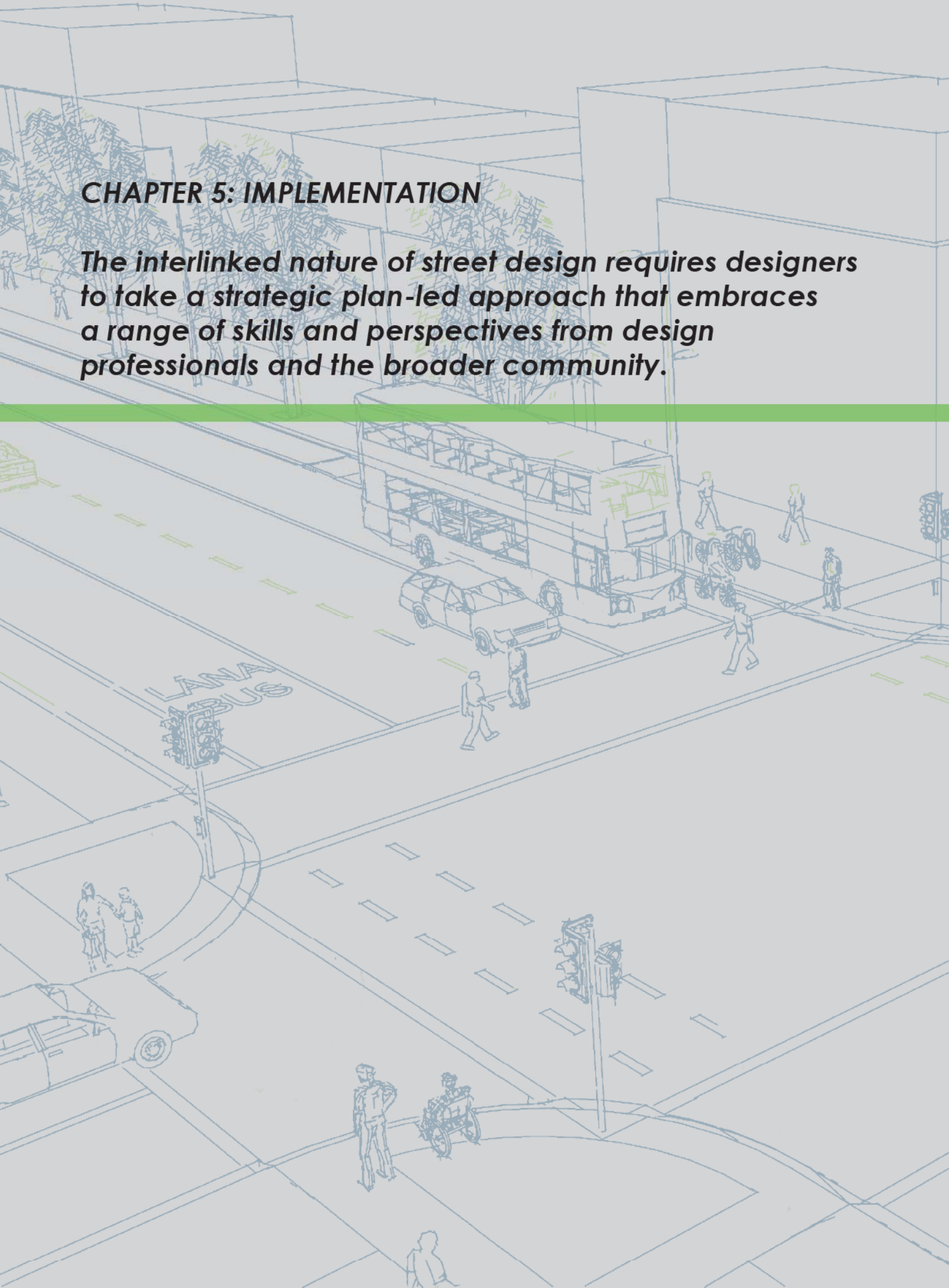
CHAPTER 5: IMPLEMENTATION

The interlinked nature of street design requires designers to take a strategic plan-led approach that embraces a range of skills and perspectives from design professionals and the broader community.



5.0 IMPLEMENTATION

5.1 The Challenge Ahead

This Manual offers designers the rationale and the tools to enact the change required by broader government policies. Implementing such change is highly challenging. As highlighted by the numerous exemplar designs contained within this Manual, such change is achievable (see Figure 5.1).

The implementation of integrated design solutions to urban road and street design requires a strategic approach where design professionals, elected members and the broader community work collaboratively.

Such integrated solutions should be supported by :

- A plan-led approach to design for development of all sizes, and inclusive of those undertaken by the public or private sectors.

- Greater collaboration from a variety of design professions and more in-depth consultation with/between road authorities and the broader community.

A plan-led and multi-disciplinary approach is discussed in the ensuing sections.

Figure 5.1: Images of Dorset Street, Dublin (part of the N1 national route), demonstrate how better outcomes can be achieved by shifting away from convention and embracing a more inclusive and strategic approach to design.

5.2 A Plan-Led Approach

5.2.1 Policy and Plans

Spatial plans are a key element in the implementation of more integrated street design. They should include information on how the principles, approaches and standards within this Manual can be applied to promote sustainable cities, towns and villages. In particular when preparing policies and objectives on transportation and the promotion of more sustainable modes of transport, regard must be had to the detailed technical advice and guidance in this Manual.

The hierarchy of spatial plans is as follows;

1. Development Plans
2. Local Area Plans
3. Masterplans*
4. Movement Frameworks*
5. Public Realm Strategies*

(* denotes non-statutory plans)

1. County Development Plans

The promotion of sustainable settlement and transportation strategies in urban and rural areas as part of development plan shall be informed by the principles in this Manual.

2. Local Area Plans

Local Area Plans shall be underpinned by an assessment of transportation and mobility in the relevant area. This will inform the formulation of policies aimed at:[1]

- Promoting a walking and cycling environment.
- Creating high levels of connectivity, particularly for more sustainable forms of transportation.
- Land use and transport integration to reduce car dependency.
- Parking for cycles and cars.

The implementation of these policies should be reflected in a range of strategies that address broader movement and place considerations, such as:

- Major connections
- Vehicle circulation
- Public transport routes
- Cycle routes
- Pedestrian routes.

Such strategies should be illustrated via a number of diagrams that indicate the basis of any future street network (see Section 3.3.1 Street Layouts).

LAPs should also be used to address more detailed matters such as those contained within Chapter 4. Such issues may be addressed via Urban Design Codes[2] which set out a series of prescriptive measures to which development should adhere. With regard to street design these may take the form of cross sections and typologies (see Figure 5.2) and/or may include detailed illustrations relating to a particular place (see Figure 5.3)

3. Masterplans

Masterplans, like LAPs, are used to provide a more detailed framework for areas where significant change or development is anticipated. Masterplans may also act as a companion guide or subset of an LAP. Such Masterplans are often referred to as an Urban Design Frameworks.

Masterplans may contain a greater level of detail than LAPs and may also include more comprehensive guidance on the design of individual streets. For example, whilst street typologies may be provided in an LAP document, they are a significant component of a Masterplan.

1 Refer to Section 5.6 Achieving Smarter Travel of the *Draft Local Plans Planning Guidelines* (2012).

2 *The Draft LAP Guidelines* (2012) recommend the incorporation of cross-section diagrams of streets and junctions within LAPs.

Further guidance on the role, scope and content of Masterplans may also be sought from *Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas (Cities, Towns & Villages) (*2009)[3] and the UK *Creating Successful Masterplans* (2004).

4. Movement Frameworks

Movement Frameworks are a form of Masterplan that are primarily concerned with issues relating to the mobility and management of users within a street/road network. A Movement Framework may focus on the broader structural/strategic aspects of movement as well as more detailed considerations. A comprehensive Movement Framework may also include a traffic management strategy that models the movement of traffic within a network. Although a Movement Framework is primarily focused on the functionality of a street/ road network, such plans should also take into account the interrelationship between movement and place.

5. Public Realm Strategies

Public Realm Strategies may address broader strategic issues similar to an LAP or Masterplan, but they are more closely associated with detailed design outcomes. In some cases Public Realm Strategies may include detailed material palettes and construction specifications. Examples of public realm strategies have been prepared by various local authorities including, Dublin City, Wicklow Town and Castlebar (see Figure 5.4).

3 Refer to Section 2.13 of the *Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas (Cities, Towns & Villages)* (2009).

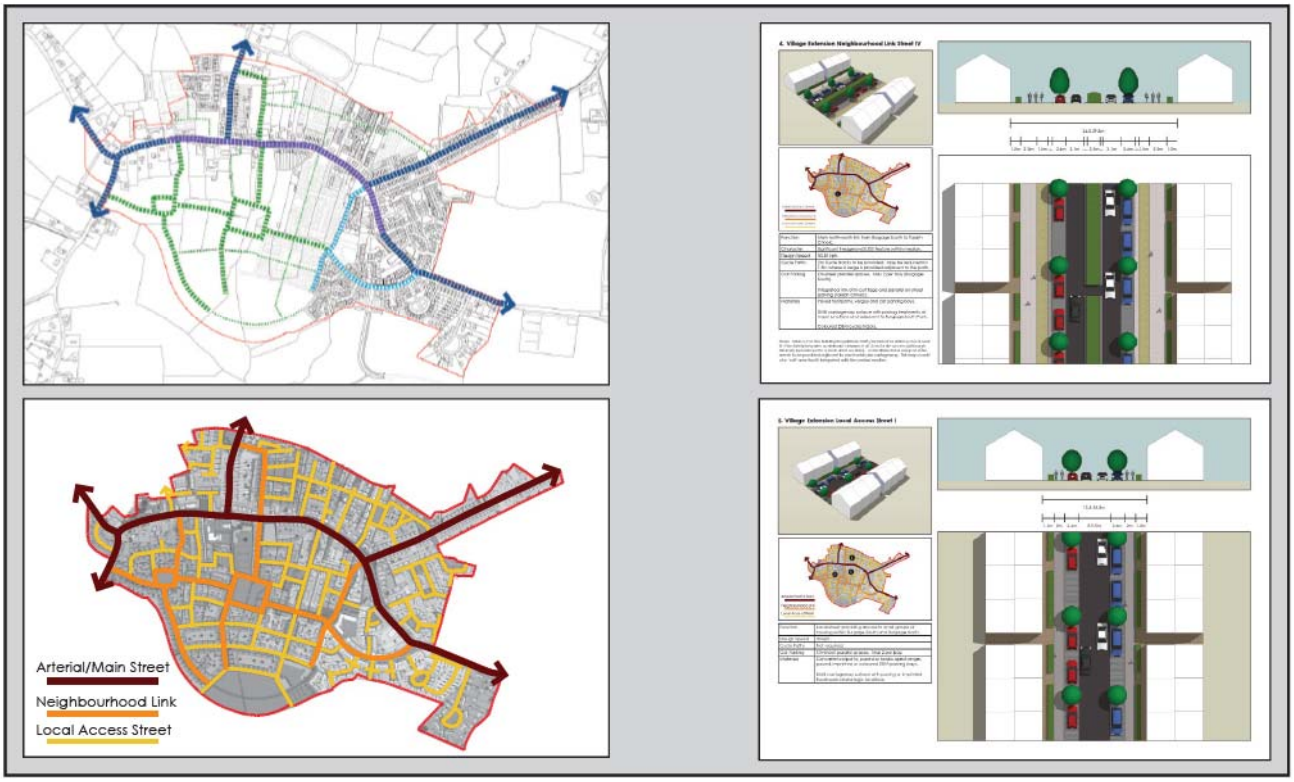


Figure 5.2: The Newcastle LAP (2012) is an example of a Local Area Plan where a series of strategic connections are proposed to shape the future expansion of the village. These connections are further detailed through a series of Urban Design Codes in the form of a street hierarchy, cross section and layouts (street typologies).

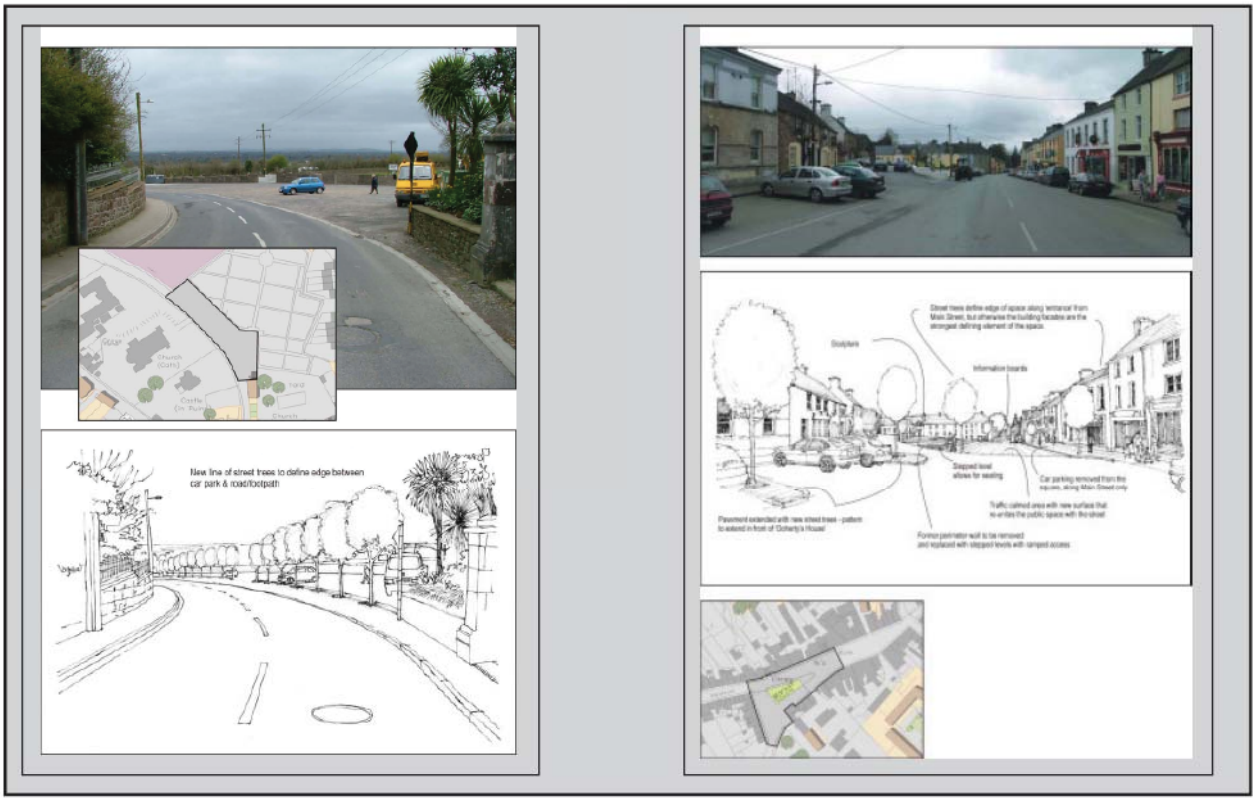
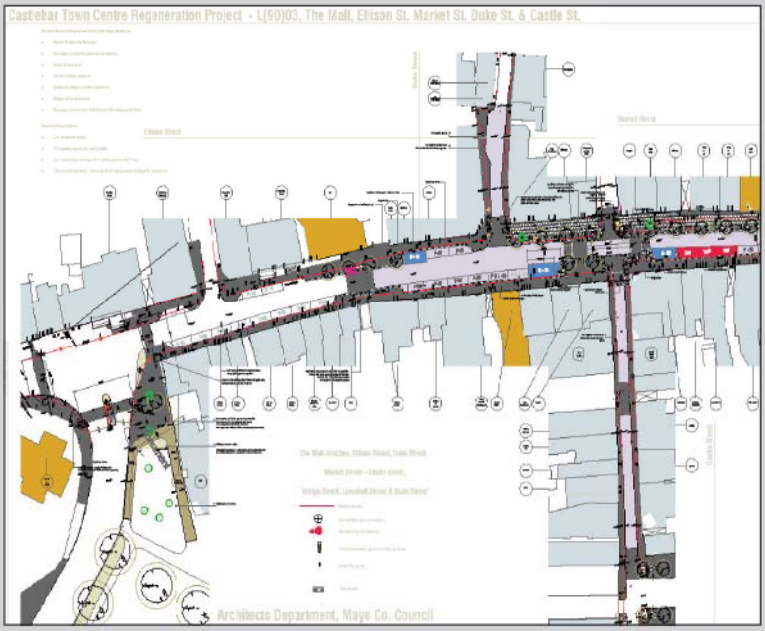
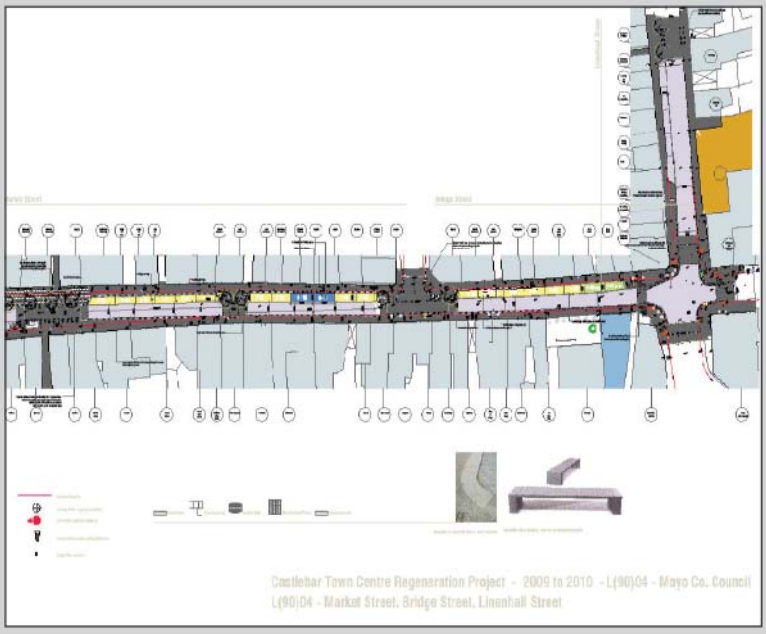


Figure 5.3: Extracts from the Kilfinane LAP (2012) illustrating a number of streetscape improvements that better define the street as a place.

Figure 5.4: Extracts from the Castlebar Town Centre Regeneration Project

An example of a detailed Public Realm Strategy. Castlebar town was described as being characterised by visual clutter, poor pedestrian infrastructure and an excessive vehicle presence. The works have significantly improved the place value of the town centre and created a sense of shared space with 'a safe pedestrian environment along with suppressed vehicle dominance'.





BEFORE

AFTER

5.2.2 Development Rationale

To effectively communicate how the principles, approaches and standards within this Manual have been applied, it is recommended that all proposed developments, regardless of scale, are accompanied by documentation that provides a clear rationale for the project, such as within a design statement[4], including:

- A clear set of objectives for the project (see Section 5.3.2 Process).
- How context and function were determined (see Sections 3.2.1 Movement Function and 3.2.2 Context).
- Strategic drawings outlining the structure of the street network (see Section 3.3.1 Street Layouts).
- Detailed street layouts that clearly illustrate all relevant geometric standards and other treatments aimed at promoting a sense of place, sustainable forms of transportation and traffic calming.
- A comprehensive auditing process (see Section 5.4 Auditing).

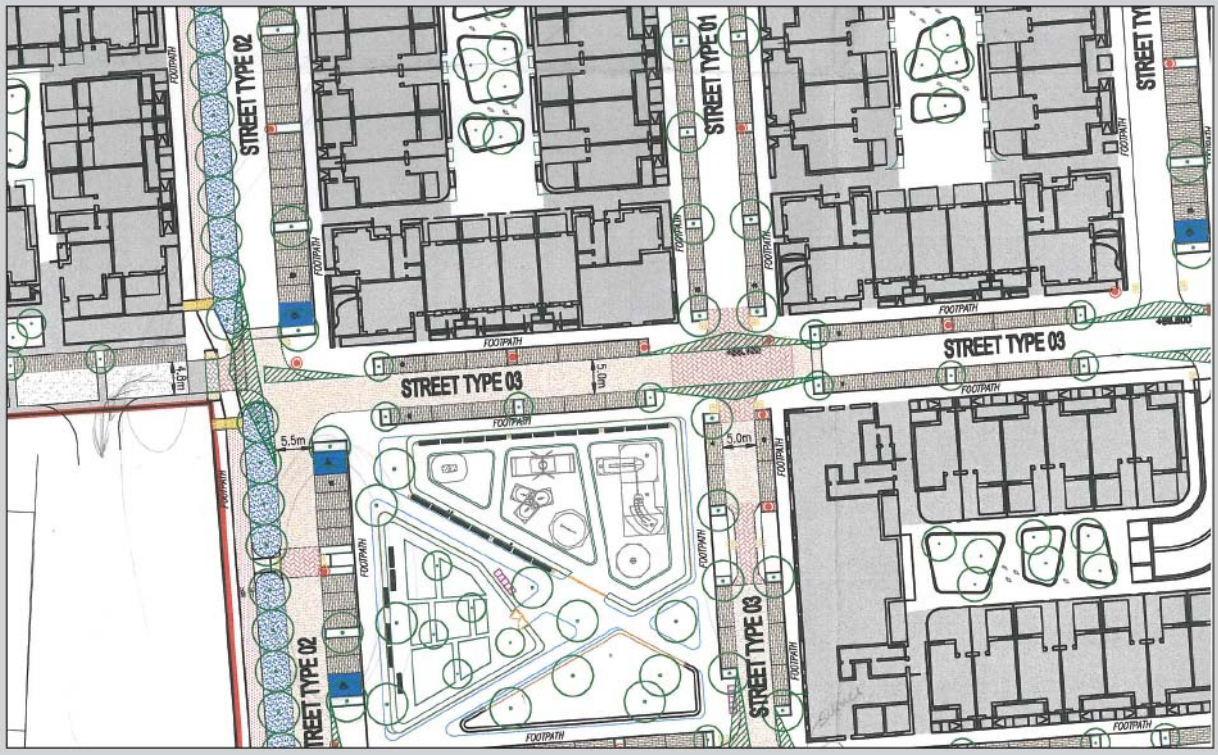
To ensure that street layout plans communicate a complete picture of the design, it is recommended that the following information be presented, as appropriate (see Figure 5.5):

- The width of streets, footways, verges, medians and privacy strips.
- The location, type and configuration of crossings and junctions.
- Corner radii (including swept paths).
- On-street parking.
- Horizontal and vertical alignment data.
- Horizontal and vertical deflections.
- Forward visibility splays.
- Kerb lines (including heights).
- Surface Materials and Planting.
- Street furniture and facilities.
- Signage and Line Marking.
- Lighting.

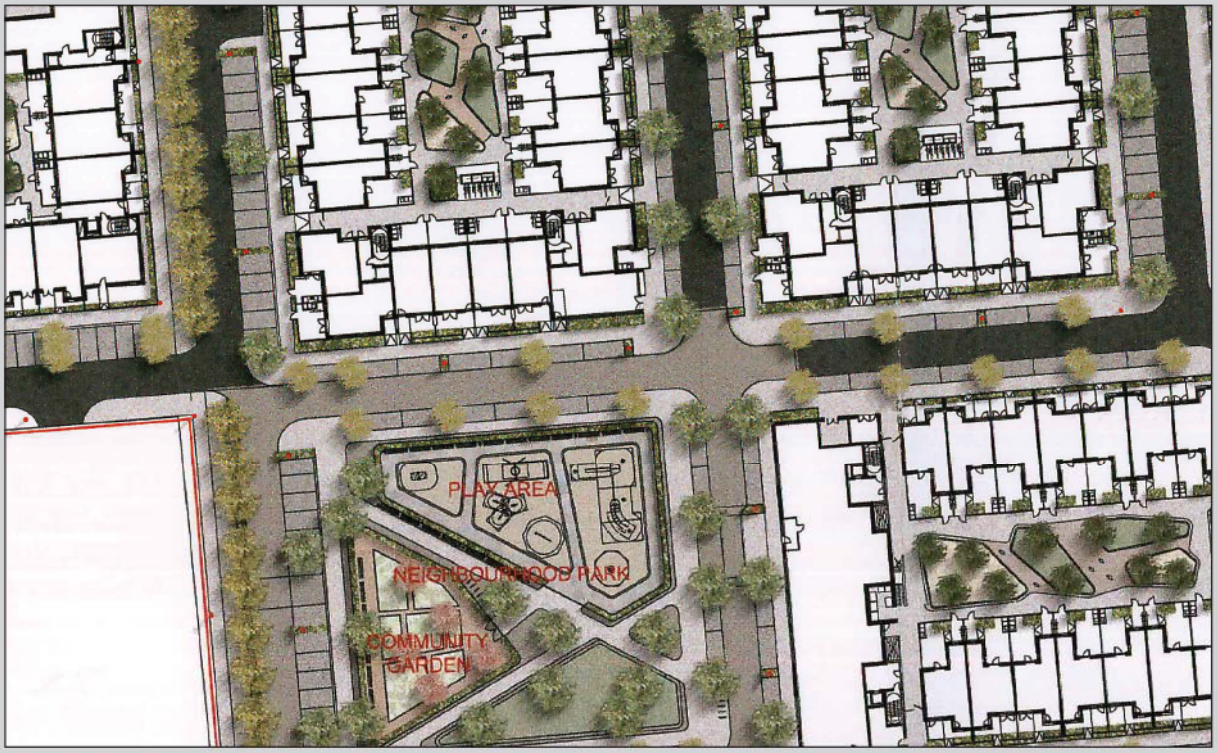
Design teams and planning authorities will need to balance the level of detail given at any stage of the design/consent process. For example, more technical specifications may be better suited to later compliance submissions so that the initial consent process is not overly burdened with detail. Such specifications may include matters such as final material palettes, construction details and planting schedules. They should be matters which do not affect the amenities of a third party, without that party having the right to comment on the compliance submission following the grant of permission.

4 Refer to Section 3.10 of the *Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas (Cities, Towns & Villages)* (2009).

FIGURE 5.5: EXAMPLES OF DETAILED DRAWINGS



Street Design Layout Plan illustrating street types and fundamental elements of the street geometry. Drawing by WSP based on design by Henry J Lyons Architects.



Landscape Plan illustrating surface materials and planting materials. Drawing by Gross Max landscape architects based on design by Henry J Lyons Architects.

5.3 Multidisciplinary Design Processes.

5.3.1 Design Team

The design team should include a broad range of professionals with varying levels of technical expertise in streets/road design (see Figure 5.6). The final make-up of a design team will depend on the resources available and the scale of the project. Design input should ideally be sought from a range of skill sets to ensure that a holistic design approach is implemented. As the scope of projects broaden, or in response to particular issues, design input may also be needed from more specialised skill sets. For example, if designing within a historic context, input should be sought from a conservation expert (see Figure 5.7).

A project manager should be appointed to oversee sizable or complex projects. The project manager may come from any background associated with the design of the built environment. It is recommended that the project manager has extensive experience in critically analysing and evaluating advice from a range of design professions.

On larger scale, or high profile projects, it is recommended that a Design Champion be assigned to the project. The UK DoT recommends that the Design Champion not form part of the day-to-day working group within the design team.[5] Rather the Design Champion should assist the team in developing a vision and set of design objectives for the project, ensuring that these are adhered to and promoting them to the broader community, including elected representatives.

The formation of a multi-disciplinary team is critical for the assessment of any project. Whilst the formal assessment and consent process for different design projects may vary, it is essential that they have multi-disciplinary input so that they can be fully assessed against the broad range of principles, approaches and standards contained within this Manual, particularly where any conflicts of place and movement may arise. To assist this process it is recommended that multi-disciplinary professional teams within planning authorities work together as a cohesive unit.

5 Refer Section 2.10 of *Local Transport Note 1/08 Traffic Management and Streetscape (2008).*

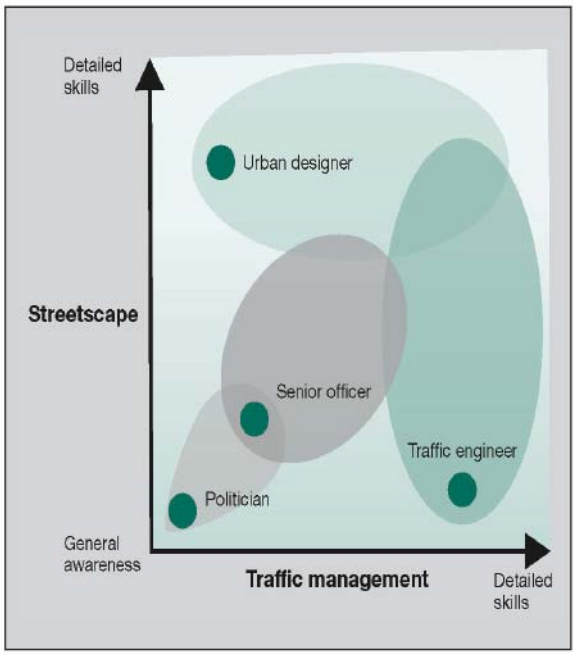


Figure 5.6: Extract from Local Transport Note 1/08 showing how a range of technical skills contribute to the design process.

Range of Inputs Required

Required

Engineering
Town Planning
*Urban Design**

Desirable

Architecture
Landscape Architecture

As required

Heritage Specialist
Conservation Specialist
Environmental Specialist

*May also include an architect, engineer, landscape architect or town planner with urban design skills.

Figure 5.7: The range of skill needed for input into a multidisciplinary design team. Skill sets have been ranked to indicate where resources should be prioritised and where additional input may be desirable.

5.3.2 Process

There several guidelines that provide in-depth advice on collaborative multidisciplinary design processes. These include the *Manual for Streets* (2007), which outlines a process for multi-disciplinary teams for projects of various scales[6] and the UK Department for Transport *Local Transport Note 1/08 - Traffic Management and Streetscape* (2008), which focuses on collating and coordinating inputs of a range of designers under the direction of a project manager. The 'In Practice' section of the *Urban Design Manual* (2010) also outlines a process for the preparation of planning applications. Figure 5.8 illustrates a simplified process that incorporates four key stages for a design team, as discussed briefly below.

Analysis and Vision

The first stages of a process should be to undertake an analysis and establish the objectives for the project so that the design team has a clear understating of the task ahead.

Collecting information for a site analysis will generally consist of two parts:

- a desktop study where all relevant plans, policies and previously collected information about a project is collated and reviewed.
- an on-site study where observations are made and data is collected.

Key information for the process includes:

- Plans and policies (relevant national, regional and local plans).
- Spatial characteristics (such as land uses, destinations, densities, activity generators).
- Movement patterns (such as user mobility, key desire lines, obstructions, public transport).

6 Refer to Table 3.1 of the *UK Manual for Streets* (2007)

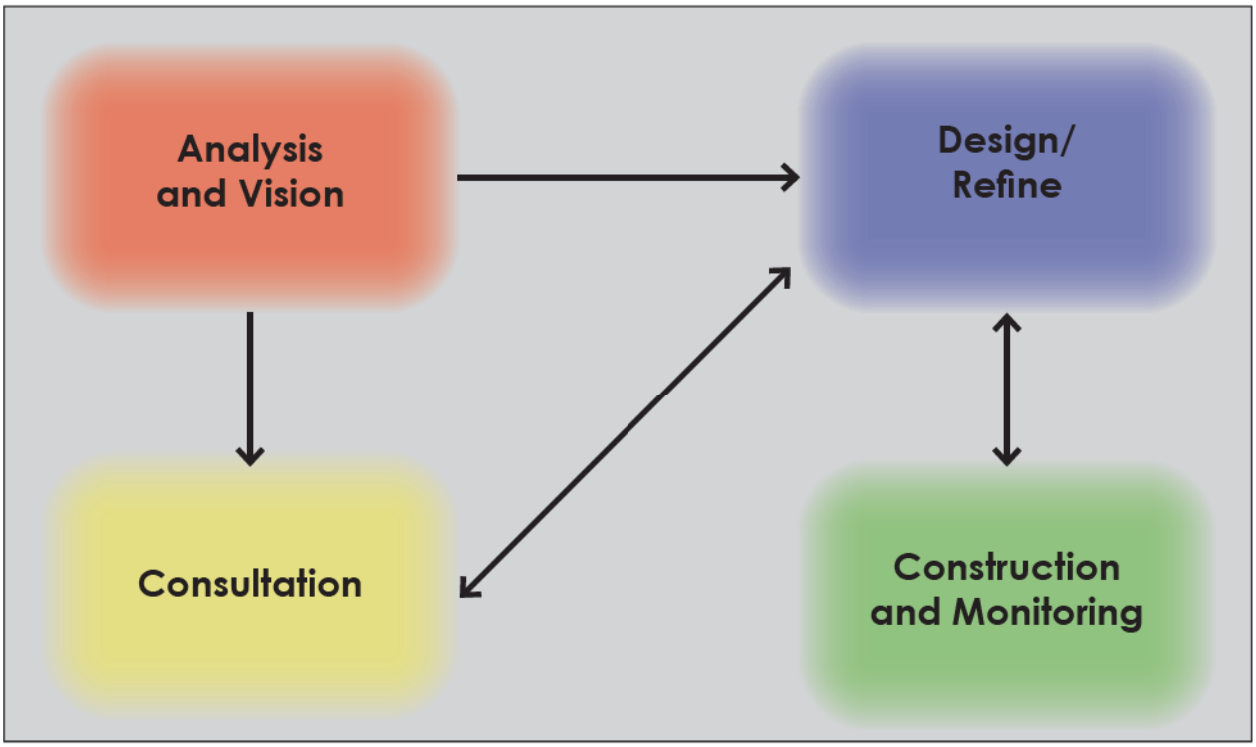


Figure 5.8: The key stages of the design process.

- Built form (enclosure, interface, street geometry).
- Traffic Survey (such as traffic counts, car parking).
- Topography and landscape (such as slopes, planting and ecology).
- Heritage and conservation (where appropriate).

A key outcome of the analysis process should also be the identification of the *Context(s)* of the project and the *Function(s)* of the street/street network. Further guidance on site analysis may also be taken from the *Urban Design Manual* (2010).[7]

The analysis process should provide a solid understanding of the issues that need to be addressed. One of the first steps in formulating a response is to establish a clear vision that addresses core issues of place and movement. A vision for the project will enable the formation of a set of objectives that acts as a 'mission statement'. This will set the context for the application of more detailed design. Objectives may relate to a number of aspects of any design, such as the character of the place, levels of connectivity for different users and traffic calming.

The objectives of a scheme should be referred to throughout a design process, and may also form the basis of a formal design brief.[8]

Consultation

Several stages of consultation may be undertaken by designers depending on the type and scale of a project. It is recommended that designers undertake consultation as early as possible. Designers may engage with a community and/or roads authority prior to any detailed design work taking place, to identify further issues and to gauge the aspirations of the community (to further refine the objectives for the project). A workshop environment may encourage participants to play an active role in the initial design of the project. Further advice to assist designers with more in-depth community involvement, particularly at the early stages of a design process, is available from the UK Royal Town Planning Institute[9] and UK Planning Advisory Service.[10]

It is also recommended that designers undertake pre-planning meetings where a design is to be submitted to a local authority. Both the design team and the local authority should ensure that this occurs within a multidisciplinary environment to ensure that a broad range of issues are considered. The design team should ensure that all relevant design disciplines are present. The local authority should ensure that all relevant disciplines are represented.

Design and Refine

The optimal solution is rarely achieved on a first attempt and is likely to emerge over many drafts, having been informed by a solid analysis and appropriate level of consultation. A thorough design process is likely to include:

- Production of strategic level drawings that illustrate the key routes and links within a street/street network (see Sections 3.3.1 Street Layout).
- Typologies or conceptual individual street designs.
- Initial detailed design and refinement prepared to a professional/technical standard.

7 Refer to the 'In Practice' section of the *Urban Design Manual* (2010).

8 *Refer to Part 3.8 of the Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas* (2010) and the In Practice Section of the *Urban Design Manual (2010).*

9 Refer to UK *Guidelines on Effective Community Involvement and Consultation: Good Practice Note 1* (2005).

10 *Refer to* UK *Community Engagement in Plan Making* (2010).

- Design finalisation and formal consent process.

The optimal time to undertake an audit process is when the design has reached a stage where the outcomes can be clearly evaluated, such as after initial refinement and prior to finalisation. This will also allow the design to be formally tested against the objectives of the project and with regard to other critical matters such as safety (see Section 5.4 Auditing).

Once the design is finalised and all the relevant approvals have been granted it must not be retrospectively revised in a manner that would contradict the approved plan at later stages. Any potential future taking in charge issues related to design geometry and layouts should be fully resolved as part of the consent process.

Construction and Monitoring

The design phase will largely conclude once any relevant approvals have been granted and all technical specifications have been formalised, it is recommenced that the design team participate in the project through to its completion and periodically monitor its performance.

During the construction phase it is recommended that the design team/planning authorities carry out periodic inspections to ensure that the project is being carried out in accordance with the approved design. This will not only assist in ensuring the objectives of the project are fully implemented, but will reduce the potential for error and abortive or wasteful works.

Periodic monitoring is recommended, particularly where innovative design techniques and/or untested materials have been used. Post-construction performance monitoring should be focused on the safety record and vehicle operating speeds to ensure that project objectives have been met. Design teams/roads authorities are encouraged to make such findings publicly available so as to add to the growing body of work that informs more integrated design solutions.

The issue of maintenance is also of primary concern for many roads authorities, particularly where higher specification materials are used. Many local authorities within the UK have issued specific streetscape design guidance that detail a palette of street furniture, materials and finishes that are acceptable to planning authorities.[11] Part B of the *Adamstown Street Design Guide* (2010) also provides examples of accepted standards. It is recommended that local authorities collate and issue similar guidance to encourage better quality 'workmanship' and to simplify the maintenance regime.

11 Examples include the *Camden Streetscape Design Manual* (2005) and *Streetscape Design Manual for Nottingham City Centre* (2006).

5.4 Auditing

5.4.1 Road Safety Audits

Auditing processes in Ireland are generally in the form of a Road Safety Audit (RSA). The NRA has published a set of standards[12] that define the role of, and outline the process for carrying out a RSA. The primary purpose of a RSA is to identify potential hazards and how they could affect road users using the following criteria:

- Does the design layout create confusion or ambiguity for road users that could lead to potential road traffic accidents?
- Is there too much, or too little information for road users?
- Is there too little, or too much visibility, or an obstruction to road users' view?
- Does the layout create hazards or obstacles to road users that could contribute to an increased risk of injuries?

If the answer is 'yes' to any of these questions, then it is deemed that the safety of the scheme could be compromised and remedial measures may be required to remove a potential or actual deficiency.

Within Ireland it is mandatory to carry out a RSA on any permanent change to the road layout on National Roads. The standard is commended to roads authorities for use in preparation of their own road schemes on Regional or Local roads' and it is common practice for local authorities to require an RSA for all road schemes. *Circular RLR 16/2008, Road Safety Audits and Road User Audits* issued by the Department of Transport also required that roads authorities carry out such audits on schemes funded or co-funded by the Department.

The implementation of the *Manual for Streets* (2007) in the UK has raised many issues in relation to the application of RSA. These issues are also further addressed in the UK *Manual for Streets 2* (2010).[13] These manuals note that the application of RSA standards require a different perspective when applied within an integrated street environment. Concerns are raised that the RSA process is predisposed to segregated/conventional design solutions that may detract from the sense of place, reduce levels of pedestrian amenity and, in some cases, actually reduce safety levels, as 'where the appearance is one of safety, individuals may drop their guard and accidents ensue'.[14]

To reduce the possibility of conflict with this Manual, the audit team responsible for carrying out a RSA:

- Must take full cognisance of the principles, approaches and standards contained within this Manual.
- Should not recommend any actions that will reduce ease of movement for pedestrians/cyclists in favour of motor vehicles or seek to add or remove measures that may result in the operating speed exceeding the intended design speed.
- Should promote the creation of a self-regulating street environment.
- Should have a clear understanding of the objectives of the design. The audit team should refer to the Road Safety Audit Brief Checklist.[15]

The RSA should, where appropriate, also be part of a larger *Quality Audit* (see Section 5.4.2 Quality Audits), this may assist in identifying many of the issues highlighted above.

12 Refer to NRA DMRB Volume 5, Section 2, Part 2 NRA HD 19 Road Safety Audit (2012).

13 Refer to Sections 3.7 of the UK *Manual for Streets* (2007) and 4.5 of the *UK Manual for Streets 2* (2010).

14 Refer to the UK *Highway Risk and Liability Claims: A Practical Guide to Appendix C of the Roads Board Report* (2009).

15 As required within NRA DMRB Volume 5, Section 2, Part 2 NRA HD 19 Road Safety Audit (2012) – Audit Brief.

The audit process may include direct communication between the audit team and design team if clarification is required on any of the above issues. This can be achieved through the existing RSA procedures 'if following the road safety audit, discussion or clarification of any issues is required by the Audit Team, the Designer or the Employer, the Employer shall convene a meeting between the Audit Team, the Designer and the Overseeing Organisation to resolve as many of the audit issues as possible.'[16] This process will allow the design team the opportunity to clarify any contentious issues and gain feedback on any alternative courses of action, prior to the finalisation of the design.

The audit team should also carry out a risk assessment,[17] ranking both the audit problems and the audit recommendations.
This process may assist in identifying the level and type of 'risk' associated with a potential 'hazard'. This is of particular importance on schemes where elements of risk are introduced to calm traffic and create a self-regulating street. In this regard design teams / audit teams may also refer to the third edition of the UK Institute of Highways and Transportation *Road Safety Audit Guidelines* (2008), produced following the publication of the UK *Manual for Streets* (2007). This document also includes a Risk Assessment process that takes into account the likely severity of outcome and frequency of occurrence that is attributable to any perceived hazard and notes that an auditor should:

> 'not assume that behaviour on roads will necessarily be displayed on streets'
>
> and;
>
> 'the emphasis within Audit should be on trying to assess what types of collisions may occur'.

16 As outlined within *NRA HD 19 Road Safety Audit* - Subsequent Actions to the Report)
17 Refer to NRA HD 42/04 Road Safety Audit Guidelines - Section 6.2 Risk Assessment

5.4.2 Quality Audits

A *Quality Audit* should be undertaken to demonstrate that appropriate consideration has been given to all of the relevant aspects of the design. The UK Department for Transport notes the key benefits of a *Quality Audit as*:[18]

- A transparent process that demonstrates that the needs of all user groups and the design objectives.
- Enables the projects objectives to be delivered by putting in place a check procedure.
- Contributes to cost efficiency in design and implementation.
- Encourages engagement with stakeholders.

Quality Audits generally consist of a number of individual and overlapping audits that may include:

- an audit of visual quality;
- a review of how the street is/may be used by the community;
- a road safety audit, including a risk assessment;
- an access audit;
- a walking audit;
- a cycle audit;
- a non-motorised user audit;
- a community street audit (in existing streets); and
- a place check audit.

The extent to which these processes are undertaken will vary according to the scale and scope of any given project. The intention of a Quality Audit is not to 'pass' or 'fail' a design. Rather it is intended as an assessment tool that highlights the strengths and weaknesses of a design and a documented process of how decisions were made.

To assist designers, it is intended that further guidance in relation to Quality Audits will be issued in the form of downloadable content to accompany this Manual.

18 Refer to UK Department for Transport *Traffic Advisory Leaflet 5/11- Quality Audits* (2011).