

DESIGNING STREETS – THE MISSING LINK IN TRANSPORT POLICY?

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Transportation policy has made enormous strides in the last decade with an agenda that is seen not just by practitioners but a high proportion of the travelling public as extremely relevant to tackling the global as well as local challenges of the 21st century. Whilst individuals might be reluctant to change their own travel behaviour, most accept that the unlimited car travel expectations of the 1960's must be consigned to history with a need for restraint to minimise damage to our increasingly fragile planet as well as our own health.

In this paper we will look further at some of the key strands of transport policy in Scotland linked to wider society challenges but specifically relate this to street and place design, an issue where the need for a radical change of approach has only more recently been gaining acceptance. The Scottish Government is expecting to publish a very significant new policy and associated guidance on street design entitled "Designing Streets", later in 2009 ¹.

This paper, presented by key members of the consultancy and client team, briefly summarises the key principles of the new policy and concentrates on exploring the vital but often understated linkage between street design and wider transport policy in Scotland. The ways in which the new approaches being promoted in Designing Streets can assist in the delivery of a range of key objectives set out in national policies, are explored and in particular the critical issue of climate change. This includes reference to some of the case studies in Designing Streets.

The Historical perspective

The Guidelines for Development Roads produced by the former Strathclyde Regional Council in 1986 ² has had a very significant impact on street design in new developments. Versions of the guidance have been widely used, admittedly with some updating, by many authorities in Scotland. The guidance had clear linkages with DB 32 (Design Bulletin 32 Residential Roads and Footpaths) which was first published in 1977 ³. There is clearly useful information in both these documents but also much which conflicts with emerging good practice and the research documents that support Manual for Streets for England and Wales ⁴, which replaced DB 32, and the draft new Designing Streets.

In particular, the older guidance set out a clear distinction between different types of road:

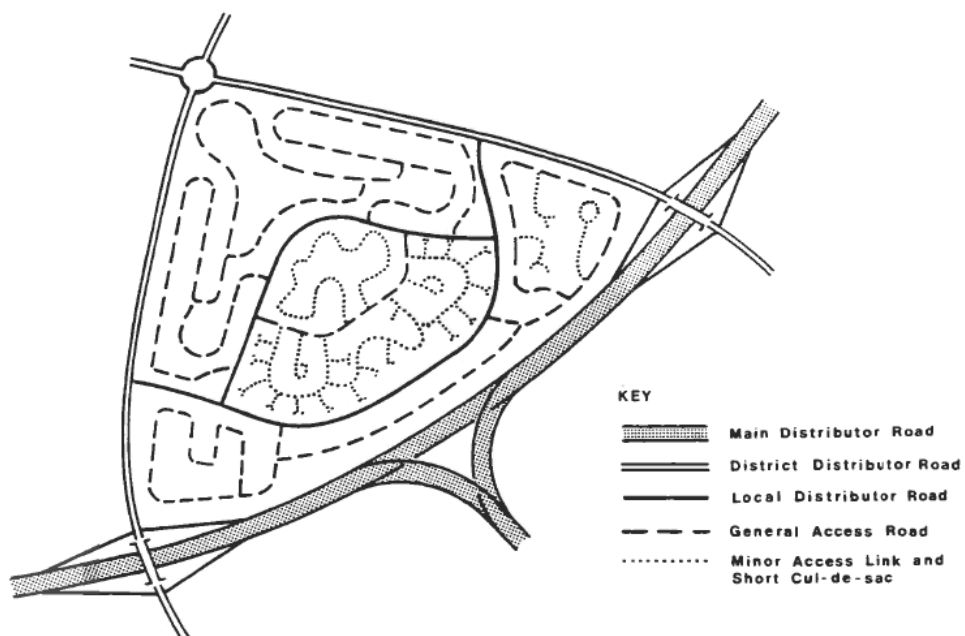
distributor roads, designed for movement, where pedestrians were excluded or, at best, marginalised; and

access roads, designed to serve buildings, where pedestrians were accommodated.

In the Strathclyde guidance these categories are further divided into a fairly rigid categorisation of no fewer than 3 types of distributor road and 4 types of access road.

This fairly prescriptive approach has led to layouts where buildings have been largely set in the space between streets rather than on them, and where movement on foot and by vehicle has often been segregated at anything above the access road level. Indeed, the guidance highlights that "Desirably, for reasons of safety and efficiency, no single length of road should fulfil both functions" (ie movement of traffic from one location to another and access to individual premises). This clearly marked a major departure from the traditional street patterns in most historical towns and cities across Scotland where these functions have happily co-existed for many years eg on key arterials into Edinburgh, Aberdeen or Glasgow and many town high streets. Similarly, crossroads, such a common feature of the grid based street patterns of so many Scottish towns, were strongly discouraged, being viewed as a safety hazard.

This widely adopted guidance, possibly not intentionally, actively promoted cul-de-sac based developments as illustrated in the figure below.



The Strathclyde based guidance also promoted segregated approaches to footpaths for pedestrians although, perhaps surprisingly, some consideration is given to the concept of shared surfaces for pedestrians and cars although only at the cul-de-sac level. It was at least a move on from the Radburn layouts of the 1960's which actively promoted segregation through such methods as decks, bridges or subways. Many developments constructed

using such Radburn layouts eg in Glasgow and certain Scottish New Towns have had significant social problems associated with them and have mostly either been demolished or undergone major regeneration.

Scottish Executive research in 2004, by WSP on the Road Construction Consent Process ⁵ found that 78 percent of local authorities last updated their design standards before 2000, with 94 percent planning to revise their documents. In reality very few authorities have substantially revised their documents in the intervening period with many still using guidance based on the Strathclyde and DB32 principles. The Society of Chief Officers of Transport in Scotland (SCOTS) is now though actively involved with the Designing Streets Steering Group as well as other initiatives to help develop new local standards in line with the new Designing Streets principles.

In the 1980's, when DB 32 and Guidelines for Development Road were being adopted, the transport policy agenda was very different. Looking at various Transport Policies and Programmes (TPP) from this time, the equivalent of Local Transport Strategies, reveals some surprisingly forward looking policies on public transport from local authorities, but nevertheless a clear domination of car based transport with an emphasis on expanding roads capacity and efficiency of movement in local as well as strategic networks. Growth in car ownership was not viewed in the same light as it is today. The prescriptive hierarchy of distributor and local roads set out in the Guidelines for Development Roads accorded well with these objectives. Safety was also, not surprisingly, a key theme in many TPP's but with an emphasis in engineering road safety improvements. The current emphasis on addressing the behaviour of drivers was yet to emerge. Whilst pedestrians received some attention, this was not given the priority it is today, with particular emphasis segregation, specifically the pedestrianisation of town centres.

Designing Streets – the Key Principles

Streets make up the greater part of the public realm. Better designed streets therefore contribute significantly to the quality of the built environment and play a key role in the creation of sustainable, inclusive, mixed communities consistent with the Government's strategic objectives and a number of National Outcomes. Better designed streets have a role in the delivery of the policy objectives of Designing Places ⁶ but also wider sustainable transportation and land use policies as we will demonstrate.

Designing Streets is expected to be used predominantly for the design, construction, adoption and maintenance of new streets, but it is also applicable to existing streets, subject to re-design. For new streets, Designing Streets advocates a return to more traditional patterns which are easier to assimilate into existing built-up areas and which have been proven to stand the test of time in many ways.

Designing Streets stresses that Streets should not be designed just to accommodate the movement of motor vehicles. It makes it clear that designers and authorities approving designs must change the emphasis to

place the highest priority on meeting the needs of pedestrians, cyclists and public transport users, so that growth in these modes of travel is encouraged in line with sustainable transport policy.

Six key qualities of successful places are advocated in *Designing Places*. These qualities should be applied to street design as follows:

Distinctive: *Street designs should respond to local context to create places that are distinctive. We need to avoid designing new places that do not sit well with their surroundings.*

Safe and Pleasant: *Streets should be designed with the aim of creating safe and attractive places. Creative layouts should be used to minimise vehicle speeds naturally. Good design is best achieved through the comprehensive design of streets, buildings and public spaces.*

Easy to get to and move around: *Streets should be easy to move around by all modes of travel, providing convenient and direct links to places that people want to get to. New streets should connect well with existing streets, walking and cycling networks, and allow for links into future areas of development. Well connected street layouts will encourage walking and cycling which has important benefits for peoples' health.*

Welcoming: *Street layouts should encourage positive interaction between neighbours. The street should allow for people to meet and interact. This will create a strong sense of community, which will foster a sense of pride, belonging and welcome.*

Adaptable: *Experience shows that street networks are the most enduring features of our towns and cities. It is therefore important to plan networks that allow for future adaptation.*

Resource Efficient: *New streets should use materials and systems that are durable and cost effective to construct and maintain including the use of recycled and local materials where appropriate.*

The guidance detailed in *Designing Streets* is entirely compatible with and supportive of achieving these six qualities. It has much to say about designing for ease of movement, but good streets also have a crucial role to play in the achievement of all of them. Indeed, poorly designed streets can make it impossible to achieve good design but also wider policy objectives.

To help achieve the qualities of streets outlined above, a number of key policy principles have been developed for *Designing Streets* following close consultation with key stakeholders. These principles, which lie at the heart of existing and emerging good practice examples in Scotland include the following which are particularly relevant in the context of the wider policy agenda covered in this paper:

Applying a user hierarchy to the design process with pedestrians first and motor vehicles last

Promoting a collaborative approach to the delivery of streets

Promoting the importance of the community function of streets as spaces for social interaction;

Promoting an inclusive environment that recognises the needs of people of all ages and abilities;

Promoting permeable and well connected networks of streets

Making streets distinctive, diverse and characterful

Use design to influence driver behaviour to deliver safe streets for all

Adopting a design led approach to parking

These principles reinforce a wider planning objective of delivering an appropriate mix of land uses incorporating key local services within walking distance of all residential areas.

Through the above principles and the more detailed guidance contained in Designing Streets the strong emphasis on increasing connectivity and accessibility of neighbourhoods should encourage activity on streets. This in turn will encourage greater use of more sustainable modes of travel such as walking and cycling which will have a positive impact on people's health and well being and also help meet wider transport and environmental objectives. Increased numbers of people results in a feeling of improved safety and security - streets that are overlooked further enhance the feeling of security. Reductions in land-take for streets along with greater use of resource efficient materials and systems can also help address climate change and other environmental agendas. These and other themes are developed further in the next section.

Designing Streets and Climate Change

Recent observations of key climate change indicators have confirmed that the worst-case scenarios from the Intergovernmental Panel on Climate Change (IPCC) may be realised, if not exceeded by the end of the century. Global surface temperatures, sea-level rise, ocean and ice sheet dynamics, ocean acidification and extreme weather events are now beyond natural variability. These findings were expressed in March 2009, at a meeting of world scientist in Copenhagen. The purpose of this meeting was to review and provide updated evidence on climate change in preparation to the December UN summit, which will look to deliver a post Kyoto agreement. Earlier models, and trends, have shown Scotland is growing warmer, wetter and with more extreme weather conditions. This will impact on land availability, eco-systems and increase pressure on infrastructure as well as the Scottish economy and the health of Scots ⁷.

Emissions from the transport sector in Scotland increased by 13.5 percent between 1990 and 2006, from 11.2 to 12.7 Mega tones of Carbon Dioxide equivalent (MtCO₂e). In 2006, road transport accounted for over 83 percent of Scottish transport emissions ⁸. However, travel is a vital part of life. It should be sustainable and sustaining ⁹. Climate change does provide an urgent need

to reduce emissions. However sustainable transport, defined as “meeting the needs of the present without compromising the needs of the future”¹⁰, means that it should also address congestion, road safety, encouraging more active lifestyles as well as the more sustainable modes of walking, cycling and public transport⁹.

The Scottish Government’s focus on climate change is demonstrated as priorities in the Economic Strategy¹¹ and National Transport Strategy (NTS)¹². The delivery of the Economic Strategy is through the five Strategic Objectives, see figure 1. The Greener Strategic objective contains targets to reduce emissions in the short term as well as in the longer term. These ambitions, and associated targets, are expressed in the Scottish Climate Change Bill. This Bill will introduce statutory targets to reduce emissions by 80 percent by 2050. This Bill aims to drive new thinking and solutions to build a sustainable low carbon economy.

Designing Streets questions existing concepts and function of streets as places to facilitate movement rather than the creation of a place that make positive contribution to the life of local communities. It provides a clear framework for the use of local systems and procedures to ensure that growth and change are managed, planned and delivered in an integrated and strategic way. It aims to deliver this through questioning existing processes and emphasis the importance of working in partnership. This will result in co-ordinated decision making to deliver quality design for local communities. As Designing Streets also places higher emphasis on more active modes of travel it will deliver on climate change targets, which is discussed further below.

Figure 1: Scottish Government's Strategic Objectives

Wealthier & Fairer Enable businesses and people to increase their wealth and more people to share fairly in that wealth.

Smarter Expand opportunities for Scots to succeed from nurture through to life long learning ensuring higher and more widely shared achievements.

Healthier Help people to sustain and improve their health, especially in disadvantaged communities, ensuring better, local and faster access to health care.

Safer & Stronger Help local communities to flourish, becoming stronger, safer places to live, offering improved opportunities and a better quality of life.

Greener Improve Scotland's natural and built environment and the sustainable use and enjoyment of it.

Scotland's National Transport Strategy was published in December 2006. It introduced three key strategic outcomes that support the purpose of the Government and respond directly to the five strategic objectives detailed in the Economic Strategy. The strategic outcomes within the NTS can be summarized as:

***Improve journey times and connections** between our cities and towns and our global markets to tackle congestion and provide access to key markets;*

***Reduce emissions** to tackle climate change; and*

***Improve quality, accessibility and affordability** of transport, to give people the choice of public transport and real alternatives to the car.*

Designing Streets as a companion to Designing Places ¹³ supports the six key qualities of successful place making as discussed above. Designing Streets applies the principle of a user hierarchy (pedestrian, cyclist, public transport user and finally motor vehicles). It also promotes networks of streets that provide a higher degree of permeability and connectivity to main destinations and a choice of routes to help support wider transport and environmental objectives. These principles reduce emissions and contribute to improvements in the quality and accessibility of alternatives to the car. By promoting the importance of streets as a space for social interaction, will help reduce traffic volumes helping to improve journey times and connections. Finally, by promoting the use of design led approaches to influence driver behaviour it aims to reduce vehicle speeds that deliver safer streets for all.

In Scotland, it is recognized that cars provide the users with the ability to travel in a way that is convenient, affordable and reliable ¹⁴. Further influences include weather conditions, access to a car, availability of parking and

distance to work. A number of other trends include the increased specialisation of employment; ease of travel; the wide variations in the cost of housing; concentration of employment on larger sites as well as the rise in the proportion of households with two or more workers contribute to increased car use. When tackling emissions from transport, all drivers and outcomes need to be considered.

The 2008 Scottish Environmental Attitudes and Behaviours ¹⁴, identified that 35 percent of respondents who knew about climate change thought that emissions from cars and road transport were the main cause of climate change. The research identified that the most common mode of transport for travel to work and grocery shopping was driving. The prominence of driving is also reflected in how often respondents use alternative modes, 18 percent use the bus most days and 3 percent use trains, whilst 27 percent never use the bus. These results are also reflected in Scottish Household Survey Travel Diaries ¹⁵ and Household Transport in 2007 ¹⁶. Short car journeys are of particular interest as it possible that many of these trips could be made by other means especially walking or cycling. 21 percent of car drives are less than 1 mile. 18 percent between 1 and 2 miles. 26 percent between 2 and 5 miles. The main purpose of car driver journeys less than 2 miles were for shopping (25 percent), 20 percent for commuting and 12 percent escorting someone to work or school ¹⁷.

At this point it is worth highlighting the importance and benefits of high quality built environments that are designed and built around the human scale as advocated by Designing Streets. It is now well recognised that the design of our neighbourhoods has a significant impact on modal choice and the behaviour of residents as well as those passing through. Safe and attractive streets are an important factor in encouraging active travel. More 'traditional' or 'walkable' neighbourhoods report about on average 30 minutes more walking each week. This increase does not appear to be linked to people more disposed to walking living in these areas, but it appears that the local environment conditions the behaviour of residents. In addition those living in walkable neighbourhoods tend to know their neighbours, trust others and be socially and politically active. Whilst low-density urban developments are associated with about 20 percent lower community activity ¹⁸.

Delivery of Designing Streets therefore helps to deliver on Healthier and Safer and Stronger Strategic Objectives. In terms of health, the Health Education Population Survey has found generally low levels of physical activity in Scotland, with most people failing to achieve recommended levels of activity (30 minutes, five times a week). Hand-in-hand with this is an increase in obesity - with the 2003 Scottish Health Survey estimating that 22 percent of men and 24 percent of women in Scotland are obese, an increase from 16 percent of men and 17 percent of women in 1995. As discussed above, improvements in the built environment can help individuals increase their level of physical activity and therefore contribute to tackling increasing levels of obesity in Scotland.

There is a need for more research on the link between the health agenda and place/street design but there is now some emerging evidence.

Dr Richard Jackson of the California State Public Health Authority has gathered data from the form of development that we live in and our health. The comparison between well connected networks and highways engineered layouts (cul-de-sacs) has shown an increase in diabetes if you live in the latter and that on average you will be 6lb heavier if you do not live in a connected street network!

Space Syntax (London) have also looked at the relationship between walking and the environment that you live in. Their (unpublished) work has shown that people in UK New Towns walk 35 percent less than those in historic UK towns.

Policy into Action

This linkage between key climate change and health policy agendas and street and place design is well illustrated in comparisons between street patterns in many historical Scottish communities and those in the cul-de-sac dominated suburbs of more recent new towns and extensions. There is a need for more research in this field but a good contrast is provided between tight, high density street network in for example one of the East Neuk of Fife fishing villages eg Pittenweem, St Monans or Crail and those within a new town such as Livingston or Glenrothes or in large extensions to towns eg Dunfermline. Car ownership is very high in many of these historic villages but despite this and additional high inputs of tourism traffic, these villages have good road safety records and yet do not conform at all with the accepted street design guidance of the 80's. Cross roads are a common feature in such villages but are strongly discouraged in the more traditional DB 32 based guidance still in use in many Scottish authorities. Cul-de-sacs on the other hand, a dominant feature in so many modern developments, are almost absent from these more traditional settlement patterns. Even the smallest courtyards also feature excellent pedestrian permeability and this is almost always overlooked by housing providing good natural surveillance and thus increases comfort and confidence for pedestrians.

Alder is one of the case studies explored in *Designing Streets*. As a village, Ardler is effectively a suburb within the north-west of Dundee. It was previously the Ardler housing estate.

The original design brief was produced in 1996/1997 and the Ardler regeneration scheme started in 1998 when Dundee City Council and the Ardler residents appointed Sanctuary Housing Association, Wimpey Homes and HTA Architects to deliver the regeneration of Ardler from a ring-fenced "estate" consisting of tower blocks and four-storey flats into a reintegrated development. HTA consultants were appointed to prepare the masterplan, produced in 1999, which aimed to create:

a hierarchy of road types;

routes linking Ardler back into the city;

a new focus within central Ardler; and

different neighbourhoods throughout Ardler.

When complete the Village will consist of 1,145 homes, of which there are 834 Housing Association (including 70 refurbished properties) and 311 homes for private sale. All of the high-rise blocks have been demolished.

A key element in designing sustainable places that deliver sustainable patterns of movement is an appropriate mix of land uses incorporating key local services within walking distance of all residential areas. This is well illustrated in Ardler with a Village Centre which contains the existing primary schools, Ardler Centre which includes a library, sports hall, cafe, and rooms for hire by community groups and banking facilities, the existing church, 3 retail units, 2 offices and workspace, a doctors' surgery, a health clinic and sheltered housing. Buses also run through the village every 15 minutes and buses run around the site every 8 minutes so residents are well catered for with public transport with quality bus infrastructure in the centre.

The scheme advocated innovative street solutions from an early stage, including reduced visibility curves, narrowing street widths, a continental-style roundabout and minimal signage. Pedestrian are given a greater priority at junction crossings through design measures; different approaches have been taken to allow this to happen but this is most successful within the later stages.

The Council acknowledged that their previous more traditional guidance had to be put to one side but that this was replaced by very close working between the roads engineers, the planners and the developer's teams from the outset. This was essential to achieve a design that met overall placemaking and sustainability objectives but also the need to consider future adoption and maintenance issues.

A variety of street scene has been created either through "traditional" streets with carriageway and footways, streets with tree planting, and shared surface streets. Cheap, easily maintained materials have been used throughout with the exception of the streetscape within the centre of the neighbourhood centre. Here, higher quality materials and street furniture have been used to help create a central heart to the development with a clear identity.

Streets in Ardler were the first in Dundee to drop visibility curves allowing a reduction in forward visibility from 35m to 20m. Further speed reductions have been achieved through reducing the road width in some areas to 4.1m.

Overall the scheme is considered to have successfully reduced speed through urban design measures and allowed more sustainable use of land through allowing building lines to come closer to corners.

The regeneration scheme was ahead of its time in engaging with local residents and the benefits of this are apparent in the sense of community that exists at Ardler Village. Feedback from the Ardler Village Trust would appear to demonstrate that a strong sense of community exists and that residents like living in the re-ordered urban environment.

The Ardler area has been completely transformed through this masterplan; it is an exemplar in how it has created a new connected development and “stitched” the area back into the city. Bold decisions have been made both in respect to street design which are very much in line with those proposed in Designing Streets. They are a natural demonstration of the very proactive approach to sustainable transport policy taken by Dundee City Council in its Local Transport Strategy and related initiatives such as the “Bringing Confidence into Public Transport” information and interchange projects.

Conclusion

The multi-layered approach, appropriate to the local context, as advocated in Designing Streets not only updates the link between planning and transportation but also provides viable walking and cycling routes and facilities. Through the application of Designing Streets in residential streets and lightly trafficked streets it aims to redress the current priority for many streets which is the movement, often dominated by the car, to that of a place to enjoy and spend time in.

The enthusiasm for taking forward the Designing Streets agenda both by many developers and their masterplanning consultants and by many local authorities is encouraging. The various case studies and other examples of good practice in Scotland featured in Designing Streets and indeed others currently being taken forward also demonstrate this progress. WSP, in association with EDAW, is also delivering training on street design for planners and roads engineers in local authorities funded through the Improvement Service which has been very well received and demonstrates the need for further such initiatives once Designing Streets is launched. This paper hopefully demonstrates the importance of Designing Streets within the wider Scottish policy agenda that should further reinforce the need for new and more holistic approaches in the design of streets and communities.

The agenda moving forward is very exciting one. Implemented with imagination and commitment with a real appreciation of local context and the needs and views of local residents and other users, the approaches outlined in Designing Streets can play a key role in tackling the critical transportation and wider climate change, health and other agendas that Scotland faces.

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