Designing Streets
A policy statement for Scotland

This is a summary of key points in Designing Streets, published by the Scottish Government 1 March 2010. It has been produced via the Scottish Public Realm Advice Network, which is run by volunteers in association with the PRIAN the Public realm information and advice network, and in support of ICE Scotland's Municipal Group and the Urban Design Group Scotland.

The aim is to provide a straight summary rather than an interpretation of the document.

Super Summary

Scottish Government policy in Designing Streets

- Street design must consider place before movement.
- Street design guidance, as set out in this document, can be a material consideration in determining planning applications and appeals.
- Street design should meet the six qualities of successful places, as set out in Designing Places.
  - **D**istinctive
  - **E**asy to get to
  - **W**elcoming
  - **A**daptable
  - **R**esource efficient
  - **S**afe and pleasant
- Street design should be based on balanced decision-making and must adopt a multidisciplinary collaborative approach.
- Street design should run planning permission and Road Construction Consent (RCC) processes in parallel.

All other content is guidance.

The guidance can be a material consideration in determining planning applications and appeals.

"Through the introduction of this policy, the Scottish Government seeks to ensure that specific interests are no longer promoted without an appreciation of the wider context."

"Balanced decision-making is at the core of this policy. Design-led solutions must be employed."

"The document underpins Scottish Ministers' resolve to move away from a prescriptive standards-based approach in order to return to one which better enables designers and local authorities to unlock the full potential of our streets to become vibrant, safe and attractive places."

"Good street design and the quality places that follow is of critical importance to sustainable development"

"Street design should be an "intelligent response to location rather than the rigid application of standards, regardless of context."

"PAN 76 New Residential Streets is replaced.
All previous guidance and standards based on DB32 are withdrawn.

Local authority design guidance which contains geometry based on DB32 should be revised."

Scope

"Designing Streets provides policy that should be followed in designing and approving all streets." P4

"Technical advice is aimed particularly at residential and lightly trafficked streets, …many of the key principles are also applicable to other types of street," for example rural and high streets. When considering busier streets, the movement function of the street may well become more significant or complex but this should be resolved through an integrated design approach and should not compromise the quality or the sense of place. P4

Roads are thoroughfares whose main function is to facilitate the movement of motor traffic. P4
Streets have important public realm functions beyond those related to motor traffic. P4

Part 1: General: Creating streets and places

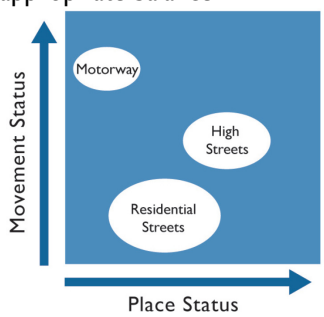
Policies

Street design must consider place before movement

Street design guidance, as set out in this document, can be a material consideration in determining planning applications and appeals.

Streets play a role in improving quality of life and sustainable patterns of behaviour.

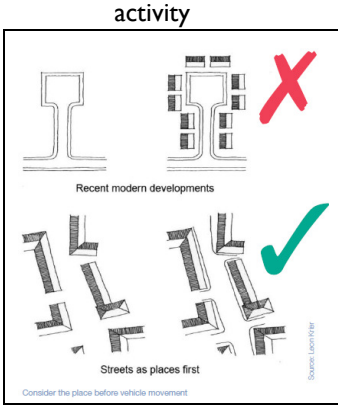
Place and Movement are two key functions performed by streets. Consider providing for movement alongside the place function of the street. Place is not subservient to movement – ensure a balance is achieved.
Place and Movement Matrix – may help in devising an appropriate balance



Consider when setting
- objectives
- design criteria
- design speed
- form of development and street pattern
- type of development

Sense of place is important. Factors promoting sense of place include

local distinctiveness;
visual quality; and
potential to encourage social and economic activity



NB this diagram on page 7 is about the design process – not about types of layout.

Do arrange the buildings for maximum effect, and only then work in the tracking and the carriageways.

Don't start from a road layout and then add buildings.

Part 2: Detail: Getting the design right

Policy

Street design should meet the six qualities of successful places as set out in Designing Places

D..E..W..A..R..S

Distinctive – Street design should respond to local context to deliver places that are distinctive

- ***block structure*** that is easily navigable, with landmarks and vistas
- ***context and character*** – local distinctiveness and responding to local history

Easy to move around - Streets should be easy to move around for all users and connect well to existing movement networks

- ***public transport*** – planned from the start
- ***connectivity*** for all modes of movement
- ***junctions –*** always designed around pedestrians and to suit the form and character of settlement – don't let standard junction designs dictate

Safe and pleasant – Streets should be designed to be safe and attractive places

- ***user hierarchy*** – with pedestrians first and private car users last
- ***inclusive street design*** – for all ages and abilities, street furniture located to avoid obstruction
- ***appropriate traffic speed*** – design used to influence speed (carriage way width, forward visibility,– key determinants (see TRL 661) also sense of place)
- ***street lighting*** –discrete, but adequate
- ***signs and markings*** – minimised

Welcoming

- ***Walkable*** street layouts connecting to local amenities - for all.
- ***Encouraging interaction*** between people

Adaptable

- ***Connected*** to surrounding street networks
- ***Parking*** – provided for flexibility and reduced visual impact
- ***Emergency and service vehicles*** – catered for without destroying the sense of place

Resource efficient

- ***Oriented*** for environmental benefit
- ***Drained*** using SUDS
- ***Utilities in their place*** – they should not be a design criteria
- ***Biodiversity*** through planting
- ***Materials*** – durable and attractive

Street design hierarchy

Designing Streets commends designers to use the following hierarchy in producing their designs

Street structure

Street layout

Street detail

Street structure

Pedestrians and Cyclists

Key considerations

- *Street user hierarchy should consider pedestrians first and private motor vehicles last*
- *Street design should be inclusive, providing for all people regardless of age or ability*

Crossings

Uncontrolled crossings – should have dropped kerbs.
Informal crossings may be achieved using paving/street furniture
Formal crossings – zebra crossings – signal controlled crossings

- Consider raising carriageway at crossings
- Consider pedestrian refuges and build outs to reduce crossing distance
- Avoid subways and footbridges

Junctions

Design junctions to conform to pedestrian desire lines, using small corner radii to slow vehicles (eg below 20/15mph) reduce pedestrian paths, and the need for pedestrians to look over their shoulders.

Footways

Unobstructed width of footway should be over 1.5-2.0 metres - there is no maxim width.
Gradients should be below 5% though topography may dictate otherwise.

Cyclists
- should generally be accommodated on the carriageway
- cycle lanes may be appropriate where traffic speeds and volumes are high

See also:
Cycling by Design 2010, alongside the Cycling Action Plan for Scotland, due for publication in April 2010 and will be available at www.transportscotland.gov.uk.

Local Transport Note 2/08 Cycle Infrastructure Design

Inclusive Design
See – Disability Discrimination Act 2005 for duties on public authorities
Guidance: PAN 78 – Inclusive Design,
DfT Inclusive Mobility,
Transport Scotland Disability Discrimination Act: Good Practice Guide for Roads

Connections to Wider Networks

Key consideration
Street patterns should be fully integrated with surrounding networks to provide flexibility and accommodate changes in built and social environments

Create permeable networks. Avoid the old style of loop and culs de sac developments that are dead-ends.
Movement framework – recommendation is to base this on the needs of pedestrians and cyclists

Connections within a place

Key consideration
Street design should provide good connectivity for all modes of movement and for all groups of street users, respecting diversity and inclusion

Design compact, walkable layouts.
Avoid one way streets owing to higher speeds and longer driving distances they tend to create.

Block structure

Key consideration
The urban form should be distinctive with landmarks and vistas that provide good orientation and navigation of an area.

Structure
Wide variety from formal grid or irregular
Perimeter blocks usually effective for residential areas
Consider Sustainable Urban Drainage System when devising layout and structure
Street patterns
Culs-de-sacs strongly discouraged – connected routes and spaces are advocated
Backs and Fronts
Private backs, public fronts advocated – exception is colony street/colony housing
Width – avoid rigid standards – typical widths of 10-18 metres for residential streets, consider activity and type of building. *(NB width and height in the 19th century Burgh Police Acts were specified – with sunlight the key objective*)
Length – consider visual interest, vistas, and speed
Buildings at junctions – design to can add interest
Squares and Spaces
Other layout considerations
- slowing traffic
- reducing noise such as from roads and railways
- orientation, variety and visual interest
- crime prevention
- boundary between public and private
- building lines -
- car parking

Walkable Neighbourhoods

Key consideration
Street layouts should be configured to allow walkable access to local amenities for all street users

5 minute walk – 400 metre radius
Possibility for higher density development at the heart.

Public transport

Key consideration
Public transport planning should be considered at an early stage in the design process

Bus routes - streets should generally be not less than 6 metres wide
Bus Stops
- high quality locations
- make easy to access,
- locate near junctions
- stops on the street – generally not in lay-by
- easy boarding facilities

Context and character

Key considerations
The requirements and impact of pedestrians, cycles and vehicles should be reconciled with local context to create streets with distinctive character

Opportunities should be taken to respond to, and to derive value from, relevant elements of the historic environment in creating places of distinctive character

Character comes from physical appearance, materials, and patterns of movement and social interaction

Street character types:

high street	mews	lane
mixed-use street	tenement block	loan
avenue	courtyard	wynd
crescent/circus	colony	
terrace/row	vennel	
cross		

Orientation

Key issue
Orientation of buildings, streets and open space should maximise environmental benefits

sun – maximise solar gain, south facing shops and public spaces, but also possibility of narrow intimate streets
shelter against prevailing wind

Street Layout

Achieving appropriate traffic speed

Key issue
Design should be used to influence driver behaviour to reduce vehicle speed to levels that are appropriate for the local context and deliver safe streets for all

20mph design speed should be the objective for residential streets

Speed controlling features are needed every 60-80m in order to achieve speeds of 20 mph or less, evidence suggests.

"Reductions in carriageway width are most effective in reducing driving speed."

Measures suggested:
- Psychology and perception
- Street dimensions
- Reductions in forward visibility
- Changes in priority/or no priority
- Physical features - vertical or horizontal deflection
- Materials

Stopping sight distances

The standard table is given, calculated using the Newtonian equation of motion for a single object under a constant rate of deceleration.

$$SSD = vt + \frac{v^2}{2a} + 2.4 metres$$

v = initial speed (new streets: design speed; existing streets 85th percentile wet weather speed)
t = reaction time - 1.5 seconds
a = rate of deceleration 4.41 m/s^2
2.4 metres is the length of the typical bonnet

Visibility splays

The Y distance is calculated using the above formula
The X distance in an urban area should normally not need to be more than 2.4 metres, and 2 metres may be appropriate in some low-speed situations.

TRL 661 found that restricting carriageway width and forward visibility may not be sufficient below design speeds of 20mph and supplementary measures may be needed.

"Parking in visibility splays in built-up areas is quite common, yet it does not appear to create significant problems in practice"

"occasional obstacles to visibility that are not large enough to fully obscure a whole vehicle or a pedestrian, including a child or wheelchair user, will not have a significant impact on road safety.

Commentary – Isn't reducing sightlines dangerous?
Some professionals have been uneasy about the reduced dimensions for sightlines advocated in Manual for Streets and Designing Streets in the belief that the extra stopping sight distance provides for extra safety. The research clearly demonstrates that long sightlines lead to higher vehicle speeds. With extra speed comes increase severity of injuries and reduced ability to avoid some types of collisions; In Designing Streets the safety margin comes from reducing vehicle speeds.

Also
there is no clear relationship between either X or Y distances and accidents.
Some professionals are over-focussed on accidents between vehicles. The majority of serious accidents on streets are between vehicles and pedestrians and cyclists. The best safety measure is reduced speed.

Junction types and arrangements

Key consideration
Junctions should be designed with the considerations of the needs of pedestrians first.
Junctions should be designed to suit context and urban form – standardised forms should not dictate the street pattern

Junctions that should be used in residential areas include:
- crossroads and staggered junctions;
- T and Y junctions;
- formal and informal squares; and
- mini roundabouts, but conventional roundabouts are not normally appropriate See Mini-roundabouts: Good Practice Guidelines

(the previous design advice had been to avoid cross-roads)
Junctions may be set within squares or speed tables
Design should reflect pedestrian desire-lines.
They are ideal locations for feature buildings.

Junction spacing – should follow on from decisions about block size
Turning areas can be avoided by networks of interconnected streets
Over-run areas – avoid in residential areas
Direct access – acceptable on 30mph roads up to 10,000 vehicles per day

Streets for people

Key consideration
Streets should allow for and encourage social interaction

Section covers the use of design to emphasise the "place" character, and encourage drivers to drive appropriately including:

Shared space – NB Shared space and level surfaces are different concepts
Home Zones
Level Surfaces
Ensuring inclusive design – the DfT work on Shared Space is awaited.

Surface treatments – block paving can reduce speeds by 2.5-4.5 mph

Integrating parking

Key considerations
Parking should be accommodated by a variety of means to provide flexibility and lessen visual impact

Cycle parking - LTN 2/08 Cycle Infrastructure design.19
Car parking – see the Scottish Planning Policy
Options include:
On-street parking
Provides useful community facility which can reduce traffic speeds, but also may visually dominate the street
Echelon or perpendicular parking, individual bays will need to be indicated or marked.
Parallel parking bay size
2 m wide and 6 m long
Echelon (or angled) parking bay size
Absolute minimum of 2.4 m wide by 4.8 m long
Desirable 2.5 m wide by 5.0 m long
Road width required for manoeuvring into 2.4 m width bay
45 degrees, 3.6 m
60 degrees, 4.2 m
90 degrees, 6.0 m
Off-street parking detail provided on design and adoption
Undercroft and basement parking
Front curtilage parking – best avoided for Streetscene reasons
Garages – need to be sized for current cars, may be used for general household storage and hence may not address car parking provision.
Parking for disabled people
Motorcycle parking - see Traffic Advisory Leaflet 02/02 and Guidelines for Motorcycling

Emergency and service vehicles

Key considerations
Street layouts should accommodate emergency and service vehicles without compromising a positive sense of place

Fire engines
Road width requirements:
- 3.7m carriageway (kerb to kerb) required for operating space at the scene of a fire.
- Simply to reach a fire, the access route could be reduced to 2.75m over short distances, provided the pump appliance can get to within 45m of all points within a dwelling.
- For narrower widths, consult the local fire safety officer.

Waste collection vehicles
Avoid designing streets to accommodate the largest possible waste collection vehicles at the expense of design for people. Achieve a balance.

Street detail

Drainage

Key considerations
Streets should use appropriate SUDS techniques as relevant to the context in order to minimise environmental impacts

See – SUDS for Roads
Sewers for Scotland
PAN 61: Planning and Sustainable Urban Drainage,31
The Flood Risk Management (Scotland) Act 2009

Planting

Key considerations
Street design should aim to integrate natural landscape features and foster positive biodiversity

The approval and maintenance of proposed planting within the street boundary will be required to comply with Sections 50 and 51 of the Roads (Scotland) Act 1984. Alternatives to formal adoption are available

Materials

Key considerations
Materials should be distinctive, easily maintained, provide durability and be of a standard and quality to appeal visually within the specific context

Reducing clutter

Key considerations
Signs and street markings should be kept to a minimum and considered early in the design process

Street furniture should be located for maximum benefit and to reduce pedestrian obstruction.
Street lighting should be as discreet as possible, but provide adequate illumination. Plan from outset, consider colour, purpose, scale, and possibility of mounting on buildings. Local authorities have the power to fix lighting to walls and buildings, Under Section 35 (5) of the *Roads (Scotland) Act.*
Centre lines are not an absolute requirement – absence may reduce traffic speed
Guardrailing – do not provide unless clear need identified

Part 3: Process: How to achieve better outcomes

Policies

Street design should be based on balanced decision-making and must adopt a multidisciplinary collaborative approach

Street design should run planning permission and Road Construction Consent (RCC) processes in parallel

A collaborative process between all parties is encouraged from the outset.

Designing Streets gives a suggested process for dealing with planning application and Road Construction Consent concurrently.

- Initial planning
- Detailed planning and street engineering consent - Stage 2
- RCC Detailed Design Submission – Stage 3

Street Engineering Review
Agreement of street layout including landscaping proposals in relation to the following:
– Vehicle tracking of layout (Particular attention to be given to refuse vehicles and pantechnicons)
– Approval of key visibility splays
– Speed control
– Agreement of drainage discharge rates
– Agreement of SUDS techniques
– Schematic drainage layout for foul and surface water including dimension requirements against building and landscaping
– Key materials palette
– Utilities strategy

Quality audit
Designing streets uses the definition of a quality audit as a composite series of audits by various professionals suggests a possible review by

Road safety audit – may be included as part of an overall quality audit, but is only a formal requirement for trunk roads - they are not mandatory for local authority roads Where an RSA is undertaken the design team still retains responsibility for the scheme and is should not be governed by the findings of the report. Risks identified should be rated for severity and likelihood of occurrence (see UK Guide on Highway Risk and Liability Claims 2009)

Annex

Risk and liability

There is little basis in law for actions on design liability on anything other than extreme professional negligence.

There are few successful cases – UK Guide on Highway Risk and Liability Claims (2009 edition)

Balanced decision making

Vision – there should be an overall vision for an area that reflects local and national policy and, where appropriate, the views of the local community
Objectives/Purpose – there should be a robust understanding of what the scheme is intended to do. This will normally include balancing:
movement and place;
risk and opportunity; and
ensuring sustainability.
Design – this should be worked up against the objectives
Quality audit – this is a review of the design against the objectives set.

Disability discrimination

The Disability Discrimination Act 2005 places local authorities under a duty to have regard to the need to:: promote equality of opportunity between disabled persons and other persons;

- eliminate discrimination that is unlawful under the 2005 Act;
- eliminate harassment of disabled persons that is related to their disabilities;
- promote positive attitudes towards disabled persons;
- encourage participation by disabled persons in public life; and
- take steps to take account of disabled persons' disabilities, even where that involves treating disabled persons more
- favourably than other persons.

See Statutory Code of Practice on the Disability Equality Duty Disability Rights Commission.

What are the adoption and maintenance Issues?

Brief commentary is provided on:

- Roads adoption – legal framework
- Road Bond Security
- Private streets
- Landscape features adoption
- Design standards for Road Construction Consent
- Private management companies/factors
- Approval processes for new streets
- Adoption of SUDS