with children playing in the communal areas due to noise and disruption. In many cases there was nowhere else for the children to play.

Figure 12.15: Signs within two Dublin Home Zones

12.7.7. Key Finding 7: Parking - Similarly parking needs to be carefully managed in Home Zones where kerbs and traditional parking formats have been removed. In addition the community needs a certain level of self regulation to maintain a good quality of life.

12.7.8. Key Finding 8: Planting and street furniture management - The additional trees, planting, street furniture or street art often associated with Shared

Space or Home Zones will entail additional management. Some stakeholders believed that such elements are worth it if they improve the quality of life within an area but agreement must be in place from the offset about the rights and responsibilities within a Home Zone or any Shared Space.

Figure 12.16: Two recently completed Dublin Home Zones illustrating the difference that maintenance makes to the quality of the residential environment.

As referred to in Section 12.7.4, a sense of stewardship and territorial guardianship is required to ensure the long term success of shared spaces, particularly in Home Zones. However, the hard and soft landscaping elements of a Home Zone will need careful management from the local authority or management company. It is argued that any damage to property, if not dealt with early, signifies a lack of interest and care in the area and thus encourages further vandalism or crime. In a seminal article in 'Atlantic Magazine' Kelling and Wilson (1982) introduced the idea of 'Broken windows policing' where it is believed that the targeting of minor offences leads to more effective policing. The 'Broken window' concept suggested that minor offences can initiate a cycle of greater neighbourhood deterioration, including greater perception of crime. Hinkle and Weisburd (2008) largely concur but stress that the manner in which 'broken windows policing' is implemented is critical to its success, as the perception of police 'crackdowns' can itself lead to increased citizen fear about the safety of their neighbourhood. These authors refer to the 'incivilities thesis' where "disorder in a community leads to fear of crime among residents, which in turn leads them to withdraw from the community. The result is a decline in the neighborhood's level of informal social control which is hypothesized to cause crime in the area to increase in frequency and severity." Strategies to employ 'Broken Windows Policing' also includes dealing with abandoned sites, derelict buildings, graffiti and other physical disorders.

One of the most widely publicised examples of 'Broken windows policing' appeared during Mayor Rudy Giuliani's tenure in New York City. His zero-tolerance policy resulted in a crackdown on begging, homelessness, squeegee cleaning of car window

screens and other issues within the city and this coincided with a reduction of crime in the city. However, besides the broader argument against excessive policing and rights to the city, some commentators have challenged the effectiveness of 'Broken windows policing' pointing to the lack of empirical evidence (Harcourt, 2001). Others have suggested that the zero-tolerance policy was not responsible for crime reduction in New York, instead attributing crime reduction to the tackling of the drug epidemic in the city, specifically 'crack cocaine' (Harcourt and Ludwig, 2006).

Notwithstanding this, the idea that a well maintained environment sends out a message that the area is secure, monitored and cared for, and therefore the abuse and the destruction of property will not be tolerated, has much currency. Referring again to the work of Hinkle and Weisburd (2008), whose research focused on crime hotspots in Jersey City in New Jersey, USA, they state that "higher levels of both perceived social disorder and observed physical disorder led to significantly higher levels of fear of crime". In terms of the public and semi-public spaces in a Home Zone, the upkeep of the area is vital; to maintain the image of the place, to send out the right signals, and to foster a sense of territorial guardianship and local pride, and finally to prevent the 'broken windows' effect as previously discussed.

Key recommendations

Successful long term maintenance and management of streets and public spaces requires a sense of stewardship amongst the local residential and business community. Any guidelines should stress that the consultation process should have as one of its goals the full participation and support of the community. The physical design and layout of shared spaces, and Home Zones in particular, should carefully consider the interaction of 'defensible space', accessibility to non residents and 'routine activities of place'. In line with this, every effort must be made to ensure that the design process and resulting built environment engenders a sense of ownership, stewardship or territorial guardianship in the local community. This must be driven primarily at the local authority level.

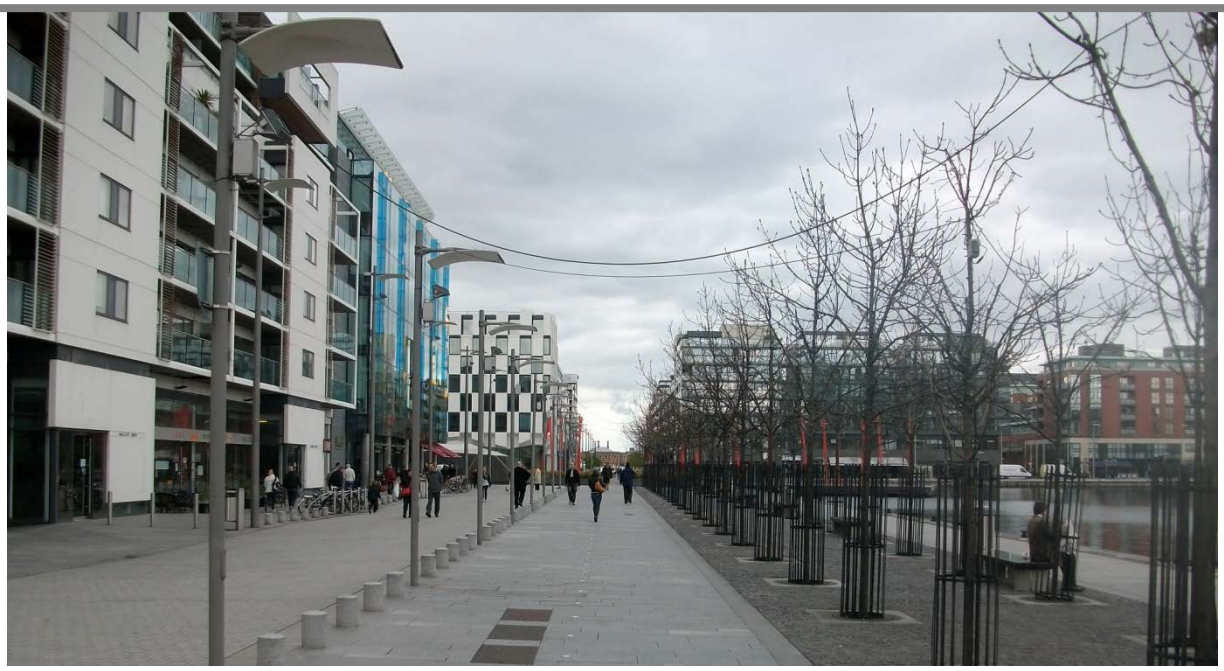
Continuing maintenance of the shared public or semi-public spaces is critical to the ongoing success of shared space design. 'Broken window' thinking is useful in terms of preventing neighbourhood deterioration, especially in shared public and semi-public spaces where obvious ownership and responsibility may not as clear as privately owned space. Management and maintenance schemes should acknowledge that initial minor damage or graffiti can often lead to more widespread disorder and thus undermine the community and any territorial guardianship.

While a certain level of local authority enforcement is required, the design guidelines should enable a final product that encourages self regulation and self enforcement at a local community level.
All national guidelines should contain robust detail specifications in relation to the use of durable and sustainable materials, drainage, cleaning, planting and long term maintenance.

Key phrases and ideas from Theme 7
Maintenance zones, costs, part of the community, education, regulation & maintenance.

13.Conclusion

Research Conclusions and Recommendations



13.1. Introduction

This research has been undertaken by TrinityHaus (Trinity College Dublin), on behalf of the National Disability Authority's (NDA) Centre for Excellence in Universal Design (CEUD). The aim of the research was to engage with a wide range of stakeholders in a discussion about Shared Spaces, Shared Surfaces and Home Zones in the Irish context. The research seeks to explore contemporary national and international practices and thinking on Shared Spaces, Shared Surfaces and Home Zones and to investigate these concepts from a Universal Design approach in the Irish urban environment. This report sets out key evidence based findings and provides key recommendations in relation to the implementation of Shared Spaces, Shared Surfaces and Home Zones in Ireland.

This research project has been conducted over six months and has involved an extensive literature review of national and international best practice, guidelines, reports and peer reviewed journal papers in relation to Shared Space, Shared Surfaces and Home Zones. In addition to this, engagement with over twenty organisations, interviews with over thirty individuals, site visits and analysis of urban spaces and Home Zones, and two workshops has thoroughly informed the research. Key urban issues, road design and end user concerns in have also been examined and these form the backdrop to Shared Space, Shared Surfaces and Home Zone concepts in the Irish context.

Following the completion of the stakeholder interviews and having conducted a large part of the research, a draft report was prepared which outlined the key preliminary findings up to that point. This was circulated to all stakeholders prior to the second stakeholder workshop and was used as the basis to discuss all the findings with the stakeholders at the workshop. This document was subsequently amended to include all feedback and now forms a large part of this final report.

13.2. Key findings

During the research a range of issues were highlighted by the stakeholders, however the following views quickly became apparent;

Lack of awareness - While the concepts of Shared Space, Shared Surfaces and Home Zones are now being used more commonly in mainland Europe and the UK, there is very little awareness of these design approaches among the general public in Ireland. Among specific organisations who represent more vulnerable pedestrians such as the National Council for the Blind Ireland and the Irish Guide Dogs for the Blind, there is a greater knowledge due to their concerns about the impact of specific shared space design features such as kerb removal and Shared Surfaces. Design professionals and local authority architects and engineers also had a good level of awareness although in some cases there was little knowledge about specific design features or best practice guidelines such as those recently published in the UK.

While there are quite a few built examples of Home Zones throughout the country, especially in the redeveloped Ballymun and the recently constructed Adamstown area, both in Dublin, there was little awareness of the Home Zone concept among the many user groups interviewed. In fact, in some cases there was limited awareness of the rationale behind this concept among those actually living in areas designed as Home Zones. All stakeholders reported that the definitions presented to them in this research for Shared Space, Shared Surfaces and Home Zones, provided them with a clearer understanding of these design concepts.

While most designers and local authorities acknowledged the challenges of shared space design in relation to people with visual difficulties, many were surprised to hear that other organisations such as the Irish Wheelchair Association also had reservations about shared space design and agreed that there needed to be greater awareness among designers and providers about the full range of end user needs.

Support and concerns - Having discussed the main issues, all of the stakeholders supported the general aims of shared space design, as long as the focus was on improving the usability of the urban environment and providing more liveable streets. However, many stakeholders expressed very strong views about specific design features such as Level Surfaces which

remove the typical delineation between traffic and pedestrians and they stressed the importance of best practice guidelines and design approaches which protect more vulnerable pedestrians.

Universal Design - In line with these concerns many stakeholders were supportive of adopting a Universal Design approach to shared space design as they believed this would help address many of the needs of more vulnerable pedestrians. The stakeholder engagement process which is central to the Universal Design was considered a key attribute to adopting this approach.

Evidence based guidelines - There was broad consensus that Ireland needs a set of national shared space design guidelines specific to the Irish context that would include advice on both Shared Space and Home Zones, which should be guided by Universal Design principles. It was also agreed that further research and pre and post condruction data gathered from pilot studies would be needed to underpin any guidelines. In addition an education and awareness campaign would be required to inform all users about the intentions of shared space design and how the priority is shifted away from the car towards a more shared environment where individual responsibility, awareness of other users, especially vulnerable pedestrians, and courtesy must be exercised.

Maintenance and ongoing success – Finally, many stakeholders emphasised the need for ongoing management and maintenance of all public urban spaces, but expressed particular concern for shared space design schemes where they believed a sense of local stewardship was required. It was acknowledged that while shared responsibility was the key to long term success, the local authority would also have to help foster this sense of shared ownership, but would also need to proactive in terms of management and enforcement if required.

As discussed in Chapter 10 the key findings are clustered around a number of themes which are broke down into seven headings including; 1) Evidence based decision making 2) Legislation, design guidelines and enforcement 3) Education, awareness and training 4) Consultation and planning 5) Design and appropriate locations 6) Economic implications and 7) Maintenance, management, durability and sustainability.

The research findings have been organised under each heading as detailed earlier in Chapter 12 of this report. Following each set of research findings there is a number of key recommendations based on the evidence presented. As stated previously, these recommendations represent the views and concerns of the key stakeholders while also providing advice on how to best advance shared space design practices in Ireland at a local authority and national level while providing for the needs of all street users. The following sections reiterate the key recommendations which are extracted from the findings in Chapter 12.

Evidence Base Decision Making

- At national level Shared Space pilot studies are required in association with selected local authorities in a number of urban and rural locations. These pilot studies need to be guided by a set of national level preliminary site selection and assessment criteria, local stakeholder consultation and design guidelines to ensure consistency of site selection and research findings at all test sites.
- Examine international examples of pre and post construction design assessments along with key performance Indicators and develop an appropriate national assessment methodology and indicator suite to measure the impact of shared space design on specific locations in line with international best practice and standards appropriate to the Irish context. This assessment procedure should follow Universal Design principles and also include a range of selected end users including older people, children and those with visual, mobility and cognitive difficulties to be involved with pre and post construction on-site assessments.
- Such assessment could be conducted presently in selected existing Home Zones to determine the usability and success of such spaces in terms of Universal Design. This assessment could provide initial feedback and help inform the preliminary guidelines used in connection with the pilot studies.

Legislation, design guidelines and enforcement

- Use of the term ‘shared space design’ as an overall term when referring generally to design which includes specific terms Shared Space, Shared Surfaces and Home Zones.
- National level legislative change to define the specific terms; Shared Space, Shared Surface, Level Street and Home Zones in the appropriate Irish road traffic or development acts.
- Legislative and regulatory changes at a national government level to incorporate shared space design measures to provide Local Authorities with clear consultation and design guidelines as well as clarity around the function of shared space design, permitted uses, permitted road user behaviour and liability and responsibility for designers, Local Authorities and users.

- Create a national level shared space design guidance document built around the principles of Universal Design, and the Universal Design process. This document could support the forthcoming 'Design Manual for Urban Streets' which is currently being finalised by the Department of Transport, Tourism and Sport and the Department of Environment, Community and Local Transport. It could also support other existing national level design guidance such as the recently published 'Building for Everyone: A Universal Design Approach. This document should provide detailed best practice design and construction detailing guidance to include Shared Space, Shared Surfaces and Home Zones. The guidance should include advice on local consultation and the carrying out of local pilot studies and mock-ups as part of the community consultation.
- The adoption of guidance by local authorities could be expedited through the use of Section 28 of the Planning and Development 2000, which allows the minister to issue guidelines directly to local authorities.

Education, Awareness and training

- At a national and local authority level training should be provided to key design professionals in private practice and those working with local authorities. This training should educate practitioners about the necessary consultation process associated with Shared Space design, end user needs and the specific design requirements of Shared Space design. This training should also extend to key contractors who will carry out the construction work as correct detailing and consistency are vital to successful shared space design.
- Relevant government authorities and departments such as the Road Safety Authority (RSA) to undertake an education and awareness campaign to extend to all road users to fully explain how shared space design has been implemented are supposed to work. The campaign should instil in all road users an understanding that in Shared Space there is a different set of priorities, that the carriageway is to be shared and that a greater level of communication, negotiation and courtesy is required.
- Any rules of the road, safe cross code, or similar road safety guidance prepared by the RSA to include information and instructions about shared space design and responsibilities of each user within such spaces. The road safety campaigns currently run by the RSA in partnership with the Department of Education and local community groups would also need to include information about shared space design schemes.

- Where shared space design pilot schemes or redevelopment takes place, the local authority need to provide accessible information onsite, online and using other relevant media to inform and educate the street users about the intentions of shared space design or the aims and objectives of the pilot study.

Consultation and planning

- The consultation process and stakeholder engagement must be seen as one of the central components of shared space design. All national guidelines should make this explicit and provide guidance to design practitioners and local authorities on how to best engage with end users, carry out local pilot studies or on site mock-ups. Beyond the national level guidelines, all local authorities must make the stakeholder consultation central to their process of implementing shared space design.
- Any guidance must stress that the objectives around a higher quality of life and increased liveability must be kept to the fore and that the process must focus on the key local issues and not get sidetracked by the pursuit of shared space design as the ultimate goal.

Design and appropriate locations

- The appropriate location of Shared Space design schemes is critical to the success of these designs and this often includes avoiding areas trafficked by heavy vehicles or excessive volumes of traffic. A set of national level selection criteria must be defined in order to guide local authorities and design practitioners in selecting appropriate locations for the implementation of shared space design.
- Any national guidance developed should be based on the principles of Universal Design and the Universal Design process should be employed throughout any shared space design process. Emphasis should be placed on key shared space design measures such as gateways, comfort zones, delineators or crossings points. Surface treatments should also be used where appropriate to provide audible warning for quieter vehicles, electric cars and hybrids.
- Further research is required to fully understand the impact of raised kerbs or dedicated comfort zones on the level of ‘sharedness’ within a Shared Space or Home Zone and to what extent this has a negative or positive impact on the quality of the space. In line with this further research should be conducted by relevant government departments in

conjunction with local authorities to examine acceptable delineators other than kerbs that could be used to demarcate comfort space and space shared with vehicles.

- Recent guidance from the UK in relation to shared space design makes it clear that kerb removal and Shared Surfaces are not compulsory in achieving Shared Space or Home Zones. Therefore, until satisfactory evidence exists, through data gathered from national pilot studies or verification from rigorous international research, which demonstrates successfully the operation of an alternative delineator to kerbs, shared space design, in the short term should maintain an appropriate kerb to indicate the comfort zone for vulnerable pedestrians.

Economic Implications

- This research has found that while a better quality street environment and pedestrian experience has positive implications for the local economy, the economic value of a high quality urban environment is not appreciated by many businesses. In fact British research shows that many businesses overestimate the value of vehicular access while underestimating the value of pedestrian traffic to their business. Using tools such as the 'Pedestrian Environment Review System' (PERS) as developed by TRL limited, or the 'Valuing Urban Realm (VUR) Toolkit', or a similar methodology developed for the Irish context, a cost-benefit analysis is required to help quantify the economic implications of improvements to the urban environment in the Irish urban areas (See Section 12.6 for an explanation of these terms). Whether existing tools are used, or a new Irish specific tool is developed, a consistent set of evaluation criteria is needed, similar to those outlined in 12.6 in this report. If a scoring system similar to PERS is employed then the PERS score of the existing street can be used as baseline in terms of judging the proposed, or completed improvements. While the VUR Toolkit automatically monetises the benefits of urban space improvement, rental values, property prices, or pedestrian footfall can also be used as a indicator proxy for the economic benefit of improving the public realm.

- Further to this, as part of any pre-and-post assessment of the implementation of shared space design, a local cost benefit exercise, along the lines of that outlined above, should be carried out by an objective team of multidisciplinary experts to quantify the affect of shared space design on local businesses. Any such team should be composed of professionals such as; retail experts, architects, landscape architects, roads or civil engineers, and quantity surveyors. Depending on the complexity of the project, the project team may also need to include a traffic or transport engineer.

Maintenance, management, durability and sustainability

- Successful long term maintenance and management of streets and public spaces requires a sense of stewardship amongst the local residential and business community. Any guidelines should stress that the consultation process should have as one of its goals the full participation and support of the community. The physical design and layout of shared spaces, and Home Zones in particular, should carefully consider the interaction of 'defensible space', accessibility to non residents and 'routine activities of place'. In line with this, every effort must be made to ensure that the design process and resulting built environment engenders a sense of ownership, stewardship or territorial guardianship in the local community (See Section 12.7 of this report for an explanation of these terms). This must be driven primarily at the local authority level.
- Continuing maintenance of the shared public or semi-public spaces is critical to the ongoing success of shared space design. 'Broken window' thinking is useful in terms of preventing neighbourhood deterioration, especially in shared public and semi-public spaces where obvious ownership and responsibility may not as clear as privately owned space (See Section 12.7 of this report for an explanation of 'Broken Windows' theory). Management and maintenance schemes should acknowledge that initial minor damage or graffiti can often lead to more widespread disorder and thus undermine the community and any territorial guardianship.
- While a certain level of local authority enforcement is required, the design guidelines should enable a final product that encourages self regulation and self enforcement at a local community level.

Conclusions

The research findings and key recommendations emphasise the current issues associated with shared space design in general and specific concerns expressed by key stakeholders in the Irish context. There is a belief held by many stakeholders that the urban design experienced in Ireland to date was not of a sufficient quality and this had some bearing on their opinion about the potential success of shared space design in Ireland.

While this report contains over sixty key research findings and twenty recommendations it is understood that these need to be prioritised and consideration given to shorter term achievements.

Many stakeholders, particularly those representing end-users had little awareness of shared space design and those that did tended to represent people with visual difficulties. These groups were therefore more aware of the potential difficulties presented by certain existing features of shared space design. However, all stakeholders were supportive of the core principles of shared space design which focus on increased pedestrian priority and the overall improvement of the street environment.

The other reoccurring themes coming out of the stakeholder engagement process centred on the need for evidence based design guidelines specific to the Irish context, serious concerns about Shared Surfaces and the lack of delineation for certain vulnerable pedestrians and the necessity for in-depth stakeholder engagement in relation to both the preparations of guidelines and ongoing local consultation regarding any proposed shared space design schemes. The stakeholders agreed that the Universal Design approach would be critical in meeting end user needs. Upon presenting the preliminary research findings the stakeholders reported that the key research findings now captured the majority of their concerns.

One of the main conclusions of this report finds that pilot studies are necessary immediately to inform end-users about the intentions of shared space design and to learn from direct onsite interactions between selected end-users, the public and local businesses and shared space designed pilot study schemes. Where local authorities are considering urban upgrade or trial pedestrianisation, this would provide an ideal opportunity for such pilot studies. Such pilot studies need to be informed by preliminary site selection criteria, draft design guidelines and an assessment methodology with an associated indicator suite to measure the impact of the alterations. These guidelines and assessment criteria need to be developed prior to the pilot study phase. Once the research has been completed a set of evidence based national guidelines can be created based on these preliminary guidelines.

Such assessment can be carried out immediately on selected existing Home Zones to determine the usability and success of such spaces in terms of Universal Design. This assessment could help inform the preliminary guidelines in relation to Home Zone design specifically. It could also be used to provide initial feedback in connection with any pilot studies associated with non residential Shared Space, and to test an appropriate pre and post construction assessment methodology.

In the short term, if there is still a genuine absence of a reliable alternative to the traditional kerb as a delineator of comfort zones, any shared space design that proceeds should maintain a kerb to act in this capacity. When evidence exists that demonstrates the successful application of an alternative delineator such as a wide tactile strip or similar, then Shared Surfaces may be considered, in consultation with local stakeholders and end-users.

In general there was much support for the Home Zone concept among the stakeholders interviewed, however the same concerns about Shared Surfaces exist. This report finds that Home Zones can bring many benefits to a local community and that with proper guidelines, addressing the concerns of vulnerable pedestrians that Home Zones could be widely implemented throughout Ireland in new build or retrofit schemes.

This report highlights the gaps in knowledge that exist in relation to Shared Space, Shared Surfaces and Home Zones, while the key findings and recommendations propose further research in the Irish context to address these issues. This research acknowledges the potential benefit of shared space design towards the creation of more liveable and pedestrian friendly street environments. Notwithstanding this, the report stresses the need for evidence based design informed by ongoing stakeholder engagement and the ongoing development of best practice. In adopting a Universal Design approach, local public involvement as advocated by Manley (Manley, 2011), an understanding of the local cultural context (Steinfeld, 2010, Steinfeld and Danford, 2007) and a continuous evolution of a design approach (Preiser, 2011), are all central to the sustainability of any high quality, people friendly and Universally Designed streetscape.

14. Glossary

Carriageway – The part of the road along which motorised traffic moves

Chicane - An artificial feature creating extra turns in a road, used to slow traffic for safety, this is a form of horizontal deflection.

Courtesy crossing – Sections of the carriageway, often signified using colour contrast or vertical deflection, which provide a place where drivers can stop safely to allow pedestrians to cross.

Deaf - People who are partially or wholly deaf, this is the preferred term of the Irish Deaf Society, rather than the use of the term hearing difficulties.

Footpath – The part of the road along which pedestrians walk

Home Zone - *The UK term for a residential street where people and vehicles share the whole of the road space safely, and on equal terms; and where quality of life takes precedence over ease of traffic movement. (Jones and Institute of Highway Incorporated, 2002).*

Horizontal deflection – Road design features that narrow the carriageway in a bid to reduce traffic speeds, features include build outs, pinch points, chicanes, islands and overrun areas.

Level street – Streets in which the traditional dropped kerb has been removed in favour of a level carriageway and footpath, however drainage channels, paving stones and bollards are used to define the footpath from the carriageway therefore still providing delineation between the two sections of the road and separate motorised vehicle s and pedestrians.

Little people – The term preferred by the Little People of Ireland to refer to individuals with restricted growth.

Luas – Dublin's light rail tram system.

Oireachtas– The national parliament of Ireland.

Persona – A precise description of a user's needs and what they hope to achieve, it is often employed as a design and stakeholder engagement method.

Shared Space - *A street or place designed to improve pedestrian movement and comfort by reducing the dominance of motor vehicles and enabling all users to share the space rather than follow the clearly defined rules implied by more conventional designs. (Department for Transport UK, 2011a).*

Shared space design - *For the purposes of this report the term shared space design will be used to refer collectively to Shared Space, Shared Surfaces and Home Zones.*

Shared Surface – A street *where there is no kerb or level difference to segregate pedestrians and vehicles. The term 'level surface' is also used in some situations and this simply refers to "A street surface with no level difference to segregate pedestrians from vehicular traffic" (Department for Transport UK, 2011a).*

Sharedness – A measure of how well pedestrians can use a space without having to give priority to motorists or cyclists. (Department for Transport UK, 2011a).

Signal controlled pedestrian crossing – A section of the road which uses pedestrian traffic lights to signify to all road users where pedestrians can safely cross the carriageway.

Sustainable Urban Drainage System (SuDS) – Water management practices and facilities designed to drain surface water in a manner that will provide a more sustainable approach than what has been the conventional practice of routing run-off through a pipe to a watercourse.

Tactile paving - A system of textured ground surface indicators found used on footpaths and transport platforms to assist navigation by pedestrians with visual difficulties, examples include blister paving, corduroy paving and warning paving, please see figure 12.4 for images.

Universal Design - Universal Design is the design and composition of an environment so that it can be accessed, understood and used to the greatest extent possible by all people, regardless of their age, size or disability. This includes public places in the built environment such as buildings, streets or spaces that the public have access to; products and services provided in those places; and systems that are available including information and communications technology (ICT). Disability Act 2005 (http://www.universaldesign.ie/)

Urban design - The collective term used to describe the process of designing and shaping cities, towns and villages.

Visual difficulties – People who have either partial or complete sight loss.

Vulnerable pedestrian - *Vulnerable pedestrians is a term used in this report to identify pedestrians such as older people, those with mobility, sensorial, or cognitive.*

Vulnerable road user - Pedestrians, motor cyclists, cyclists, young children and older people (Road Safety Authority, 2007)

15. Abbreviations

CBD – Central Business District

CEUD – Centre for Excellence in Universal Design

DEHLG – Department of Environment, Heritage and Local Government

DMUS – Design Manual for Urban Streets

ILI – Irish Landscape Institute

IPI – Irish Planning Institute

IWA – Irish Wheelchair Association

NCBI – National Council for the Blind Ireland

NDA – National Disability Authority

NRA – National Roads Authority

NTA – National Transport Authority

RIAI – Royal Institute of the Architects of Ireland

RSA – Road Safety Authority

SUDS – Sustainable Urban Drainage Systems

TCD – Trinity College Dublin

UD – Universal Design

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17. APPENDICES

Appendix 1 – Principles of Universal Design

1: Principle One: Equitable Use

The design is useful and marketable to people with diverse abilities

GUIDELINES

- Provide the same means of use for all users: identical whenever possible; equivalent when not.
- Avoid segregating or stigmatizing any users.
- Provisions for privacy, security, and safety should be equally available to all users.
- Make the design appealing to all users.

2: Principle Two: Flexibility in Use

The design accommodates a wide range of individual preferences and abilities.

GUIDELINES

- Provide choice in methods of use.
- Accommodate right- or left-handed access and use.
- Facilitate the user's accuracy and precision.
- Provide adaptability to the user's pace.

3: Principle Three: simple and intuitive

Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.

GUIDELINES

- Eliminate unnecessary complexity.
- Be consistent with user expectations and intuition.
- Accommodate a wide range of literacy and language skills.
- Arrange information consistent with its importance.
- Provide effective prompting and feedback during and after task completion.

4: Principle Four: Perceptible Information

The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

GUIDELINES

- Use different modes (pictorial, verbal, tactile) for redundant presentation of essential information.
- Provide adequate contrast between essential information and its surroundings.
- Maximize "legibility" of essential information.
- Differentiate elements in ways that can be described (i.e., make it easy to give instructions or directions).
- Provide compatibility with a variety of techniques or devices used by people with sensory limitations.

5: Principle Five: Tolerance for Error

The design minimizes hazards and the adverse consequences of accidental or unintended actions.

GUIDELINES

- Arrange elements to minimize hazards and errors: most used elements, most accessible; hazardous elements eliminated, isolated, or shielded.
- Provide warnings of hazards and errors.
- Provide fail safe features.
- Discourage unconscious action in tasks that require vigilance.

6: Principle Six: Low Physical Effort

The design can be used efficiently and comfortably and with a minimum of fatigue.

GUIDELINES

- Allow user to maintain a neutral body position.
- Use reasonable operating forces.
- Minimize repetitive actions.
- Minimize sustained physical effort

7: Principle Seven: Size and Space for Approach and Use

Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

GUIDELINES

- Provide a clear line of sight to important elements for any seated or standing user.
- Make reach to all components comfortable for any seated or standing user.
- Accommodate variations in hand and grip size.
- Provide adequate space for the use of assistive devices or personal assistance.

Appendix 2 – List of interviewed stakeholders

Below is a list of organisations who were invited to engage with the research, those in green were interviewed, or attended the stakeholder workshops. The organisations listed in red were unfortunately not available to engage with the research at this time.

User Group Organisations	Interviewee
Age Action Ireland	Not available
Centre for Ageing Research and Development in Ireland (CARDI)	Conor Breen
Children's Research Centre (TCD)	Sandra McCarthy
Chambers Ireland	Not available
Dublin City Business Association	Tom Coffey
Dublin Cycling Campaign	James Leahy
Irish Deaf Society	Susan Whelan
Irish Guide Dogs Association	Lean Kennedy
Irish Small and Medium Size Enterprises	Not available
Irish Wheelchair Association	Dolores Murphy, Vijoy Chakraborty & Bridget Boyle
Irish Autism Action	Sarah Rennick
Little People of Ireland	Sinead Burke
National Council for the Blind Ireland	Fiona Kelty
Sugradh & Dublin City University	Carol Barron
Older and Bolder	Not available
People with Disabilities Kildare	Claire Kinneavy, Martin Kelly & Anne Kelly
Provider Group Organisations	**Interviewee**
AECOM (representing Engineers Ireland)	Joe Seymour
Cork County Council	John Stapleton
Department of the Environment, Heritage and Local Government	Paul Altman
Department of Transport	Dominic Mullaney
Dublin City Council	Brian Swan & Kilian Skay
Dublin Bus	Not available
Galway City Council	Rosie Webb
Irish Landscape Institute	Feargus McGarvey
Irish Planning Institute	Mary Crowley & Rachel Ivers
Irish Georgian Society	Donough Cahill
Society of Chartered Surveyors Ireland	Tomas Kelly
National Transport Authority	David Clement & Eoin Farrell
PMCE (representing Engineers Ireland)	Peter Monaghan
Road Safety Authority	Michael Brosnan
Royal Institute of Irish Architects	Fionnuala Rogerson

Appendix 3 - Project briefing document

Research of Shared Spaces, shared surfaces and Home Zones from a Universal Design approach for the Urban Environment in Ireland

1. Project Briefing Document

What is the aim of this research?

This research is being undertaken by TrinityHaus, on behalf of the Centre for Excellence in Universal Design (CEUD) and the National Disability Authority (NDA). The aim is to engage with a wide range of stakeholders in a discussion about Shared Spaces, shared surfaces and Home Zones in an Irish context. This project aims to research contemporary national and international practices and thinking on Shared Spaces, shared surfaces and home zones with key recommendations on the direction that the NDA should take on this issue.

Some Definitions

Shared Space definition *(from the UK Department for Transport 2011)*
A street or place designed to improve pedestrian movement and comfort by reducing the dominance of motor vehicles and enabling users to share the space rather than follow the clearly defined rules implied by more conventional designs.

Shared surface *definition* *(from UK Department for Transport 2009*)

Shared space schemes sometimes used what is often referred to as a "shared surface", where there is no kerb or level difference to segregate pedestrians and vehicles.

Home Zone *definition* *(from the UK* Institute of Highway Incorporated Engineers 2002)
Home Zone is the UK term for a [residential] street where people and vehicles share the whole of the road space safely, and on equal terms; and where quality of life takes precedence over ease of traffic movement.

Universal Design definition *(from the Irish Disability Act 2005)*

Universal design refers to the design and composition of an environment so that it can be accessed, understood and used to the greatest extent possible by all people, regardless of their age, size, ability or disability.

There are four photographs below which represent a Shared Space, shared surface, a traditional street and a Home zone. These images are followed by written descriptions for those using screen readers.

Descriptions of the photos for users of screen readers

Photo 1: This image shows a Shared Space from Haarlem in the Netherlands. The road is quite wide and runs from the right to left of the photo. There is an absence of kerbs between the pavement and the road, this has been replaced by white triangles marking the delineation between the two spaces on the street. There is a pedestrian crossing route which contrasts strongly with the regular road surface in terms of colour. There is a truck entering from the right of the image and there are several cyclists and pedestrians crossing the road in front of the truck.

Photo 2: This photo shows an image of a road where there are no road signs or delineators between the areas used by cars and pedestrians. To the left of the image there are people sitting at tables and chairs outside a café, there is a car driving nearby these tables and pedestrians are also walking along the street. On the right side of the road a father and son are cycling on bikes, there is also a car parked on the right hand side of the road.

Photo 1 : A Shared Space

Photo 2 : A Shared Surface

Photo 3 : A typical Street

Photo 4 : The same street converted to a Home Zone

Photo 3: This image is an elevated photograph of a typical residential street of terraced houses in the United Kingdom. There are traditional kerb lines between the road and footpath and cars are parked halfway up on the kerb. There are no trees, bollards, bike locking facilities or traffic calming measures, such as speed bumps on the street.

Photo 4: This photo represents the same street in photo 3 after retrofitting to follow Home Zone guidelines. There are designated car parking spaces which prevent the cars parking on the foot paths, this has narrowed the carriageway of the street. Trees have been planted along the street, and bike locking facilities and bollards have been added. Colour contrasting road marking has been added at the beginning of the street to signal to road users that they are entering a Home Zone. Traffic calming measures have been added to the street to slow the speed of cars using the space.

How will the research be structured?

This research project is divided into several stages as follows:

November 2011 to February 2012: Interviews with key stakeholders, provider groups and relevant government department and local authority staff to understand the design and use of Shared Spaces, shared surfaces and Home Zones.

November 2011 to January 2012: Field based case studies to directly examine how users interact with selected streetscapes and how the modes of navigation behaviour employed may impact on Shared Spaces, shared surfaces and Home Zones.

January 2012: A stakeholder workshop to bring together all the key stakeholders to discuss Shared Space, surfaces and Home Zones, and their access and ease of use. Personas will be used

during the workshop to formulate discussion about the design and use of streetscapes and urban spaces by diverse users.

February 2012: Develop Draft recommendations on Share Space and surfaces and Home Zones in an Irish context and circulate to all stakeholders for comment.

February 2012: Second stakeholder workshop to facilitate feedback on the draft recommendations.

March 2012: Final report and recommendations on a Universal Design approach to Shared Space, surfaces and Home Zones in an Irish context will be submitted to the National Disability Authority.

What are the main issues with Shared Space, surface and Home Zones to be discussed?

While Shared Space principles may provide benefits, they may also present some problems to specific user groups, such as people with visual difficulties, or hearing difficulties, older people or children.

Benefits

- Enhanced safety as drivers and other road users make eye contact so cars no longer dominate the space.
- Creating a better pedestrian environment through reduced street clutter and signage.
- Helping to revive declining retail areas and enhancing the public realm with places for civic activities.
- Reduced speed & volume of traffic.

Problems

- People with visual difficulties cannot acknowledge the presence of other road users using eye contact.
- Difficult to navigate and way-find for many users.
- Lack of delineators such as kerbs used by children, people with visual difficulties or guide dogs.
- Users unsure how to use Shared Space.

It is these issues and more that this research must address through wide ranging stakeholder consultation.

Who do we want to consult with?

We believe it is vital to discuss this research with the key stakeholder and users of Irish streets, service and space providers such as the local authorities and the operators of business premises who are affected by the design of our streets. We are therefore extending an invitation to a broad range of key stakeholder organisations, representative bodies, government department, local authorities and professional bodies to find out their views, opinions and concerns.

How can you engage with the research*?*

Stakeholder engagement forms a central part of this project; we would therefore like to invite you to share your thoughts on this project during a personal interview which we can schedule at your convenience. Following on from this we would also like to invite you to a workshop which will be held in Trinity College Dublin in January 2012.
Interviews: November to December 2012 in a location of your convenience. The interviews will not be recorded but the interviewers will take notes.

Workshop 1: 9:00 am to 1:00 pm Monday 16th January 2012.
Workshop 2: Half day commencing in the morning. February 2012 (exact date to be confirmed).
Location for workshops: The Long Room Hub, Fellows' Square, Trinity College Dublin.
Please call **01-896-3174 for** directions.

Appendix 4 – Interview questions document

Research of Shared Spaces, shared surfaces and Home Zones from a Universal Design approach for the Urban Environment in Ireland

2. Interview Questions & Workshop Outline

Stage 1 of the research captures a broad list of issues that we would like to discuss during the course of interviews with key stakeholder and user groups, and provider groups. The first set of questions relate to the quality of urban spaces in general and the second set of questions refer more specifically to Shared Spaces, shared surfaces and Home Zones.

Stage 2 outlines the aims and structure of the first stakeholder workshop, which will be held in Trinity College Dublin in January.

Stage 1: Interviews - Some typical questions

Quality of the urban environment

4. Name five elements about street environments that contribute to your safety, comfort and enjoyment.
5. Name five elements about street environments that you don't like.
6. Name a place/street in your locality that you like and feel meets your needs well, how does this place meet your needs?

Shared Spaces, shared surfaces and Home Zones

6. What is your understanding of the terms Shared Space, shared surfaces and Home Zones?
7. Do you feel that Shared Space, shared surfaces or Home Zones are viable in the Irish context?
8. If so, why? If not, why not?
9. Are you aware of problems or difficulties surrounding such methods of street design? If so, for which users?
10. Are you aware of design methods that can be used to overcome these problems or difficulties while still facilitating the Universal Design of Shared Space, shared surfaces and Home Zones?

Stage 2: Workshop 1 – Proposed objectives & outcomes

The workshop will encompass approximately 25 attendees including Local Authority and Government department staff, representatives from key stakeholder and user groups, and provider groups.

Workshop objectives:

- Introduce Shared Space, shared surfaces and Homes Zones concept and discuss pros and cons and the use of these concepts internationally.
- Discuss how different users navigate through street and urban spaces.
- Discuss the field studies conducted in December 2011.
- Stakeholders divided into groups and asked to examine a journey through an existing streetscape through the experience of a specific persona. They will be asked to consider which aspects of the street and urban design assisted the journey and where barriers arose, they will then be asked to provide suggestions for how the streetscape and urban space could be improved.
- The stakeholders will then be asked to take the same journey again this time through a street or urban space that has been modified to represent the general international guidelines for Shared Spaces and surfaces. They will report the same information as in the initial exercise and comment on which street design was easier to move through.
- Both exercises will be supported by video footage, audio descriptions, photographs, drawings and written descriptions. All groups will work on the same streetscape but each group will be assigned a different persona.
- At the end the attendees will be asked to complete a questionnaire asking them if they think Shared Spaces, shared surfaces and Home Zones are viable in an Irish context? If so, how? If not, why not?

Workshop outcomes:

- Gain a better understanding of the stakeholders' opinions and concerns about Shared Space, shared surfaces and Home Zones.
- Understand more fully how users negotiate typical urban spaces and streetscapes and which design features help or hinder this process.

How can you engage with the research?

Stakeholder engagement forms a central part of this project; we would therefore like to invite you to share your thoughts on this project during a personal interview which we can schedule at your convenience. Following on from this we would also like to invite you to a workshop which will be held in Trinity College Dublin in January 2012.

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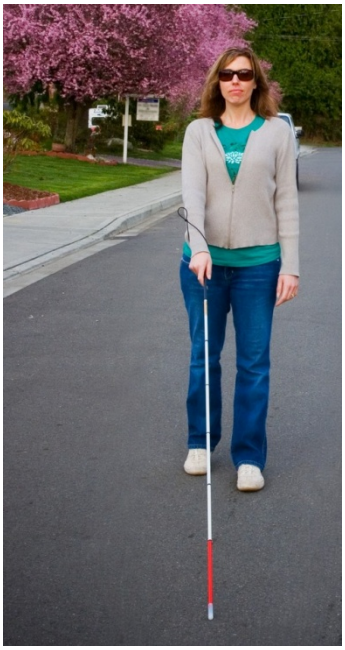
Location for workshops: The Long Room Hub, Fellows' Square, Trinity College Dublin. Please call 01-896-3174 for directions.

Appendix 5 – List of workshop 1 attendees

Organisation	Attendee
AECOM	Joe Seymore
Centre for Excellence in Universal Design	Ger Craddock
Department of the Environment, Heritage and Local Government	Paul Altman
Department of Transport	Dominic Mullaney
Dublin City Business Association	Tom Coffey
Dublin City Council	Brian Swan
Dublin City Council	Kilian Skay
Dublin Cycling Campaign	James Leahy
Galway City Council	Rosie Webb
Irish Guide Dogs Association	Lean Kennedy
Irish Planning Institute	Mary Crowley
Irish Planning Institute	Rachel Ivers
Irish Wheelchair Association	Dolores Murphy
Irish Wheelchair Association	Vijoy Chakraborty
Little People of Ireland	Sinead Burke
National Council for the Blind Ireland	Fiona Kelty
National Transport Authority	David Clement
PMCE	Peter Monaghan
Road Safety Authority	Michael Brosnan
Royal Institute of Irish Architects	Caitriona Shaffrey
Royal Institute of Irish Architects	Fionnuala Rogerson
TrinityHaus	Mark Dyer

Appendix 6 – Workshop Personas

Persona 1 – Long cane user



Grace is a long cane user and is 32 years old. She lives in a Northside suburb of Dublin and works just outside the North City Centre.

Grace was blind from birth and therefore relies on her cane, memory, sound and tactile signals for her navigation of the built environment. She finds certain aspects of street design key to her successful navigation of the built environment. Clear delineation between the pavement and the road is important coupled with consistent use of tactile paving which give Grace confidence that she is walking on the safety of the pavement. Controlled junctions with audio crossings also increase her confidence as to when it is safe to cross the road. Excessive street clutter can make it difficult for Grace to manoeuvre along pavements, however very wide pavements with no navigational cues can also make navigation difficult as she may become disorientated.

Persona 2 – Guide dog user

Paul is a guide dog user and is 51 years old. He lives in a Southside suburb of Dublin. He is an avid music lover and frequently goes to the city centre to attend concerts.

Paul retains approximately 10% of his vision after his retinas detached 15 years ago. He has been a guide dog user for 10 years and Bruno is his second guide dog. Paul relies largely on his guide dog for navigation, but can detect colour contrasts using his residual sight. He also pays attention to tactile cues in the environment. Paul is independent and will often go on his own to parts of the city centre with which he is familiar.

However; Paul finds certain aspects of street design key to his successful navigation of the built environment. Clear delineation between the pavement and the road is important coupled with consistent use of tactile paving which allows Paul to correct Bruno should he make mistakes in guiding him. Controlled junctions with audio crossings also increase Paul's confidence as to when it is safe to cross the road. Narrow streets and clutter

pavements cause barriers for Paul and make it difficult for him and Bruno to walk side by side.

Persona 3 – Manual wheelchair user

Sinead is a manual wheelchair user and is 38 years old. She lives and works in a Southside suburb of Dublin. She has a good social life and a large circle of friends and regularly comes into the city centre to socialise.

Sinead is a manual wheelchair user as she was in a car accident at 18, she is well adapted to the use of her chair at this point in her life; however she finds certain aspects of street design a hindrance to her navigation of the built environment. Uneven or broken pavements can make it difficult for her to manoeuvre her chair and she often has to concentrate harder on such surfaces. On the plus side wide, flat street surfaces and well designed pavements with appropriate dished kerbs signalled by a colour contrast allow Sinead to move easily around the built environment.

Persona 4 – Small child with parent

Sophie is five years old and has recently started primary school. She lives in a Southside suburb of Dublin and goes to school walking distance from her home. She regularly walks to school with one of her parents.

Sophie occasionally comes to town with one or both of her parents. She finds the city centre very different to the quite suburb where she lives. There is much more traffic, especially buses and taxis, but her parents are careful to always keep a tight hold of her hand. Sophie doesn't like this as at home she is allowed to walk on the pavement without holding her parents' hands. She knows the safe cross code and always stops when she sees a pavement or pedestrian traffic lights

Persona 5 - Older person

Henry is an older person of 78 years. He lives alone in a Northside suburb of Dublin and has been retired for the past 18 years. He goes to the city centre quite infrequently and finds the large changes to the city since his retirement often confuse him. Although Henry is quite active and doesn't use any mobility aids, he has started to suffer from arthritis in his hips in recent years and is also starting to suffer from mild hearing difficulties.

Henry finds certain aspects of street design key to his successful navigation of the built environment. Due to his arthritis, Henry can often find tactile paving a trip hazard, however good colour contrast helps him to be aware of this. Controlled junctions with audio crossings also increase his confidence as to when it is safe to cross the road; however Henry can often find that the pedestrian lights change too fast for him to cross the road. Excessive street clutter and crowds can make it difficult for Henry to manoeuvre along pavements. As he often gets tired and therefore regular seating enhances Henry's enjoyment of the streetscape.

Persona 6 - Cyclist

Alice is regular cyclist in the city centre and uses her bike as her primary mode of transport. She is 27 years old and lives in the South Inner City. She works in the city centre.

Alice has been a commuter cyclist for the past eight years. She has noticed a greater number of cyclists on the roads since the introduction of the bike to work scheme and the Dublin Bike Scheme. She feels that the greater number of cyclists on the road make drivers more aware.

The primary obstacle for Alice cycling in the city is the mixing of all modes of traffic together, in particular it can be difficult to navigate between a large number of buses. Also the road surfaces can often be potholed which forces Alice to concentrate further of her safe manoeuvring through the street. Often the one way street system in the city centre can frustrate Alice and she has to get off and push her bike to avoid a long detour. Pedestrians often don't seem to see Alice and she finds she is often forced to ring her bell, call out or swerve around pedestrians that walk out onto the road.

Persona 7 - Motorist

Frank is a 46 year old, regular driver who lives in South County Dublin, he rarely drives in the city centre.

When Frank drives into Dublin City Centre he often finds himself confused by the one way system. He needs to concentrate very hard on all the different signals he receives, such as traffic markings, road signs, buses, taxis and pedestrians. Frank often finds that pedestrians walk out in front of him and cyclists tend to break the rules of the road quite frequently.

Appendix 7 – Plan drawing and photographs of the traditional city streetscape

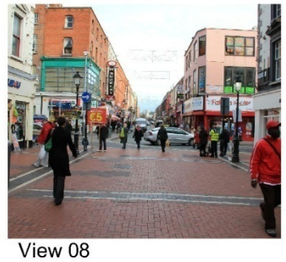
City Street - Workshop Route (existing)

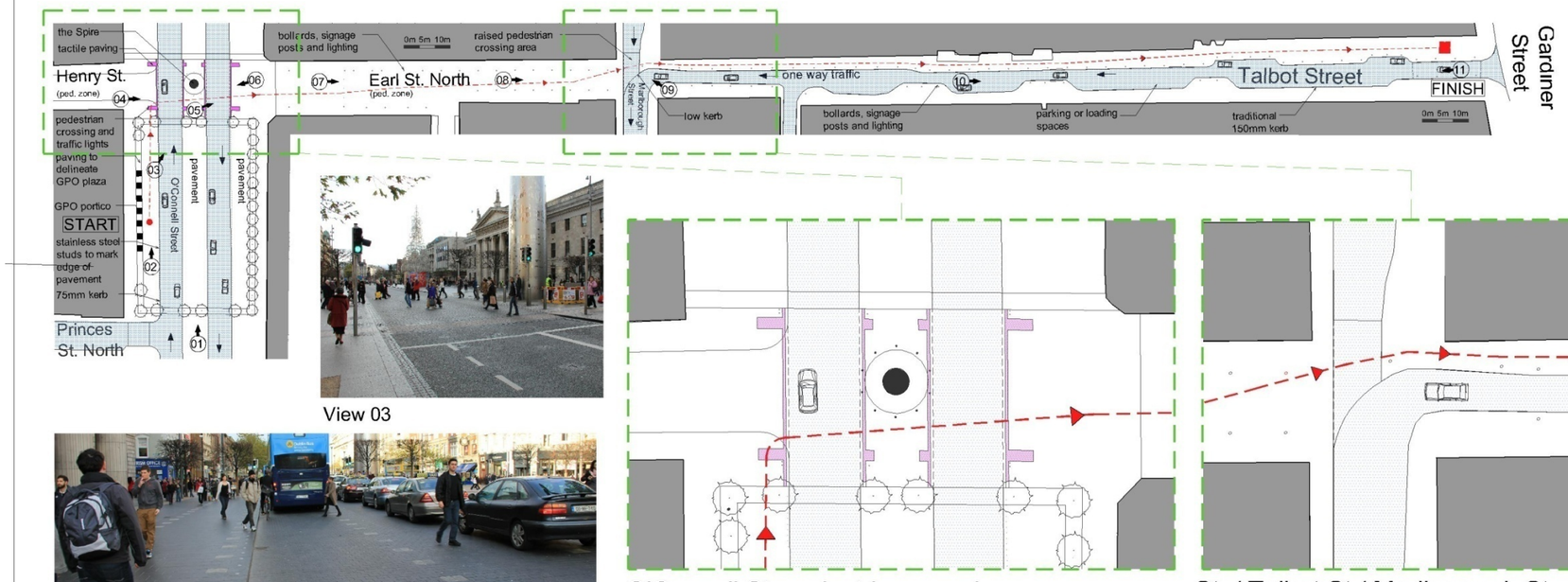

View 04


View 05


View 06


View 07


View 08

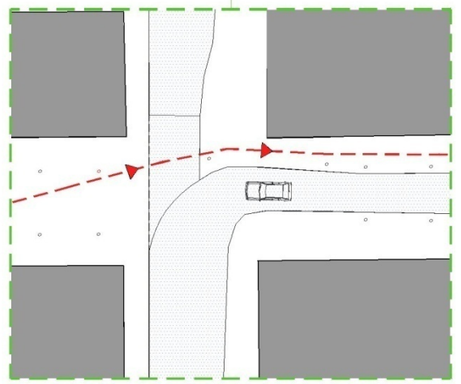


View 03


View 02


View 01

O'Connell St. pedestrian crossing


St. / Talbot St./ Marlborough St.


View 11


View 10


View 09

TrinityHaus
www.trinityhaus.tcd.ie
16 Westland Row,
Trinity College Dublin,
Dublin 2
Tom Grey Ph. 01 8963802 tom.grey@tcd.ie
Emma Siddall Ph. 01 8963956 siddale@tcd.ie

NDA
Údarás Náisiúnta Míchumais
National Disability Authority

Legend

- Road
- Tactile paving
- Stainless steel studs
- Trees
- Bollards / posts

Client:
CEUD / NDA

Project:
Research of Shared Spaces, shared surfaces and Home Zones from a Universal Design approach for the urban environment in Ireland

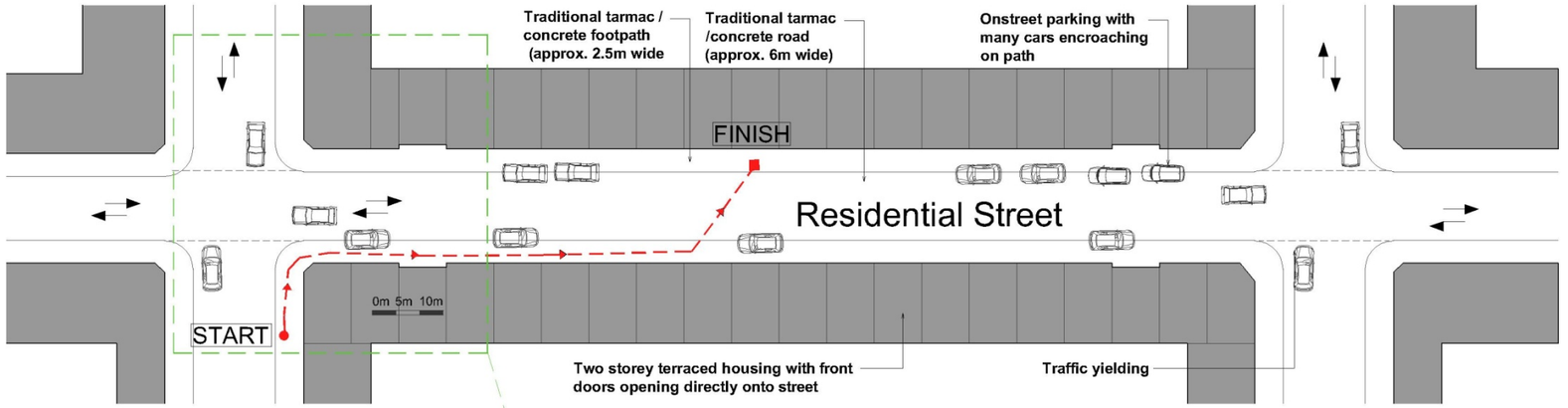
Drawing Title:
City Street

Drawn by:	Checked by:
Scale:	Plot Date:

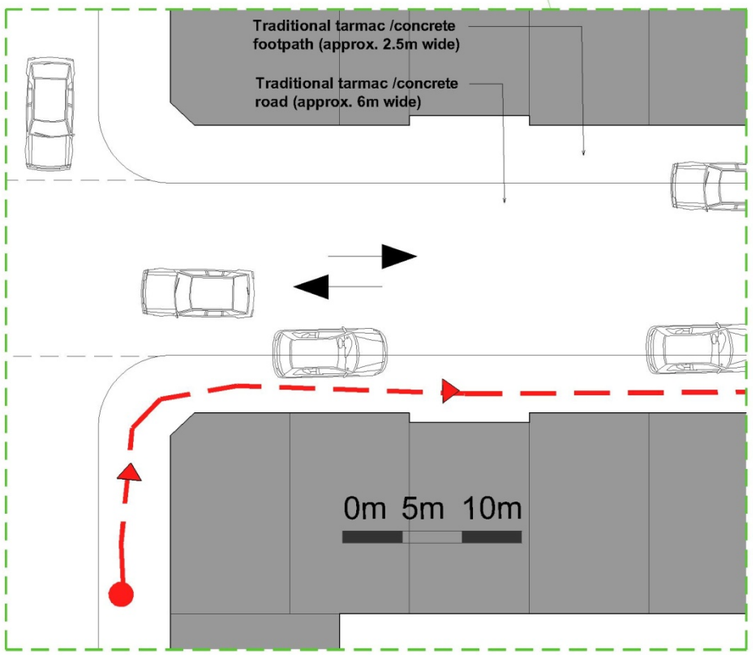
Drawing No:	Rev.

Appendix 8 – Plan drawing and photographs of traditional residential street

Residential Street - Workshop Route (existing)



Plan of Street (Scale 1:500)



Traditional tarmac / concrete road (approx. 6m wide)

Onstreet parking with many cars encroaching on path

Traditional tarmac / concrete footpath (approx. 2.5m wide)

Two storey terraced housing with front doors opening directly onto street

Traffic yielding

Plan of Street (Scale 1:200)

TrinityHaus
www.trinityhaus.tcd.ie
16 Westland Row,
Trinity College Dublin,
Dublin 2
Tom Grey Ph. 01 8963802 tom.grey@tcd.ie
Emma Siddall Ph. 01 8963956 siddale@tcd.ie

Údarás Náisiúnta Míchumais
National Disability Authority

Client:
CEUD / NDA

Project:
Research of Shared Spaces, shared surfaces and Home Zones from a Universal Design approach for the urban environment in Ireland

Drawing Title:
Residential street

Drawn by:	Checked by:
Scale:	Plot Date:

Drawing No:	Rev.

Appendix 9 – Plan drawing and photographs of the city street with Shared Space and shared surface design features

City Street - Workshop Route (with Shared Space features)

Note: All Shared Space detailed design principles taken from the DfT (UK) Shared Space LTN 1/11

D. Level Surface

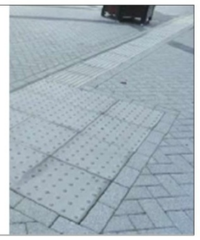
- Removal of traditional dropped kerb

E. Comfort Space

- Create an area on the street predominantly for pedestrian use where motor vehicles are unlikely to be present
- Use tonal contrast or the careful siting of trees, benches, lighting, bollards, etc.

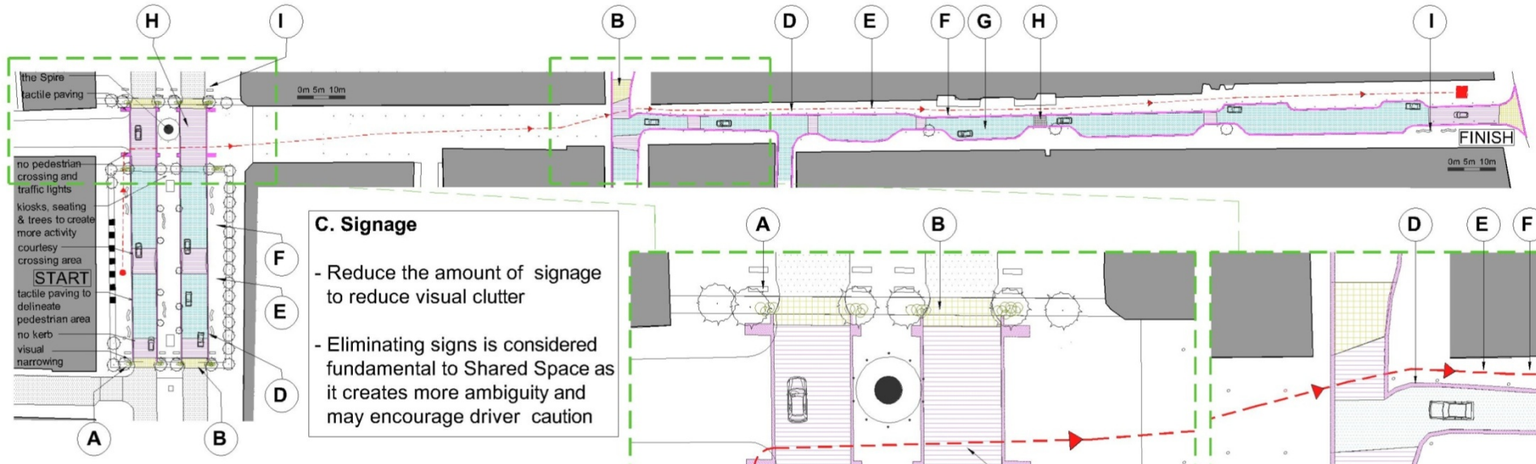
F. Tactile Paving

- Corduroy Tactile paving to delineate edge of comfort zone
- Use Blister paving at crossing



G. Parking

- Lines may not prevent encroachment (consider use of street furniture)



C. Signage

- Reduce the amount of signage to reduce visual clutter
- Eliminating signs is considered fundamental to Shared Space as it creates more ambiguity and may encourage driver caution

B. Transition

- Create gateway feature to indicate change of environment & to encourage drivers to slow down
- reduction in width, visual narrowing

O'Connell St. pedestrian crossing

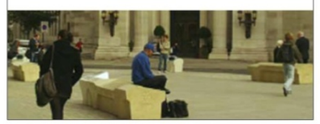
Earl St. / Talbot St./ Marlborough St. Junction

A. Design for Low Speeds

- Design speeds of 15 mph or less
- change in surfacing
- presence of street trees, seating, public art etc. to create driver ambiguity
- Visual narrowing (see adjacent image)

I. Seating

- Seating allows people to stop, rest & socialise. It can also help define pedestrian only zones



H. Crossings for pedestrians

- Typically uncontrolled crossings
- In busier spaces controlled crossings may be required
- Courtesy crossings (drivers treat like a zebra crossing)

Other Issues

Wheel Loading

Public Transport

Drainage

Cycle Parking

TrinityHaus
www.trinityhaus.tcd.ie
16 Westland Row,
Trinity College Dublin,
Dublin 2
Tom Grey Ph. 01 8963802 tom.grey@tcd.ie
Emma Siddall Ph. 01 8963956 siddale@tcd.ie

NDA
Údarás Náisiúnta Míchumais
National Disability Authority

Legend

- Shared carriageway
- Courtesy crossing
- Transition / gateway
- Tactile paving strip
- Trees
- Bollards / posts

Client:
CEUD / NDA

Project:
Research of Shared Spaces, shared surfaces and Home Zones from a Universal Design approach for the urban environment in Ireland

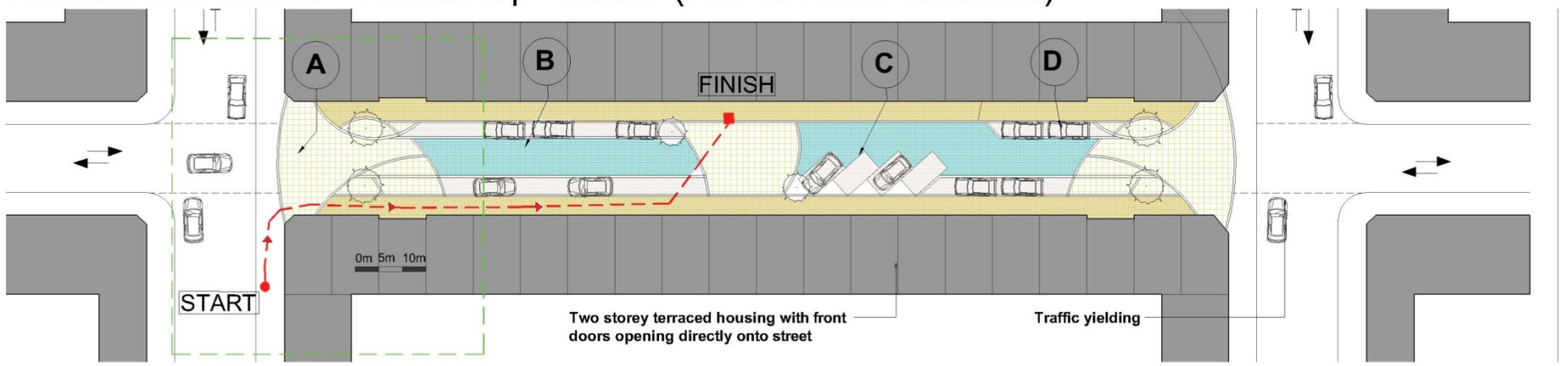
Drawing Title:
Shared Space Street

Drawn by:	Checked by:
Scale:	Plot Date:

Drawing No:	Rev.

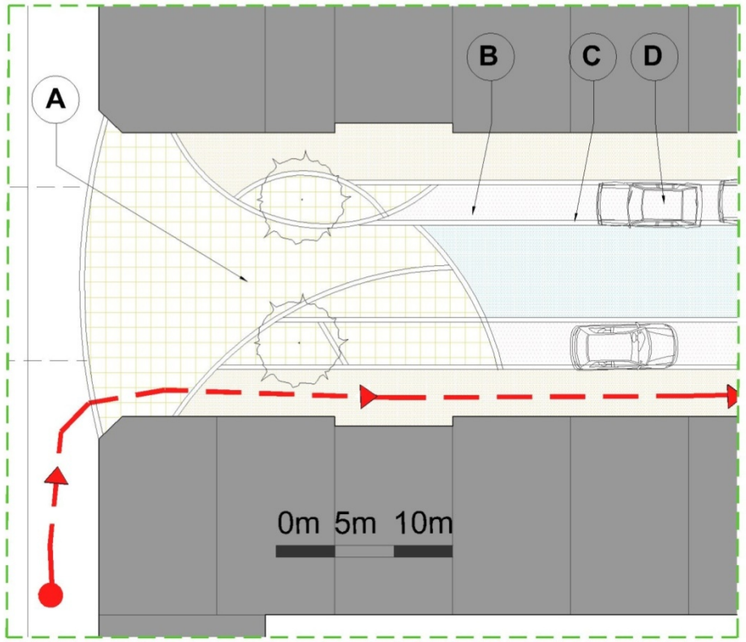
Appendix 10 – Plan drawing and photographs of residential street with Home Zone features

Residential Street - Workshop Route (Home Zone features)



Plan of Street (Scale 1:500)

A. Gateways	B. Shared Surface	C. Delineation	C. Parking
- Create gateway using trees, furniture & paving to indicate change of environment	- Remove kerbs and create level shared surface - create horizontal deflections	- Define defensible space - Define pedestrian space - Define parking space	- Define parking spaces - However parking practices need to be self enforced



Create horizontal deflections

Delineated parking

Shared Surface

Trees and street furniture to create gateway and visual narrowing

Gateway feature to indicate change of environment and to encourage drivers to slow down

Plan of Street (Scale 1:200)

TrinityHaus
www.trinityhaus.tcd.ie
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Trinity College Dublin,
Dublin 2
Tom Grey Ph. 01 8963802 tom.grey@tcd.ie
Emma Siddall Ph. 01 8963956 siddale@tcd.ie

NDA
Údarás Náisiúnta Míchumais
National Disability Authority

Legend
- Shared carriageway
- Pedestrian zone
- Transition / gateway
- Parking zone
- Trees

Client:
CEUD / NDA

Project:
Research of Shared Spaces, shared surfaces and Home Zones from a Universal Design approach for the urban environment in Ireland

Drawing Title:
Home Zone

Drawn by:	Checked by:
Scale:	Plot Date:

Drawing No:	Rev.

Appendix 11 - Key issues surrounding Shared Space, Shared Surfaces and Home Zones

Positives	Negatives
1. Improved legibility of the street. 2. Improved emphasis on place making, the street as a social space. 3. Increased footfall improves passive security. 4. Improved footfall which can promote economic revitalisation. 5. Increased attractiveness of the public realm. 6. Increased sense of community and social space leading to a greater draw to the area. 7. Democratisation of the street and removal of prioritisation of the car. 8. Reduced traffic speeds due to increased driver uncertainty and design features to narrow the carriageway. 9. Safe environment for all road users. 10. Increases road users' forgiveness of each other, one of the principles of sustainable safety. 11. Removal of level differences makes it easier for people with mobility difficulties to move through the space. 12. Reduced street clutter and signage. 13. Shared Space, Shared Surfaces and Home Zones can help prevent cars parking on pavements which has the benefit of reducing clutter. 14. When pedestrians and cyclists don't respect pedestrian lights then an uncontrolled junction that needs to be navigated by all users may be preferable especially for cyclists and motorists (Field study Middle Abbey St vs N. Prince St). 15. Improved access for cyclists who are prohibited from using pedestrianised spaces.	1. Removal of key navigation cues for vulnerable road users especially those with visual difficulties, children, older people and people with cognitive difficulties. 2. The removal of controlled crossings can make it impossible for vulnerable road users to safely navigate a Shared Space. 3. Removal of clear audio signals and potential increase in ambient noise. 4. Too few navigational cues in a Shared Space may disorientate a long cane user. 5. People with visual difficulties cannot acknowledge the presence of other road users using eye contact. 6. Exclusion of certain users from the space due to fear of having an accident, either perceived or real fear. The fear is valid if it is strong enough to exclude them from the space. 7. The changing rules of the road as you move from traditional streets to Shared Space and back again could be confusing. 8. Reduces predictability of road user behaviour which is one of the features of sustainable safety. 9. The statistics on the reduction of vulnerable road users involved in accidents in areas converted to Shared Space may in fact reflect the reduced number of such users in the space, rather than increased safety of these users (Imrei and Kumar, 2010). 10. Removal of clear right of way in a Shared Space can be confusing and frustrating for many users.

Positives continued	Negatives continued
16. Potentially better access to bike parking and seating. 17. Improved health due to promotion of higher levels of active travel, thus reducing obesity and associated illnesses (Adamstown street design guide). 18. Colour contrasts can help to delineate different areas in a Shared Space for all users except those with visual difficulties.	11. There is a need to re-educate all road users as to how to use Shared Space, Shared Surfaces and Home Zones. 12. Kerbs were viewed as important in both city streets and residential streets, therefore their removal in Shared Space and Home Zones were an issue. 13. Unclear as to the need for total kerb removal, there may be more negatives than positives and many of the benefits of Shared Space could be achieved while retaining the kerbs. 14. No acceptable replacement delineators for the removal of traditional kerbs. 15. Potential negative effects on car parking and delivery vehicle access which could have an effect on economic activity in a Shared Space. 16. It may be difficult to distinguish between Shared Space and fully pedestrianised areas. 17. Presence of cyclists mixed with pedestrians may make vulnerable road users uncomfortable. 18. Cyclists and motorists may be frustrated by Shared Space and find the mixing with pedestrians impedes their movement. Difficult for motorists to accept the removal of prioritisation when in Shared Space. 19. Negative impacts on the timely running of public transport. 20. Meaningless colour changes can be confusing to people with visual difficulties, as can sudden unexpected level changes. 21. Consistent use of tactile paving needs to be maintained in Shared Space. 22. Shared Space, Shared Surfaces and Home Zones are only viable in certain locations, site selection needs to be carefully considered.

Negatives continued

23. There are baseloading and drainage issues associated with Shared Space, Shared Surfaces and Home Zones.
24. Potentially greater initial cost to the construction of Shared Space, Shared Surfaces and Home Zones.
25. There may be higher maintenance costs to a Shared Space, Shared Surfaces and Home Zones.
26. Shared Space may negatively impact access of street cleaners to the area as they use kerb lines as a guidance.

Appendix 12 – List of workshop 2 attendees

Organisation	Attendee
Centre for Excellence in Universal Design	Ger Craddock
Centre for Excellence in Universal Design	Neil Murphy
Children's Research Centre TCD	Sandra McCarthy
Department of Transport	Noel Singleton
Dublin City Council	Shane Dineen
Dublin City Council	Kilian Skay
Dublin City Council	Elaine Power
Dublin Cycling Campaign	James Leahy
Fingal County Council	Sean McGrath
Irish Landscape Institute	Fergus McGarvey
Irish Planning Institute	Rachel Ivers
Irish Wheelchair Association	Dolores Murphy
Irish Wheelchair Association	Vijoy Chakraborty
Irish Wheelchair Association	John Graham (Wheelchair user)
National Council for the Blind Ireland	Fiona Kelty
National Transport Authority	Eoin Farrell
People with Disabilities Kildare	Claire Kinneavy (has rheumatoid arthritis)
People with Disabilities Kildare	Martin Kelly (Visual difficulties)
People with Disabilities Kildare	Martin Kelly (Visual difficulties)
Royal Institute of Irish Architects	Caitriona Shaffrey
TrinityHaus	Mark Dyer
TrinityHaus	Amelia Kelly
	Genny Carraro (long cane user)

Appendix 13 – Detail Stakeholder feedback from Workshop 2

The following sections represent the detailed feedback from the stakeholders who took part in Workshop 2. The feedback presented is a direct translation of comments taken directly from the worksheets provided.

Theme 1 - Evidence based decision making

Key statement from Preliminary research findings as presented at workshop

1.1. Shared Space, Shared Surfaces and Home Zones concepts have come about through the desire for people friendly, safer and more liveable urban environments with less car dominance. These are the primary objectives. Any process, guidelines or education associated with Shared Space, Shared Surfaces and Home Zones should keep these objectives to the fore and the process should never be driven by specific design measures or technical features.

Feedback from stakeholders

1. Guidelines should be consistent (national/regional/local) (Eoin Farrell)
2. Top-down/ bottom-up approach needed (Shane Dineen, Ger Craddock)
3. Relevant guidelines needed at all levels (Shane Dineen)
4. Challenge on the consultation – focus on consultation before going into detail (Dolores Murphy & John Graham, Claire Kinneavy)
5. Better public transport and attractive alternatives to reduce car dominance (Dolores Murphy & John Graham, Claire Kinneavy)
6. Big picture – re-establish sociability on the street (Killian Skay)
7. Where are the cars parked? (Claire Kinneavy)
8. Manage stakeholder consultations at the start of process (Neil Murphy)
9. Irish people love their cars (Neil Murphy)
10. Upgrading pedestrian status (Neil Murphy)
11. Bespoke solutions will only apply to small number of spaces. For typical streets half measures will not do – standard spec needed (James Leahy)
12. Cars need space too, cannot completely remove private vehicle access (Elaine Power)
13. Language needs to be stronger (Ger Craddock)
14. Balance between safety and quality of life (Michael Brosnan)
15. Important in drafting national guidelines (Sandra McCarthy)

16. Detail driven design creates possibility of creating a dated design that the community could outgrow (Rachel Ivers)
17. Try to reach an agreement about what a people-friendly environment is – not everyone wants less car dominance

Key statement from Preliminary research findings as presented at workshop

1.2. There is a need to create pilot studies of Shared Space, Shared Surfaces and Home Zones to allow all user groups an opportunity to experience and interact with built examples of Shared Space, Shared Surfaces and Home Zones in order to develop a set of acceptable and inclusive design and construction details

Feedback from stakeholders

1. Guidelines should support different types of core studies (home zone/street/interchange) (Eoin Farrell)
2. Cultural differences may come into play e.g. urban vs. rural areas (Shane Dineen)
3. Uniformity and consistency (Dolores Murphy & John Graham)
4. Good marketing of pilot studies, ad campaigns etc (Dolores Murphy & John Graham)
5. Involve local authorities (Killian Skay)
6. If people understand the space they are more likely to accept it (Neil Murphy)
7. TV/radio/web ad campaign to educate people (Neil Murphy)
8. Difficult to retrofit existing spaces – should build where population are educated on benefits of Shared Space/ Home Zones and want it. (Elaine Power)
9. Need pilot studies required for different locations and contexts (Ger Craddock)
10. Develop guidelines for the pilots (Noel Singleton)
11. Insurance implications (Noel Singleton)
12. Business implications – footfall (Noel Singleton)
13. Engagement with local authorities (Sandra McCarthy)
14. Pilot studies needed for discarding ideas that aren't feasible in practise (Rachel Ivers)

Key statement from Preliminary research findings as presented at workshop

1.3. These consultation and design process for these pilot studies should include onsite mock-ups to test various solutions; and critically to involve both end user and provider groups in the design and onsite assembly.

Feedback from stakeholders

1. Ensure that emergency services can access (Martin & Anne Kelly)
2. Consultation time frames, ease of implementation (Shane Dineen)
3. Involve the vulnerable users at all locations (Dolores Murphy & John Graham, Killian Skay)

4. Use budget wisely (James Leahy)
5. How to easily bring in the user (Ger Craddock)
6. What is best practise for mock-ups? (Mark Dyer)
7. Consider applications to test possible layouts (Noel Singleton)
8. Every community s different, should be reflected in types of pilots (Rachel Ivers)
9. Use actual data from other countries; rely on real data over mock-ups

Key statement from Preliminary research findings as presented at workshop

1.4. There is a need for comprehensive pre and post-construction data gathering on user experiences of altered streetscapes with Shared Space, Shared Surfaces or Home Zone features. It has been suggested that the reduced accident rates observed in Shared Space, Shared Surfaces and Home Zones may be due to the exclusion of vulnerable road users from such spaces. Therefore, the data gathered should include qualitative measures of enjoyment and sense of safety, as well as quantitative data such as number and types of users in the space, traffic speeds, and accident rates.

Feedback from stakeholders

1. Before and after studies of the safety and enjoyment of user groups (Eoin Farrell)
2. List of consistent performance indicators should be devised (Eoin Farrell)
3. Methodology for collecting qualitative data (Vijoy Chakraborty)
4. Longitudinal analysis to ensure that 'novelty factor' doesn't skew results (Shane Dineen)
5. Involve the providers in reviews (Dolores Murphy & John Graham)
6. Management and enforcement (Dolores Murphy & John Graham)
7. Should review success of zone after certain time periods, in case the success is short-lived. (Elaine Power)
8. Watch out for novelty value, assess over longer period of time (Ger Craddock)
9. Focus on safety and quality of life evaluation (Michael Brosnan)
10. Benchmarks for methodologies especially for safety and enjoyment e.g. define enjoyment. 11. 11. Need international standards, e.g. Road Safety Strategy 2012 –2020 (Mark Dyer)
12. Safety issues (Noel Singleton)
13. Public transport (Noel Singleton)
14. Careful data collection coupled with on-site walk through (Noel Singleton)
15. Children on their own – link behaviour patterns and safety implications (Noel Singleton)
16. Comprehensive data gathering is essential before agreeing on best practise or guidelines (Rachel Ivers)

Theme 2 - Legislation, design guidelines and enforcement

Key statement from Preliminary research findings as presented at workshop

2.1. The current definitions of a footpath versus a carriageway and the legally acceptable behaviour that can occur on each is very black and white (Office of the Attorney General, 1993). This may causes designers to worry about their liability in the design of any form of Shared Space. Therefore there is a need to develop clear legislation to differentiate Shared Spaces, Shared Surfaces and Homes Zones from the traditional practice of constructing pavements and carriageways.

Feedback from stakeholders

1. Clear definitions to be used or developed for rights of cars and people (Dolores Murphy & John Graham)
2. Pilots on Irish contexts (James Leahy)
3. Definitions of zones by colours or textures
4. How would you police Shared Space? Is there a hierarchy of culpability (e.g. car, bike, pedestrian? Might this introduce opportunistic litigation?(Martin & Anne Kelly)
5. Critical to develop Irish guidelines (not based on UK laws) (Killian Skay, Neil Murphy)
6. Language is important (pavement vs footpath – Shared Space blurs these definitions) (Sean McGrath)
7. Fear of liability (Sean McGrath, Sandra McCarthy)
8. Very important at national level, sets guidelines in turn for county councils (Rachel Ivers, Sandra McCarthy).
9. Exploration of existing EU guidelines/legislation (Sandra McCarthy)
10. Terminology in context of Irish legislation (footpaths vs pavements etc) (Shane Dineen)
11. Irish v UK legislation, careful with terminology (Ger Craddock)
12. Shared Space legislation should be defined to be self enforced, not part of the Road Traffic Act (Michael Brosnan)
13. There are implications for existing legislation (Fergus McGarvey)
14. What laws exist in other countries? (Mark Dyer)
15. Need a culture change to give priority to pedestrians and cyclists (Mark Dyer)
16. Modification of the Road Safety Act (Vijoy Chakraborty)

Key statement from Preliminary research findings as presented at workshop

2.2. Implement a clear legislative framework to define terms, outline best practice, regulate design and ensure proper enforcement.

Feedback from stakeholders

1. National legislation specifying general principles and requiring consideration of guidelines of design and implementation (Noel Singleton)
2. Guidelines to include checklists of items that must be considered (Noel Singleton)

3. Guidelines flexible for local level implementation. (Noel Singleton)
4. Research to show the needs and benefits of legislative change.(Dolores Murphy & John Graham)
5. Must become political (Dolores Murphy & John Graham)
6. Should legislation outline best practise and regulate design? (James Leahy)
7. Enforcement needs to be followed through on. However if the point of Shared Space is to ensure equality, shouldn't the spaces be somewhat self-policing? (Martin & Anne Kelly, Michael Brosnan, Mark Dyer, Vijoy Chakraborty)
8. Terminology is important (not the same as UK) (Sean McGrath)
9. Ensure that best practise is suited to different community needs (Rachel Ivers, Sandra McCarthy)
10. All levels should be collaborative (Sandra McCarthy)
11. Explore evidence of best practise at EU level (Sandra McCarthy, Ger Craddock)
12. Do so without sanitising the process of design or of use (feeling alert and aware) (Fergus McGarvey)
13. Make sure framework isn't too restrictive and allows for design creativity (Mark Dyer)

Key statement from Preliminary research findings as presented at workshop

2.3. Based on trial sites, research in the field, and wide ranging consultation; create a set of guide guidelines to be issued at national or local authority level.

Feedback from stakeholders

1. National before local – change legal framework, links with engineers, architects and councils, overall goal with steps along the way (Dolores Murphy & John Graham)
2. Need to clarify difference between legislation and guidance. Why not publish different guidelines and let designer use best judgement while still complying with regulations? (James Leahy)
3. Consult with all user groups including tourists
4. Review of legislation needs to come before guidelines
5. National before local (Claire Kinneavy, Neil Murphy)
6. Look further than UK (Netherlands for example) when compiling guidelines (Sean McGrath)
7. Implement guidelines at national level for fluidity and consistency of design (Rachel Ivers)
8. Legislative control (Rachel Ivers)
9. Involve NDA/CEUD in process of designing new legislation
10. Traffic legislation needs to reflect the findings from research, guidelines need to consider rights and responsibilities of all users. (Sandra McCarthy)
11. Change of legislation should be introduced and lobbied early (Shane Dineen)
12. Bring out guidelines under Section 28 OP Planning Act (Shane Dineen, Ger Craddock)
13. Guidance not regulation to allow free thinking for design solutions. (Fergus McGarvey)

Theme 3 - Education, awareness and training

Key statement from Preliminary research findings as presented at workshop

3.1. Training needs to be provided to all designers of Shared Spaces, Shared Surfaces and Home Zones, to ensure that they are aware of the diverse needs to different users of such space and how careful design can ensure the Universal Design of future plans. As part of any local consultation process, it is essential that the local authority or design team make the locals fully aware of the key issues to ensure a shared design process.

Feedback from stakeholders

1. Who is the trainer (Michael Brosnan, Mark Dyer, Vijoy Chakraborty, Fergus McGarvey, John Graham, Dolores Murphy)
2. CPD of all designers needs to be coordinated by CEUD (Claire Kinneavy)
3. Designers need to be trained to consult with users (Claire Kinneavy)
4. Manufacturers of signage, paving, street furniture etc included in training
5. Difficult to get engagement from all sections of a community (Elaine Power, Ger Craddock)
6. Who is responsible if an accident occurs? How do the LAs ensure that everyone is aware of rules in the new space? (Elaine Power)
7. Shared Spaces should be implemented in places where it would definitely be an improvement so as to get the locals on side, and less resistant to change
8. Shouldn't Shared Space be intuitive and logical, and therefore not need so much training?
9. Education about penalties for those who abuse Shared Space
10. Local community are best placed to inform training (Sandra McCarthy)
11. Tap into pre-existing community networks (Sandra McCarthy)
12. Important that training is administered to people involved in building the Shared Spaces (Rachel Ivers)
13. First educate professionals, then educate the public (Ger Craddock, Sean McGrath, Shane Dineen)
14. Education for designers, construction workers, landscapers, especially education about vulnerable users (Martin and Anne Kelly)
15. Educate tourists and visitors, especially because Shared Spaces will be focal point (James Leahy)

Key statement from Preliminary research findings as presented at workshop

3.2. Training needs to be provided to all users of Shared spaces, Shared Surfaces and Home Zones, which include drivers, cyclists and pedestrians. This needs to involve the Road Safety

Authority as well as user groups such as the National Council for the Blind Ireland, the Guide Dogs Association and the Irish Wheelchair Association.

Feedback from stakeholders

1. Who is the central policy maker of Shared Space (Michael Brosnan)
2. Schools initiative (Mark Dyer, Vijoy Chakraborty)
3. Recommendations to appropriate government department (Vijoy Chakraborty)
4. Needs to involve all disability organisations - physical, sensory, mental health, learning disabilities, advocates for most vulnerable (Claire Kinneavy)
5. Include bus drivers instead of identifying heavy bus use areas as inappropriate for SS (Fergus McGarvey)
6. How can education be encouraged? People may not engage (Elaine Power)
7. Online training (Noel Singleton)
8. Training should be adequate and consistent (Noel Singleton)
9. DVD, TV library, social events, for residents (Noel Singleton)
10. Very important that children are considered (site by site) so that they are not at risk in SS. (Sandra McCarthy, John Graham, Dolores Murphy)
11. What constitutes adequate training? (Rachel Ivers)
12. Important to consider groups with disabilities, awareness education (Ger Craddock, Sean McGrath)
13. Get councillors involved (Ger Craddock, Sean McGrath)
14. Additional training for future and current drivers so they can respect users with different needs and abilities (Martin & Anne Kelly, Eoin Farrell)
15. Must train cyclists and Gardai – can't assume all users are trained (James Leahy)
16. Special training for vulnerable users (Eoin Farrell)

Key statement from Preliminary research findings as presented at workshop

3.3. Training needs to be provided to all users of Shared spaces, Shared Surfaces and Home Zones, which include drivers, cyclists and pedestrians. This needs to involve the Road Safety Authority as well as user groups such as the National Council for the Blind Ireland, the Guide Dogs Association and the Irish Wheelchair Association.

Feedback from stakeholders

1. Underpinned by philosophy of Universal Design (Mark Dyer)
2. Target for local authorities - planners, road engineers (Fergus McGarvey)
3. Formalise design consultation procedure
4. Ensure Local Authorities are fully educated so they can pass on to community (Elaine Power)

5. Training should address diversity of needs and specific environments and the potential for change for the better
6. Training methods using national frameworks and locally based delivery (Sandra McCarthy)
7. LA should conduct case studies to understand shared spaces (Rachel Ivers)
8. Responsibility of the LAs to advise sub-contractors for the needs of users (Martin and Anne Kelly)
9. Link to college courses, engineering etc. (Eoin Farrell)

Theme 4 - Education, awareness and training

Key statement from Preliminary research findings as presented at workshop

4.1. The planning of any Shared Space, Shared Surface or Home Zone should include in depth stakeholder engagement from the outset of the project. This creates a shared vision with agreed objectives, allows a site specific design and includes user needs as part of the design.

Feedback from stakeholders

1. More structured consultation procedure, registered user groups
2. Do the terms adequately describe Shared Spaces (Dolores Murphy and John Graham, Claire Kinneavy)
3. Suggestion – include partially sighted user in case study. This covers a lot of older users who may not realise nor admit to their sight difficulties. Partially sighted users experience unique difficulties, fundamentally different from other case studies. (Martin and Anne Kelly)
4. Consultation should be early, honest, realistic, and with opportunity for regular feedback (Noel Singleton, Rachel Ivers)
5. Methods for consulting with children and young people should be devised (Sandra McCarthy)
6. Prioritisation of needs (what is helpful for one ser might be dangerous for another
7. More meaningful consultation, guidance on how to carry out consultation (Fergus McGarvey, Michael Brosnan)
8. Needs to be introduced into third level courses (Mark Dyer)
9. Wide ranging consultations
10. LA should work with local residents and public reps in planning phase (Elaine Power)
11. Must allocated enough time and money in planning phase (James Leahy)
12. Consult at all stages of development (planning, design and after) (Eoin Farrell, Ger Craddock, Shane Dineen)
13. Need experts supporting the consultation process (Ger Craddock)
14. Include building owners (Shane Dineen, Sean McGrath)
15. Keep consultation focussed so it is not seen as a forum to raise other issues (Shane Dineen, Sean McGrath)

Key statement from Preliminary research findings as presented at workshop

4.2. The site specific vision and objectives for the street should be agreed first and only then should any discussion take place around the need for Shared Surfaces or any other technical issue. It is paramount that the technical features do not drive the design as this may leave to early conflict over terminology.

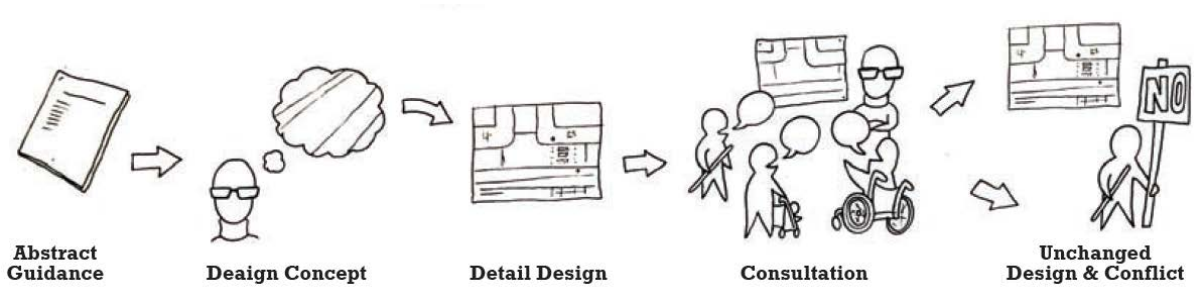
Feedback from stakeholders

1. People before design (Martin and Anne Kelly, Elaine Power)
2. Location should be chosen carefully (Martin and Anne Kelly, Rachel Ivers)
3. Remember that design is cyclical, not linear (Fergus McGarvey)
4. Allow stakeholders to engage in the design process (Mark Dyer)
5. Bear in mind that some technical details must be dealt with first (eg drainage)
6. Also bear in mind that some visions are not feasible, especially in the Irish context (James Leahy)

Key statement from Preliminary research findings as presented at workshop

4.3. The planning and consultation of such designs should follow the Universal Design process outlined in figure 1.

Current design process



Universal Design Process

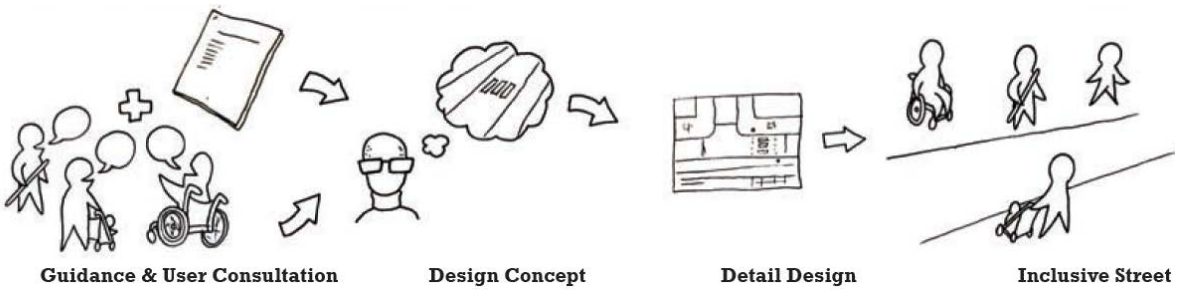


Figure 1: Comparison of current and Universal Design processes (taken from (Atkin, 2010))

Feedback from stakeholders

1. Include children as stakeholders (Sandra McCarthy)

2. Look at evidence from other consultation exercises (Sandra McCarthy)
3. Numerous options should be given to stakeholders to allow a cohesive design and planning consultation (Rachel Ivers)
4. National requirement, not so restrictive at local level
5. Designers need to be more away of the diverse needs of users (Vijoy Chakraborty)
6. How to balance/weight the different stakeholder groups?
7. Include public consultation, and consult with tourists etc. (Elaine Power)

Theme 5 - Universal Design and appropriate locations

Key statement from Preliminary research findings as presented at workshop

5.1. The introduction of Shared Space, Shared Surfaces and Home Zones is viable in Ireland; however the viability is site specific. Careful consideration needs to be given to the impact of such design on the proper functioning of public transport and it was suggested throughout the research that in areas with a high motorised vehicle volume, particularly high bus volume, such designs are not appropriate.

Feedback from stakeholders

1. Easy access to transport is important (Claire Kinneavy, Vijoy Chakraborty, Noel Singleton)
2. Uncontrolled crossing etc. probably not good idea (Killian Skay)
3. Reduced bus sizes in cities (Killian Skay)
4. Hierarchy of users in the space (Eoin Farrell)
5. Easiest place to start is where there are low car volumes (Sean McGrath)
6. Develop criteria for shared space (Vijoy Chakraborty, Martin and Anne Kelly, Mark Dyer)
7. Where do high-density residential urban areas fit in? (Sandra McCarthy)
8. No silent buses or trams (Neil Murphy)
9. Smaller lighter public transport vehicles (Neil Murphy)
10. Public transport in a shared space as long as there is awareness (Neil Murphy)
11. Need to consider access for service vehicles (Feargus McGarvey)

Key statement from Preliminary research findings as presented at workshop

5.2. The creation of a **comfort zone** was also deemed to be an important design feature for the Universal Design of Shared Space and Home Zones. This comfort zone can be delineated using a traditional dropped kerb, or possible well placed street furniture such as seating, lighting or bike locking facilities.

Feedback from stakeholders

1. Comfort zone should always be available for nervous or vulnerable users

2. Small kerbs and street furniture to define comfort zone (Killian Skay)
3. Gateway is necessary to delineate comfort zone (Claire Kinneavy)
4. Consider tactile paving (Sean McGrath, Elaine Power, Dolores Murphy and John Graham)
5. Make sure location of comfort zone is acceptable to all users (Shane Dineen)
6. Terminology needs to be internationally consistent (Vijoy Chakraborty)
7. Kerbs needed until alternative is devised (Noel Singleton)
8. Delineation is difficult for all users, but the complexity of users needs to be accounted for, as delineators can be a help or a hindrance depending on the user's needs (Martin and Anne Kelly)
9. Is there an 'alertness zone' also? (Feargus McGarvey)
10. Gateways are important to create comfort zones (Mark Dyer)

Key statement from Preliminary research findings as presented at workshop

5.3. Further research is needed to identify viable replacement delineators which can be used in the absence of traditional dropped kerbs; this is of particular importance for people with visual difficulties. It should be noted that while the interviewees were aware of research that outlines problems for blind people when kerbs are removed, there is also more recent studies that show more positive results for tactile paving. Research carried out by the MVA Consultancy in the UK that looked at newly laid tactile paving on Shared Surfaces on Exhibition Road in London and concluded that corduroy paving 800 mm wide was reliably detected by blind or partially sighted participants (MVA Consultancy, 2011). However, a 2010 study failed to identify any reliable tactile delineators that effectively replaced traditional dropped kerbs (Childs et al., 2010). This illustrates the importance of evidence based design as part of any process or creation of guidelines.

Feedback from stakeholders

1. Kerbs should not be removed as they are useful for drainage and as delineators (Elaine Power)
2. Smaller kerbs
3. Consistent use of colours is necessary (Claire Kinneavy, Martin and Anne Kelly, Dolores Murphy and John Graham)
4. Serious concern regarding guide dog training (Shane Dineen)
5. More research needed on usefulness of kerbs (Elaine Power)
6. Children's safety and education of delineators needs to be taken into account (Sandra McCarthy)
7. On the 800mm tactile, is there any corroboration with latest findings? Could it be comfortably used by all users? Could other technologies be used in conjunction? (Martin and Anne Kelly)
8. Shared space with Luas, pedestrians and cyclists only? e.g. College Green (Neil Murphy)

9. New types of delineators, no bollards (Neil Murphy)
10. Need universally agreed delineators (Feargus McGarvey)
11. Need to look at why kerbs were introduced to begin with (not around in 19th C) (Mark Dyer, Dolores Murphy and John Graham)

Key statement from Preliminary research findings as presented at workshop

5.4. Throughout the research there were questions raised as to the need for complete kerb removal from Shared Space, there was greater support for Shared Spaces that did not incorporate Shared Surfaces. Further research is needed to clarify whether the benefits of Shared Space can be achieved while retaining a dropped kerb.

Feedback from stakeholders

1. Can the road be shared by all users, and the path be specifically for pedestrians?
2. Only if there is an alternative to the kerb (Rachel Ivers)
3. Complete removal of kerb may confuse users (Killian Skay)
4. Agreement needs to be reached on kerb (Claire Kinneavy)
5. Standardisation of tactile design
6. Only when suitable replacement is found (Vijoy Chakraborty)
7. Can we identify a collection of delineators that together would define shared spaces for all users? (Martin and Anne Kelly, Ger Craddock)
8. Colour difference is important as a delineator (Ger Craddock, Martin and Anne Kelly)
9 Kerbs only as warnings and comfort zone delineators (Neil Murphy)
10. Consider using sound to delineate safe crossings (Mark Dyer)
11. Use smart phone apps, info and Dublinked to be directed to shared spaces (Mark Dyer)

Key statement from Preliminary research findings as presented at workshop

5.5. Controlled crossings are considered by many to offer safety and comfort, so their elimination needs to be carefully considered. The use of courtesy crossings may help many users in a Shared Space or Home Zone but this must be based on field research and pilot studies.

Feedback from stakeholders

1. Research must consider those who do not use courtesy crossings
2. Vulnerable users feel safer with allocated crossing areas (Rachel Ivers)
3. Publicity campaign needed if courtesy crossings are used (Claire Kinnneavy)
4. Better enforcement needed at zebra crossings
5. May not be required by all users (Shane Dineen)
6. Change in driving culture needed (Shane Dineen, Elaine Power)
7. Safety is paramount (Noel Singleton)

8. Educate drivers and cyclists (Martin and Anne Kelly, Ger Craddock)
9. Remove unnecessary clutter (signage, badly placed trees etc) (Martin and Anne Kelly)
10. Way finding strategies for the street to direct people to crossings (Feargus McGarvey)

Key statement from Preliminary research findings as presented at workshop

5.6. Existing Shared Space and Home Zone guidance documents discuss the need to create transition zones and gateways to alert users to the fact that they are entering or leaving a specific environment. However such gateways are typically aimed at drivers. It is equally important to notify pedestrians and especially those with visual difficulties, that they are entering or leaving a Shared Space or Home Zone. Thus the creation of pedestrian thresholds and gateways through tactile surfaces or some other design mechanism may deal with this issue. The implementation of these transitions zones needs to be carried out in conjunction with an extensive user education campaign as discussed in section 3.3.

Feedback from stakeholders

1. Why bother, why not spend the money on maintaining current system
2. More awareness by cyclists, pedestrians and drivers (Elaine Power)
3. Gateways need to be universally understandable by children, tourists etc, possibly using signage (Sandra McCarthy)

Key statement from Preliminary research findings as presented at workshop

5.7. Traffic volume and traffic speed is critical to the sharing of a space. Shared Space guidelines from the UK suggest that a maximum design speed of 15 mph is preferable within Shared Spaces.

Feedback from stakeholders

1. Pedestrians are safer at lower speeds
2. Speed restrictions necessary in residential areas, but there must be a balance so that goods can be transported etc (Elaine Power)
3. Deliveries could be problematic – possibly truck depots so goods can be changed over to smaller lighter delivery vehicles?

Key statement from Preliminary research findings as presented at workshop

5.8. Ideally Shared Space should not be trafficked by buses, trams or heavy vehicles so public transport routes need to be carefully considered.

Feedback from stakeholders

1. Public transport should be convenient to home zones and shared spaces. (Noel Singleton, Mark Dyer)
2. Be careful not to end up with dead streets with no movement, no access (Elaine Power)
3. Public transport needs to stick to a timetable (Vijoy Chakraborty)
4. Disagree – public transport is needed to keep areas alive (Neil Murphy)
5. Buses and trams are useful as traffic calming measures (Feargus McGarvey)

Key statement from Preliminary research findings as presented at workshop

5.9. Currently there is an emphasis on urban settings when Shared Space, Shared Surfaces and Home Zones are discussed, however throughout the research it has become clear that the implications for various forms of shared space in rural and semi-urban settings needs to be considered, especially in the Irish context.

Feedback from stakeholders

1. Already de facto shared space on country roads, but would be nice if it was safer
2. Difficult in rural villages where one main street takes all vehicular traffic (Sean McGrath)
3. Emphasis should be on urban environments first
4. Are there any international examples (Elaine Power)
5. Allowances for heavier vehicles in rural areas
6. Conduct a feasibility study (Vijoy Chakraborty)
7. Commuter belt culture needs to be considered (Sandra McCarthy)
8. Wider thinking will help formulate policy and strategy (Feargus McGarvey)

Theme 6 – Economic Implications

Key statement from Preliminary research findings as presented at workshop

6.1. The economic implications of the introduction of Shared Spaces, Shared Surfaces and Home Zones need to be fully considered as street work associated with these concepts often involve more expensive paving, trees and additional street furniture.

Feedback from stakeholders

1. Do we have the resources to do a feasibility study for each site? (Vijoy Chakraborty)
2. Should not be done until we can ensure we have the resources to follow through
3. Use consultation and research to ensure wise spending (Sandra McCarthy)
4. Ensure proposals are justified before spending (Noel Singleton)
5. Could the money be spent more effectively? (Noel Singleton)
6. Is the potential output likely to justify the input? (Noel Singleton)
7. Must also consider the savings that results from having shared space (Ger Craddock, Martin and Ann Kelly)

8. Widespread use of these materials will drive down costs (Ger Craddock, Martin and Ann Kelly)
9. Use same materials but laid differently – use imagination (Martin and Ann Kelly)
10. Materials aren't the most expensive things and cheaper ones can be quite useful (Feargus McGarvey)
11. Could cost of home zone retrofit be linked to increase in house prices etc? (Mark Dyer)
12. Careful choice of materials required to ensure sustainability and appropriate use + provision (John Graham and Dolores Murphy)
13. A large range of inexpensive alternatives is available (Killian Skay)
14. Initial costs can be offset by increased consumer activity (Neil Murphy)
15. Also consider parking costs (Claire Kinneavy)
16. Materials need to be considered carefully (Elaine Power)
17. Ensure that changes enhance area, not just make it different (Rachel Ivers)
18. Expensive – allowance for delivery, drainage, root growth, leaf collection, etc (Caitriona Shaffrey)
19. Should not be seen as primary factor in the proposed scheme (Shane Dineen)

Key statement from Preliminary research findings as presented at workshop

6.2. If kerbs are removed then there is the cost of levelling the street surface and providing a larger quantity of tactile paving to delineate safe zones.

Feedback from stakeholders

1. Is tactile paving an adequate replacement for kerbs? (Vijoy Chakraborty)
2. Should we remove kerbs? What about water pooling?
3. Can the benefits match the costs? (Sandra McCarthy)
4. Significant cost and unlikely to work for guide dogs and children – why bother?(Noel Singleton)
5. Problems of drainage and delineation if kerbs are removed (John Graham and Dolores Murphy)
6. Renovation could largely be carried out as ongoing street improvements (Killian Skay)
7. Drainage could be handled by permeable paving (Caitriona Shaffrey)
8. Drainage alternatives are expensive (Sean McGrath)

Key statement from Preliminary research findings as presented at workshop

6.3. There have been suggestions that Shared Space improves retail spending, there needs to be further research to gather quantitative data to back up this suggestion in an Irish context.

Feedback from stakeholders

1. Wait till this is confirmed before spending. (Vijoy Chakraborty)
2. If progress is slow, then retailers may go out of business before they can benefit
3. Collect qualitative on barriers to consumer spending (Sandra McCarthy)
4. Only true if space is served by car parks and public transport, as businesses rely on footfall (Noel Singleton)
5. Will commercial renting in shared space cost more? (Ger Craddock, Feargus McGarvey)
6. Does the presence or absence of buses in shared space area affect business e.g. Arnotts vs Clearys? (Martin and Ann Kelly)
7. Gather data from similar projects, e.g. pedestrianisation of Grafton Street (Mark Dyer)
8. David O'Connor (DIT) might have some data (Eoin Farrell)
9. Good research will provide local authorities with ammunition to counter the arguments of the retail groups who object to change (Neil Murphy)
10. Consider that drivers may avoid shopping in SS zones completely due to lack of parking and access (Elaine Power)
11. Comprehensive review of similar operations needed (Rachel Ivers)
12. Need to consider home delivery etc. (Caitriona Shaffrey)
13. Confounding factor – is increase in spending a transfer from adjoining streets, or an overall increase? (Sean McGrath)

Key statement from Preliminary research findings as presented at workshop

6.4. A cost benefit analysis needs to be conducted regarding the cost of creating Shared Space, Shared Surfaces and Home Zones versus the savings due to increased road safety and economic activity in the area.

Feedback from stakeholders

1. Cost benefit calculation for every site, or do the findings apply to each site? (Vijoy Chakraborty)
2. Quality of life cannot be measured in economic terms – if equality is achieved then it will be worth it
3. Parameters need to be defined (Noel Singleton)
4. Try to evaluate quality of life and enjoyments as an economic benefit (Feargus McGarvey)
5. How do measure quality of life? (Mark Dyer, Sean McGrath)
6. Ensure that all potential users, especially vulnerable ones are consulted and provided for (John Graham and Dolores Murphy)

7. Should be driven by civic/social vision (Killian Skay)
8. Key performance indicators need to be defined (Eoin Farrell)
9. Is there really a road safety benefit? Confounding factor – nervous pedestrians avoid the area (Elaine Power)
10. Expensive to retrofit and most retailers don't want it in College Green for example (Elaine Power)
11. Need for comprehensive and standardised pilot studies (Rachel Ivers)

Theme 7 - Maintenance, management, durability and sustainability

Key statement from Preliminary research findings as presented at workshop

7.1. Traditional street drainage uses kerbs and gullies to deal with rainwater and prevent flooding of pedestrian areas and buildings. Shared Surfaces may complicate this and it may prove difficult to find appropriate drain covers and grates which allow water to drain through without causing issues for pedestrians. These issues need to be researched further to identify all challenges and propose solutions.

Feedback from stakeholders

1. Maintenance of drains is essential (Ger Craddock)
2. Drainage needs to be adequate for Irish weather (Martin and Anne Kelly)
3. Leave the kerbs where they are
4. Concentrate on finding correct drainage system (Claire Kinneavy)
5. Use normal engineering design (Kilian Skay, Neil Murphy)
6. Current delineators can be unsafe and slippery, perhaps permeable paving is best solution. (Caitriona Shaffrey)
7. Gentle gradients to deal with rainwater, permeable paving (Shane Dineen)
8. Massive costs, need input from LA drainage division (Elaine Power)
9. Conservation of streets may be an issue (Elaine Power)
10 Maintenance is important (Feargus McGarvey)
11. What are the existing international standards (Noel Singleton, Sandra McCarthy)
12. Is there potential to collaborate with other projects in relation to environmental sustainability? (Sandra McCarthy)
13. Conduct more research or wait till research findings have been established (Vijoy Chakraborty)
14. Investigate use of SuDS and porous paving (Mark Dyer)
15. Encourage communities to take ownership of maintenance (Mark Dyer

Key statement from Preliminary research findings as presented at workshop

7.2. To alleviate drainage problems caused by the removal of kerbs and gulleys, it is recommended to explore the greater use of sustainable urban drainage schemes (SuDS) for a more sustainable solution to water management.

Feedback from stakeholders

1. Will SuDS work in home areas? (Ger Craddock)
2. Can kerbs not assist in this?
3. Use only in appropriate areas which have green zones (Neil Murphy)
4. Requires a huge area to cater for storm water, unavailable in city centre (Sean McGrath)
5. May not be sufficient to deal with all drainage. May need to retrofit street, conservation could be an issue (Elaine Power)
6. Save money by recycling rainwater in imaginative ways (Rachel Ivers)

Key statement from Preliminary research findings as presented at workshop

7.3. The introduction of Shared Surfaces raises engineering issues with regard to underground services. In particular there are practical design issues involved such as the requirement for straight service runs versus meandering carriageways; potential wheel loading over a wider area and service access areas suitable for vehicle and pedestrian traffic.

Feedback from stakeholders

1. New developments need to clearly mark engineering zones (Ger Craddock)
2. Engineering zones need to be accessible and imaginatively designed (Martin and Anne Kelly)
3. National guidelines, but local research before implementation
4. Use normal engineering design (Claire Kinneavy, Kilian Skay, Neil Murphy)
5. Meandering carriageways can be formed within straight drainage runs (Caitriona Shaffrey)
6. In residential areas most services are on paths and not subject to heavy traffic loads. Constructing a wider area to take traffic loads will be expensive (Sean McGrath)
7. Access may be an issue (Shane Dineen)
8. Design solutions available for this (Feargus McGarvey)
9. Sustainable materials should be used (Rachel Ivers)
10. What solutions have other countries come up with? (Vijoy Chakraborty)

Key statement from Preliminary research findings as presented at workshop

7.4. In Home Zones, residents are encouraged to colonize the public space but this can sometimes result in conflicting views of what constitutes proper usage, or in certain cases residents abusing the space such as littering, abandoning cars, or other anti-social behaviour. Local authorities and property management companies may need a well enforced management plan to maintain the quality of these spaces.

Feedback from stakeholders

1. Follow through on enforcement (don't just hand over to groups of anti-socials – e.g. Smithfield) (Ger Craddock)
2. Management and authority as well as awareness and education (Martin and Anne Kelly)
3. Public safety top priority
4. Good management is needed (Neil Murphy)
5. Deterrents need to be put in place to minimise anti-social behaviour (Caitriona Shaffrey)
6. Passive surveillance is vital (Sean McGrath)
7. Littering and abandoned cars – Litter Act (Sean McGrath)
8. Home zone charter so residents take control of area (Shane Dineen)
9. Education of residents – do they want to take responsibility? (Elaine Power)
10. Rules need to be clear for those unfamiliar to area (Rachel Ivers)
11. Local consultation needed at design stage (Noel Singleton)
12. On-going enforcement may also be required for safety. Legislation required? (Noel Singleton)
13. Community based approach, self management (Sandra McCarthy)
14. Avoid perceived threatening behaviour by providing hangout places (Mark Dyer)

Key statement from Preliminary research findings as presented at workshop

7.5. Similarly parking needs to be carefully managed in Home Zones where kerbs and traditional parking formats have been removed. In addition the community needs a certain level of self regulation to maintain a good quality of life.

Feedback from stakeholders

1. Can't legislate for safe regulation, but there could be some rules
2. Need durable and consistent colour markings (Claire Kinneavy)
3. Good universal design should make user rules obvious (Kilian Skay)
4. Same street maintenance needed as usual, no extra training required (Kilian Skay)
5. Education (Neil Murphy)

6. Shared car/van schemes to reduce on-street parking, but allow for goods to be transported (Caitriona Shaffrey)
7. Residents need to take ownership of the area (Shane Dineen)
8. People like to park near their houses (Elaine Power)
9. Can help develop a sense of community (Feargus McGarvey)
10. Make it a part of the community (Mark Dyer)

Key statement from Preliminary research findings as presented at workshop

7.6. The additional trees, planting, street furniture or street art often associated with Shared Space or Home Zones will entail additional management.

Feedback from stakeholders

1. Worth it for quality of life (Ger Craddock)
2. Postpone till we counter from economic situation
3. Careful specification is required (Caitriona Shaffrey)
4. Consider costs involved with installation and maintenance (Elaine Power, Noel Singleton, Vijoy Chakraborty)
5. Who decides on the artwork? (Elaine Power)
6. Safety issues – barriers etc? (Noel Singleton)
7. Agreement at early stages of rights and responsibilities in shared spaces (Sandra McCarthy)

“Life between buildings comprises the entire spectrum of activities, which combine to make communal spaces in cities and residential areas meaningful and attractive”

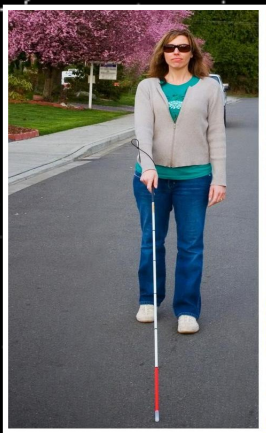
(Jan Gehl)

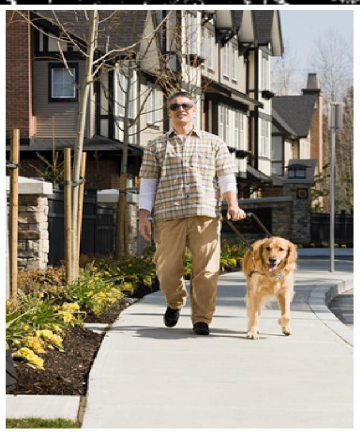
“The major challenge for urbanism in the Information age is to restore the culture of cities. This requires a socio-spatial treatment of urban forms, a process that we know as urban design. But it must be an urban design able of connecting local life, individuals, communes, and instrumental global flows through the sharing of public spaces”

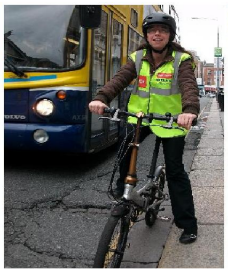
(Manuel Castells)

“The built environment has traditionally been built with the average young, healthy male in mind. .... Until the design of the built environment takes into account the diverse needs of users, many people will be restricted or excluded from the outside world”

(Burton and Mitchell)







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