WEST DUNBARTONSHIRE COUNCIL PLANNING GUIDANCE

Flood risk, Drainage and Road Construction Consent

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1 INTRODUCTION

This guidance has been produced by West Dunbartonshire Council (WDC) to assist developers and consulting engineers to produce Flood Risk Assessments (FRA's) and Drainage Impact Assessments (DIA's) to support planning applications and Road Construction Consent (RCC) applications.

A new development will require a number of permissions in addition to Planning Permission. Where new public roads are required a Road Construction Consent (RCC) is needed. As the planning and RCC process deal with different issues, the granting of Planning Permission does not imply an RCC will be issued, nor vice versa. Other permissions such as Structures Approval, permits for working on the road, and permissions from third parties such as Scottish Water and SEPA are also likely to be required.

Planning Permission may form a single application to include all the details or may be split into two parts known as (a) Planning Permission in Principle, followed by (b) Approval of Matters Specified in the Conditions. It is more common to use the two-stage process for larger housing applications.

This Guidance Document will be used by WDC for assessing the transportation, flooding and drainage aspects of development and proposals for all new developments. While the Guidelines are written for new developments on greenfield sites, the principles will also apply to the redevelopment of existing sites and for infill development in both rural and urban areas.

1.1 Flooding & Drainage Consents

To reduce the amount of flooding which affects new developments, national policies, and the Local Development Plan (LDP) now require additional information and evidence, including Flood Risk Assessment (FRA) and Drainage Impact Assessment (DIA), to accompany planning applications for developments and new roads. Section 3 sets out what is required to satisfy these requirements.

1.2 Roads Consents

Under the terms of Section 21 of the Roads (Scotland) Act 1984, any person other than a Roads Authority who wishes to construct a new road or extend an existing road must obtain Road Construction Consent (RCC). This may be granted by the Council as the Roads Authority and road construction works may only be undertaken while the RCC remains valid.

This document sets out the guidance and standards for the provision of transport infrastructure, including the design and construction of all new roads, associated with development proposals, within the WDC area.

These Guidelines aim to ensure new roads are safe whilst, at the same time, ensuring new developments also provide transport facilities that are convenient for all types of road user as well as creating a high quality environment. The Guidelines also apply to a developer who proposes alterations to an existing public road. The Guidelines also sets out the procedures to be followed to ensure that new roads achieve acceptable standards so that the Council can subsequently adopt them as suitable public roads.

The Council in its role as Roads Authority will advise:

- whether the location is suitable for the type of development in relation to the local transport network infrastructure, and existing or proposed community facilities, such as shops and schools;
- whether the proposed layout is acceptable and conforms with relevant local design guidance, including the location of car and cycle parking provision, including vehicle charging infrastructure and accessible parking bays;
- whether the development is appropriate in the context of relevant national transport policy;
- which elements should be included in the Travel Plan;
- if there are significant features for consideration in the Quality Audit, such as desire-lines for pedestrian and cycle movements;
- if there are significant features for consideration in the Road Safety Audits;
- appropriate contributions towards mitigation on the strategic transport network;
- whether any local mitigation is required, external to the development site.

1.2.1 Road Construction Consent

The Road Construction Consent process considers more technical aspects such as:

- specifications, alignments, geometry and junction arrangements of the roads and paths;
- proposed speed limits, and traffic calming measures required to keep traffic speeds at an appropriate level;
- form of any structures required to support or protect the roads and paths;
- provision of road drainage, including location and types of Sustainable Drainage Systems (SuDS);
- proposals for future maintenance of new roads, paths, open space and SuDS features;
- provision of road lighting;
- location of underground services.

1.3 Process for Planning, Road Consents and Flood Risk/ Drainage Consent

Figure 2.1 provides a summary of the planning process. The role and interactions from WDC's Planning and Development Services and Flood Risk & Roads Services are illustrated. Planning and Development staff will lead the process.

Approval and sign off of any street lighting design, SUDs design, Traffic Signal design and Structures decision (as appropriate) will be required before a final RCC or other authorisation will be issued.

It should be noted, to avoid possible abortive work, it is this Council's policy that the RCC shall not be granted until such time as planning permission with associated conditions is granted. Therefore, whilst an RCC application may be submitted in tandem with an application for planning permission the RCC shall not be processed until the layout of the development has been agreed in principle by the Head of Planning.

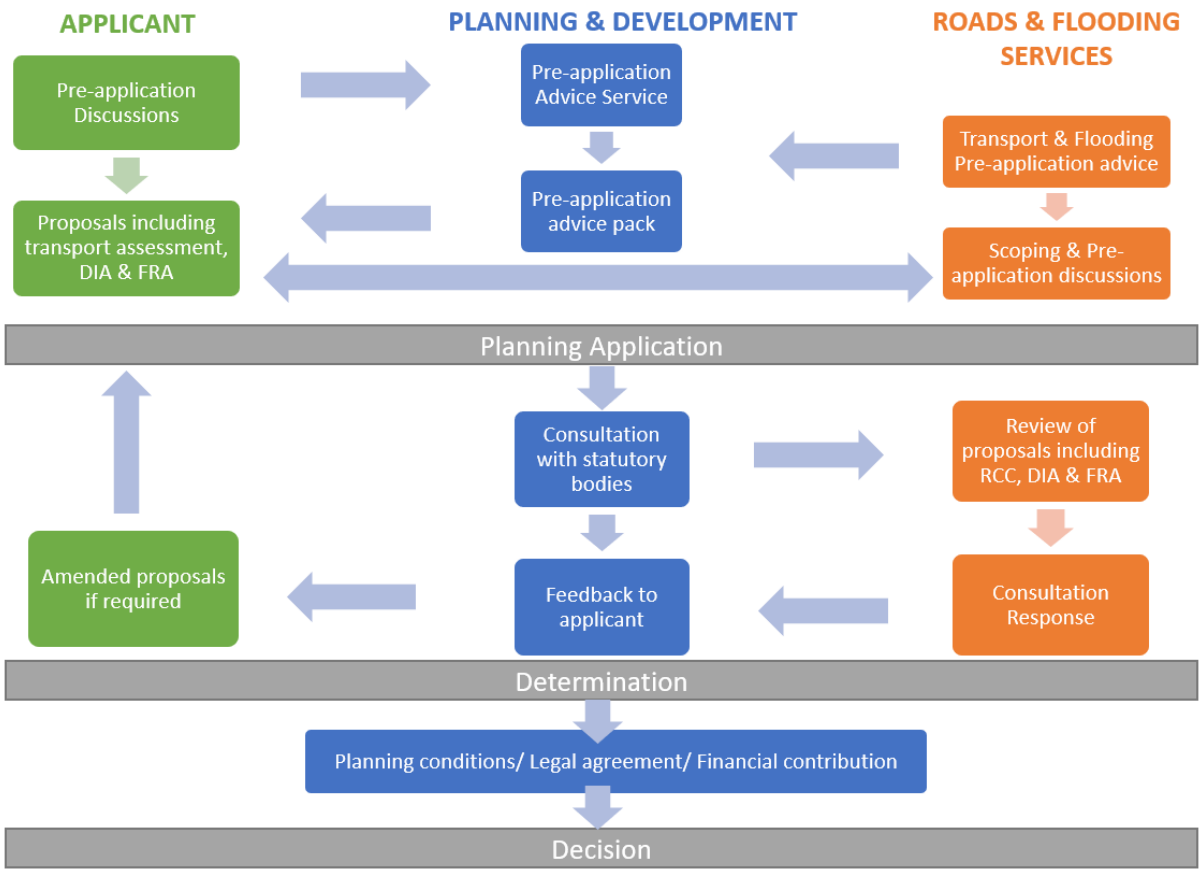


Figure 1-1 Interaction between Planning, Roads, Flooding and Drainage

2 POLICY AND PROCEDURES

This document does not seek to reproduce existing guidance but seeks to complement existing planning/ design guidance and direct applicants to the relevant resources to produce compliant, comprehensive, clear and concise assessments/ designs required.

2.1 National Planning Framework 4 (NPF4)

This guidance considers Scotland's fourth National Planning Framework. The framework brings together long-term spatial strategy with a comprehensive set of national planning policies. By applying these spatial principles, the national spatial strategy will support the planning and delivery of the following key themes:

- Sustainable places, where we reduce emissions, restore and better connect biodiversity;
- Liveable places, where we can all live better, healthier lives; and
- Productive places, where we have a greener, fairer and more inclusive wellbeing economy.

2.1.1 Policy 13 Sustainable Transport

Policy 13 of NPF4 relates to the design of transport infrastructure and aims to encourage, promote and facilitate developments that prioritise walking, wheeling, cycling and public transport for everyday travel and reduce the need to travel unsustainably.

Proposals to improve, enhance or provide active travel infrastructure, public transport infrastructure or multi-modal hubs will be supported. This includes proposals:

i. for electric vehicle charging infrastructure and electric vehicle forecourts, especially where fuelled by renewable energy;

ii. which support a mode shift of freight from road to more sustainable modes, including last-mile delivery;

iii. that build in resilience to the effects of climate change and where appropriate incorporate blue and green infrastructure and nature rich habitats (such as natural planting or water systems).

Development proposals will be supported where it can be demonstrated that the transport requirements generated have been considered in line with the sustainable travel and investment hierarchies and where appropriate they:

i. provide direct, easy, segregated, and safe links to local facilities via walking, wheeling and cycling networks before occupation;

ii. will be accessible by public transport, ideally supporting the use of existing services;

iii. integrate transport modes;

iv. provide low or zero-emission vehicle and cycle charging points in safe and convenient locations, in alignment with building standards;

v. supply safe, secure and convenient cycle parking to meet the needs of users and which is more conveniently located than car parking;

vi. are designed to incorporate safety measures including safe crossings for walking and wheeling and reducing the number and speed of vehicles;

vii. have taken into account, at the earliest stage of design, the transport needs of diverse groups including users with protected characteristics to ensure the safety, ease and needs of all users; and

viii. adequately mitigate any impact on local public access routes.

Development proposals for significant travel generating uses will not be supported in locations which would increase reliance on the private car, taking into account the specific characteristics of the area.

Development proposals which are ambitious in terms of low/ no car parking will be supported, particularly in urban locations that are well-served by sustainable transport modes and where they do not create barriers to access by disabled people.

Development proposals for significant travel generating uses, or smaller-scale developments where it is important to monitor travel patterns resulting from the development, will only be supported if they are accompanied by a Travel Plan with supporting planning conditions/obligations. Travel plans should set out clear arrangements for delivering against targets, as well as monitoring and evaluation.

Development proposals that have the potential to affect the operation and safety of the Strategic Transport Network will be fully assessed to determine their impact.

Where it has been demonstrated that existing infrastructure does not have the capacity to accommodate a development without adverse impacts on safety or unacceptable impacts on operational performance, the cost of the mitigation measures required to ensure the continued safe and effective operation of the network should be met by the developer.

While new junctions on trunk roads are not normally acceptable, the case for a new junction will be considered by Transport Scotland where significant economic or regeneration benefits can be demonstrated.

New junctions will only be considered if they are designed in accordance with relevant guidance and where there will be no adverse impact on road safety or operational performance.

2.1.2 Policy 22 Flood Risk and Water Management

Policy 22 of NPF4 deals with flood risk and water management. It aims to strengthen resilience to flood risk by promoting avoidance as a first principle and reducing the vulnerability of existing and future development to flooding. The policy further aims to use water resources efficiently and sustainability and adopt a wider wise of natural flood risk management.

Development proposals at risk of flooding or in a flood risk area will only be supported if they are for:

i. essential infrastructure where the location is required for operational reasons;

ii. water compatible uses;

iii. redevelopment of an existing building or site for an equal or less vulnerable use; or

iv. redevelopment of previously used sites in built up areas where the LDP has identified a need to bring these into positive use and where proposals demonstrate that long-term safety and resilience can be secured

The protection offered by an existing formal flood protection scheme or one under construction can be considered when determining flood risk. In such cases, it will be demonstrated by the applicant that:

- all risks of flooding are understood and addressed;
- there is no reduction in floodplain capacity, increased risk for others, or a need for future flood protection schemes;
- the development remains safe and operational during floods;
- flood resistant and resilient materials and construction methods are used; and
- future adaptations can be made to accommodate the effects of climate change.

Additionally, for development proposals meeting criteria part iv), where flood risk is managed at the site rather than avoided these will also require:

- the first occupied/utilised floor, and the underside of the development if relevant, to be above the flood risk level and have an additional allowance for freeboard;
- and that the proposal does not create an island of development and that safe access/ egress can be achieved.

Small scale extensions and alterations to existing buildings will only be supported where they will not significantly increase flood risk.

Development proposals will:

- not increase the risk of surface water flooding to others, or itself be at risk.
- manage all rain and surface water through sustainable urban drainage systems (SUDS), which should form part of and integrate with proposed and existing blue green infrastructure. All proposals should presume no surface water connection to the combined sewer;
- seek to minimise the area of impermeable surface.

Development proposals which create, expand or enhance opportunities for natural flood risk management, including blue and green infrastructure, will be supported.

2.2 Transport Infrastructure Policies

All new transport infrastructure must comply with the guidance documents set out in Table 2-1; this is not an exhaustive list. The references to guidance within this document have been made as up to date as possible, however applicants should ensure they review guidance from the relevant bodies. The National Roads

Development Guide and Designing Streets are the key documents which will inform much of the required designs and assessments.

Table 2-1 Transport Infrastructure Policy documents

Legislation/Policy*	Link
National Planning Framework 4	https://www.gov.scot/publications/national-planning-framework-4/documents/
West Dunbartonshire Local Development Plan (LDP)	https://www.west-dunbarton.gov.uk/council/key-council-documents/local-development-planning/development-plan/
National Transport Strategy	https://www.transport.gov.scot/media/47052/national-transport-strategy.pdf
Designing Streets	https://www.gov.scot/publications/designing-streets-policy-statement-scotland/
National Roads Development Guide	http://scotsnet.org.uk/documents/NRDG/national-roads-development-guide.pdf
Design Manual for Roads and Bridges	https://www.standardsforhighways.co.uk/dmrb/
Cycling by Design	https://www.transport.gov.scot/media/50323/cycling-by-design-update-2019-final-document-15-september-2021-1.pdf
Roads for All	https://www.transport.gov.scot/media/30228/j256264.pdf
Inclusive Mobility	https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1044542/inclusive-mobility-a-guide-to-best-practice-on-access-to-pedestrian-and-transport-infrastructure.pdf
The SuDS Manual	http://www.scotsnet.org.uk/documents/NRDG/CIRIA-report-C753-the-SuDS-manual-v6.pdf
Traffic Signs Regulations and General Directions (2016)	https://www.legislation.gov.uk/uksi/2016/362/contents/made
The Traffic Signs Manual	https://www.gov.uk/government/publications/traffic-signs-manual
Well-managed Highway Infrastructure (Department for Transport, 2016)	https://www.ciht.org.uk/media/17087/well-managed_highway_infrastructure_combined_-_28_october_2016_amended_15_march_2017_-3.pdf

2.3 Flood Risk & Drainage Policies

All drainage assessments and flood risk assessments must comply with criteria set out above and with the guidance documents summarised in Table 2-2. This is not an exhaustive list but covers key standards and guidance which must be adhered to for planning approval. The references within this document have been made as up to date as possible, however applicants should ensure they review the latest version of guidance from the relevant bodies. Unless otherwise specified, any reference to a Guidance, British Standard or DMRB Guidance means the latest Guidance/ Standard.

Table 2-2 Flooding & Drainage Policy documents

Legislation/Policy*	Link
National Planning Framework 4	https://www.gov.scot/publications/national-planning-framework-4/documents/
Flood Risk Management (Scotland) Act 2009	https://www.legislation.gov.uk/asp/2009/6/contents
West Dunbartonshire Local Development Plan (LDP)	https://www.west-dunbarton.gov.uk/council/key-council-documents/local-development-planning/development-plan/
SEPA's "Technical Flood Risk Guidance for Stakeholders"	https://www.sepa.org.uk/media/162602/ss-nfr-p-002-technical-flood-risk-guidance-for-stakeholders.pdf
SEPA's "Climate Change Allowances for Flood Risk Assessment in Land Use Planning"	https://www.sepa.org.uk/media/594168/climate-change-guidance.pdf
SEPA's "Flood Risk Standing Advice for Planning Authorities and Developers"	https://www.sepa.org.uk/media/534740/sepa-flood-risk-standing-advice-for-planning-authorities-and-developers.pdf
SEPA's Flood Risk and Land Use Vulnerability Guidance	https://www.sepa.org.uk/media/143416/land-use-vulnerability-guidance.pdf
Flood risk: planning advice	https://www.gov.scot/publications/flood-risk-planning-advice/
Water Assessment and Drainage Assessment Guide, Sustainable Urban Drainage Scottish Working Party (SUDSWP)	Water drainage assessment guide (sepa.org.uk)
The SuDS Manual	
Planning Advice Note 61: Sustainable urban drainage systems	https://www.gov.scot/publications/pan-61-sustainable-urban-drainage-systems/

Note: some of these policy documents are being updated in response to NPF4. It is the applicant's responsibility to ensure they are utilising the most up to date guidance.

3 FLOODING GUIDANCE

The proposed development should be assessed for risk from all sources of flooding, including fluvial, pluvial, tidal, groundwater, sewer inundation, and infrastructure failure such as a canal or flood protection structure. Historic flooding events and any existing flood alleviation measures should be detailed to help determine the flood risk of the proposed site.

It is recommended that SEPA flood maps are used to provide a general understanding of the flood risk within the area. The SEPA flood extents are indicative for use at a strategic scale as they have been produced at the using national datasets and a consistent methodology. A number of limitations exist such as pluvial mapping[1] not accounting for interaction with the sewer network and river mapping[2] not showing very small watercourses i.e. where the area draining to the river is less than 3km^2.

The maps are intended for use at a community scale, informing flood risk management planning. It is therefore inappropriate for the SEPA Flood Maps to be used to assess flood risk to an individual property or street level, or to be used as the sole basis for Flood Risk Assessment.

Details should be provided on surrounding watercourses including photographs of key features, such as bridges and culverts. This will help inform whether a Flood Risk Assessment (FRA) is required.

WDC will require an FRA as supplementary evidence to support a planning application if the site has one of the following;

- proposed development is within 20 metres of a watercourse/drainage ditch that it poses a realistic risk;
- historic flooding has been recorded in the area;
- SEPA flood maps show the site is at risk of flooding from any source;
- the development is considered a major development, as defined under the Town and Country Planning (Hierarchy of Developments) (Scotland) Regulations 2009.

3.1 FRA Requirements

The FRA must consider all sources of flooding and demonstrate how flood mitigation methods will be managed. The FRA should be carried out in compliance with the technical guidance provided in Section 2.3 with particular reference to SEPA's "Technical Flood Risk Guidance for Stakeholders".

The FRA will be required to demonstrate that any flood risk associated with the development can be managed now and, in the future, considering climate change and illustrate how the development will not increase the risk of flooding elsewhere. The FRA should be produced under the direction of a member of the relevant chartered professional institution with experience of flood risk assessment and management.

[1] https://www.sepa.org.uk/media/594528/surface_water_summary_v3

[2] https://www.sepa.org.uk/media/163406/river_flooding_summary.pdf

3.1.1 Types of Flood Risk Assessment

The detail required for an FRA is dependent on the complexity of the flood risk mechanisms, uncertainty, the site characteristics, and the severity of the flood risk. Guidance on the appropriate levels of FRA required is described in CIRIA C624 under Level 1, Level 2 or Level 3. This hierarchy should be followed when considering flood risk at the proposed development and this should inform whether a more detailed level of FRA is required.

- **Level 1, Screening** – should provide a general indication of the potential flood risk to the site and identify whether there are any flooding or surface water management issues that may warrant further consideration or may affect the feasibility of a development. The purpose of the screening is to identify all sources of flood risk and whether any further analysis is required. It may also confirm that the site is at low risk of flooding from all sources and that no further assessment is required.
- **Level 2, Scoping –** should assess the quantity and quality of existing flood risk data and provide a qualitative appraisal of the flood risk posed to a site. It should also consider potential impacts on flood risk elsewhere. Possible flood risk mitigation measures to reduce flood risk to acceptable levels should be recommended.

Level 3, Detailed FRA – where Level 1/Level 2 FRAs are insufficient to rule out flood risk further quantitative analysis is required. Generally this will involve catchment analysis (hydrology) and hydraulic calculations or flood modelling to clarify the source, pathway and consequence (frequency and magnitude) of flooding which may affect the site. The FRA should assess the development's impact on baseline flood risk and recommend mitigation measures to ensure there is no flood risk to the development or increased flood risk the surrounding area. Early engagement with WDC and SEPA is recommended to discuss the level of FRA required, prior to submitting a planning application. The checklist provided in Appendix A details the content required.

The FRA must demonstrate the following:

- the development will not be at risk or susceptible to damage due to flooding within the parameters set in the Local Plan and SEPA's Flood Risk and Land Use Vulnerability Guidance[3]. Different design flood events should be considered depending on the type of development:
    - General developments should not be at risk in a 0.5% AEP+CC design event. Examples include, but are not limited to, housing development and shopping centre etc;
    - Most Vulnerable category developments should not be at risk in the 0.1% AEP+CC. Examples include, but are not limited to, emergency services, nurseries and care homes;
- normal operation of the development will not be susceptible to disruption because of flooding from the appropriate event;
- safe access to and from the development will be possible during the appropriate design flood event;
- the development will not increase flood risk anywhere else;

[3] SEPA (2018), Flood Risk and Land Use Vulnerability Guidance

- the development will provide for safe access for maintenance of watercourses. Maintenance and operation of flood defences will be as required by WDC.
- the development will not lead to the degradation of the environment;
- the development will meet all the outlined criteria for its entire lifetime including consideration for climate change.

To complete a comprehensive assessment the developer must:

- be aware of all the relevant planning policy and legislation;
- complete technically accurate calculations;
- follow professional guidelines and procedures;
- certify that flooding will not pose a risk to the development;
- complete the required Compliance and Independent Check Certificate;
- submit evidence of appropriate Professional Indemnity insurance

3.2 Hydrology and Hydraulic Modelling

As noted in Section 3.1.1, when a detailed FRA is required, methods should be applied in accordance with available guidance, including the advice outlined in this document and SEPA's Technical Flood Risk Guidance for Stakeholders[4]. Other literature and guidance could be used for reference, and up-to-date industry standards as appropriate for the site in question should be followed. All available local data and information of relevance should be utilised for any assessment. A precautionary approach should be applied, and particular attention paid to uncertainties and model sensitivity.

Reference should be made to Section 4 of SEPA's Technical Flood Risk Guidance for Stakeholders to inform hydrological approaches. Rainfall estimation for use in hydraulic modelling of watercourses should be computed using an up-to-date method such as REFH2 or FEH 2022 and an allowance for climate change should be added. Applicants should clarify the method used to estimate design rainfall and demonstrate why alternative methods are more appropriate, if alternatives (such as FSR, FEH99, REFH2 or FEH13 rainfall data) are used.

Reference should be made to Section 5 of SEPA's Technical Flood Risk Guidance for Stakeholders to inform hydraulic modelling approaches. A model of the surrounding rivers and tidal sources may be required to effectively assess the flood risk. Modelling results should be provided which indicate expected flood levels for different design events and the flood envelope surrounding the watercourse. If a model is required, justification must be given as to the type of model used (1D, 2D, linked 1D-2D), and must be calibrated and verified where possible. Models should be accompanied by appropriate sensitivity analysis. Flood extents should be provided

[4] SEPA, Technical Flood Risk Guidance for Stakeholders - SEPA requirements for undertaking a Flood Risk Assessment, Version 13 June 2022

for a range of flood events including the 1% AEP and 0.5% AEP event, with an allowance for climate change. Initial consultation should be held with WDC and SEPA to obtain agreement with approach in principle to avoid rework and delays.

If there are hydraulic structures located upstream or downstream of the site, blockage scenarios should be included within the analysis. This will highlight any overland flows which may result due to blockages or indicate additional flood plain storage upstream of the structure which may not have previously been accounted for.

3.3 Estuary/ Tidal

Reference should be made to Section 6 of SEPA's Technical Flood Risk Guidance for Stakeholders to inform coastal assessments. Where the site's location, SEPA coastal flood maps or historic flood records indicate there is an inherent tidal risk to the proposed development site, then this should be fully accounted for in the FRA. Modelling of tidal waters may be necessary to fully understand the risk to the development. The applicant should identify any available local tidal gauge data and assess its suitability. Wider coastal processes should always be considered when assessing coastal flood risk, such as coastal erosion, storm surges and wave effect.

In the absence of local data, Environment Agency Coastal Flood Boundary Data[5] should be reviewed against pre and post development site topography or within a hydraulic model depending on the complexity of the risk.

3.4 Climate Change Allowances

SEPA's Climate Change Allowances for Flood Risk Assessment in Land Use Planning[6] recommends certain climate change uplifts (CC) to be applied to in fluvial flood risk assessments. Specifically here in the Clyde River Basin District the following applies:

- a peak river flow climate change uplift of 49% for river catchments greater than 50km^2;
- a rainfall intensity uplift of 41% for catchments smaller than 30 km^2;
- or the greatest of the two uplifts for catchments between 30 and 50 km^2.

The Guidance also requires climate change to be considered where tidal flood risk is an issue. A +0.85m uplift is to be added to calculated sea levels based on the outputs from UK Climate Projections 2018 (UKCP18). This uplift represents the potential cumulative sea level rise predicted to occur between 2017 to 2100.

At the time of writing, UKCP18 has only been brought to the local scale up to 2100. However, given that sea level rise will continue well beyond the end of the 21st century, we require that an additional allowance of 0.15m per decade after the year 2100 be applied where the design life of a development is known to extend beyond that date.

[5] https://www.gov.uk/government/publications/coastal-flood-boundary-conditions-for-uk-mainland-and-islands-design-sea-levels

[6] SEPA (2023), Climate Change Allowances for Flood Risk Assessment in Land Use Planning

3.5 Finished Floor Levels (FFL)

Properties should be protected from flooding through the setting of appropriate finished floor levels within the development. The FFL should be set at least 600mm above the floodwater level or the nearby watercourse/ water body level. This represents a freeboard level which accounts for uncertainty in hydrology and hydraulic modelling. Freeboard is separate from any climate change uplift. In other words, freeboard and climate uplifts needs to be added separately to flood levels to determine required FFL.

New developments located behind a flood defence scheme must have their finished floor level at or above the peak flood level (including an allowance for climate change) with the required freeboard duly considered.

Properties which do not achieve the minimum required finished floor level to minimise flood risk must be flood resilient. This may mean the use flood resistant and flood resilient building techniques and products in the design.

3.6 Compensatory Storage

If the proposed development requires land raising within the functional floodplain, SEPA guidance on compensatory storage areas in the Technical Flood Risk Guidance document should be followed.

3.7 Development protected by a formal Flood Protection Scheme

For developments behind an existing or planned formal Flood Protection Scheme (FPS) reference should be made to SEPA Planning Information Note 4[7]. SEPA's Flood Risk and Land Use Vulnerability Guidance is an essential reference to determine requirements. Certain developments may be acceptable behind an existing or planned formal scheme ***in a built up area***. These fall into four main categories:

1. Water compatible developments and essential infrastructure that is designed to remain operational during flood events; or,
2. Development that does not increase overall flood risk; or,
3. The principle of the development has been established in an up-to-date, adopted development plan (including the National Planning Framework) with due consideration of flood risk; or,
4. The scheme is built to the minimum appropriate standard for the land use vulnerability category of the proposed development as defined in Table 3-1.

It is recommended that any development protected by a formal scheme is built to a water resilient design and has adequate evacuation procedures in place that are appropriate to the level of risk and use.

Developments that introduce most vulnerable uses e.g. care homes, hospitals, schools etc. are not considered acceptable behind a flood protection scheme. The consequences of any residual flood risk would be too significant for developments within this land use category.

[7] SEPA, Planning Information Note 4, SEPA Position on development protected by a Flood Protection Scheme, July 2018

Table 3-1 Land Use Vulnerability Minimum Appropriate FPS Standard of Protection

Land use vulnerability classification	Minimum appropriate standard
Water compatible uses e.g. docks, amenity open space, pumping stations	No minimum standard
Essential infrastructure (designed and constructed to remain operational during a flood)	No minimum standard
Least vulnerable uses e.g. shops, professional services, restaurants, general industry etc.	0.5 % AEP (200 year) standard of protection
Highly vulnerable uses e.g. dwelling houses, hotels, hostels etc.	0.5 % (200 year) plus climate change standard of protection

3.8 Access and Egress

Access and egress to the site must be maintained during a design flood event. The results of hydraulic modelling and drainage network modelling (discussed below) should indicate whether the access and egress will be affected by flooding. The developer must demonstrate that access and egress will not be compromised due to a range of flood types. Any mitigation measures should be identified and appropriately explained. The report should also outline the residual risk after mitigation measures have been introduced.

4 DRAINAGE IMPACT ASSESSMENT

A Drainage Impact Assessment (DIA) is a report, prepared by the developer, assessing how surface water will be drained from the site and how attenuation and treatment requirements will be satisfied. Calculations and drawings should be submitted to show how surface water will be routed from source to receiving watercourses, sewers or to the ground via infiltration, and highlight how any attenuation and treatment requirements will be met.

A Drainage Impact Assessment not required where:

- developments have total proposed impermeable surface area of less than 1000 m²;
- single residential properties and developments which are effectively a sub development of a larger development area for which a drainage impact assessment has already been submitted.

Drainage design is a complex process so it is important that all drainage matters are considered at an early stage in the design process. It is therefore required that a DIA is submitted with the first planning application, whether it be a full planning application or application in principle, for any development which requires waste or surface water to be drained. It is also recommended that a pre-application meeting takes place for larger schemes and, when located in sensitive areas, discuss plans for the site and any potential drainage issues.

For large developments where there is an intention to separate the development into zones, which are to be constructed at different stages, or by different developers, it is a requirement that a drainage master plan covering the whole area of development be submitted.

Where drainage is to be adopted by Scottish Water reference Sewers for Scotland Technical Guidance [8] should be applied in design.

4.1 Hydrology

An up-to-date method for estimating design rainfall should be used. FEH 2022 rainfall data the most recent up to data available. REFH2 or FEH calculation of rainfall should be used.

Catchment delineation should consider the potential for surface water to reach the site from adjacent higher ground. This additional storm water should be considered in drainage designs.

Adequate rainfall estimation is necessary for reliable modelling of drainage networks and all components should be calculated prior to modelling all aspects of the drainage system. It is recommended in SEPA's Climate Change Allowances for Flood Risk Assessment in Land Use Planning that an allowance of 41% is used to account for increases in rainfall intensity due to climate change.

[8] Scottish Water, Sewers for Scotland 4, 2018

4.2 Drainage Layout Drawing

A drainage layout drawing should be submitted showing the entire proposed network and location of discharge. The drawing should clearly show the location of all manholes within the development and their corresponding manhole number in drainage calculations. SuDS features should be shown on this plan showing how they are connected to the drainage system to help inform the area draining to each feature. The location of end of system discharge should also be shown on the layout drawing.

Where applicable, a pre and post development topographic plan is required that will provide details of the proposed earthworks and topographic changes. Pre and post development flow paths should be provided to show the change in surface water flow behaviour across the site after construction. Surface water flows on site should be captured by on-site drainage or be directed away from properties. The amount of surface water flowing away from the site should not increase post-construction since this will increase flood-risk elsewhere, such as to neighbouring properties.

4.3 Attenuation

The proposed discharge rate from a development site should be no greater than the lesser of:

- 1:2-year return period greenfield runoff rate; or
- 4.5 l/s/ha of impermeable or positively drained area.

In order to attain these flow rates, surface water should be attenuated within the development boundary. Should overland flows result as part of the drainage strategy then these must also be retained within the property boundary up to the 1:200-year return period storm event (including an allowance for climate change).

The DIA must confirm the volume of storage provided and confirm that the 3.33% AEP storm event (including an allowance for climate change) remains contained within the SuDS and drainage network. The DIA must confirm that the 1:200-year return period storm event (including an allowance for climate change) remains on site and does not pose a flood risk to sensitive receptors. SuDS must not be placed within an area at risk of flooding, for example adjacent to a watercourse.

4.4 Drainage Calculations

Drainage calculations can be conducted either by hydraulic modelling software or by hand. If using hydraulic modelling software, the software parameters and outputs should be included within the DIA. This should include details of all underground pipework including rainfall data, manhole and pipe schedules (to mAOD) and pipe surcharge reports for all underground pipe connections. The manholes in the calculation should be cross-referenced to the drainage drawing to enable interpretation.

Calculations should be provided showing the water levels of critical durations across the proposed drainage network. Modelling results for the 0.5% AEP+CC, 1% AEP+CC and 3.33% AEP+CC flood events should all be provided. The results should show no flooding of the network during the 1% AEP+CC flood event. The drainage calculations should be checked for a range of 0.5% AEP+CC storm events to determine any flooding resulting from surcharging of the system.

Any exceedance flows should be dealt with appropriately, ensuring that flows are directed away from properties, whilst not leading to an increase in flood risk for neighbouring properties. Evidence should be provided for the 0.5% AEP+CC event showing that there will be no flooding within 300mm of the lowest garden ground level or 600mm of property FFLs. If the development is classed as civil or critical infrastructure the 1:1000-year return period event (including an allowance for climate change) should also be included.

The DIA should also clarify how exceedance will be contained within the site and how it will be drained once the event has subsided. Dry pedestrian access and egress must be maintained at all times during events up to the 1:200-year return period event (including an allowance for climate change). Where flooding is predicted on the road, the applicant must demonstrate that emergency vehicle access can be safely maintained.

A sensitivity analysis exercise should be conducted to understand how the drainage network responds to blockage and exceedance scenarios and adjustments should be made to the design to make it more robust if possible.

Should the calculations be undertaken by hand then account must be taken of the staged discharge relationship which applies to orifices and vortex flow control devices. In order to provide a conservative estimate, a halved discharge rate must be applied when calculating the required storage volume.

4.5 Discharge Location

The following hierarchy should be used to prioritise how surface water is discharged from a site:

- water used as a resource for natural processes such as evaporation and transpiration; or reuse of surface water via rainwater harvesting or similar techniques;
- discharge into the ground, via infiltration;
- discharge to a water body (e.g. watercourse);
- discharge to a surface water sewer, highway drain or another drainage system;
- discharge to a combined sewer;
- surface water discharges to the combined sewer network should be avoided.

The applicant is required to provide evidence in reporting of how this was considered.

4.6 Discharge to Existing Sewer

As per NPF4 and Scottish Water policy there should be no presumption of surface water connection to the combined sewer. A confirmation letter from Scottish Water should be submitted showing confirmation that in principle the existing network has enough capacity for receiving surface water and foul flows from the new development. This letter should detail the maximum allowable discharge rate to the sewer. Modelling calculations should show compliance with this allowable discharge rate.

Where the development will lead to the production of wastewater, a DIA must include a section on wastewater drainage. The assessment should examine the availability of public sewers to carry wastewater from the

development and should include copies of all correspondence with Scottish Water including their approval in principle to connect to the local network.

Any discharge to existing networks (storm or foul) should not increase the occurrence of flooding or surcharging to the existing sewer network. Consideration should also be given for the potential for effluent to discharge during severe storm events into adjacent watercourses via combined sewer overflows and the impact this may have on the receiving watercourse. The DIA should also address what measures are in place to ensure that during construction there will be no cross connections leading to contamination of surface water sewers.

4.7 Sustainable Urban Drainage Systems (SuDS)

The developer is required to incorporate Sustainable Drainage Systems (SuDS) into their proposals. These must deal with excess water from a site and return it to the water system in a controlled manner to alleviate flood risk and reduce discharge of diffuse pollutants.

SuDS should be used wherever possible in order to retain, attenuate and treat discharge from site. SuDS features should be designed in accordance with the SuDS Manual: CIRIA 753. Drawings should be provided showing layout and dimensions of all proposed SuDS. WDC require basin slopes to be no steeper than 1:4, security screen on inlets to basins and debris screens on outlets from basins.

Note that while the use of permeable paving on carriageways is not supported, it may be acceptable in parking areas. Permeable paving must have fin drains with connection to basin/sewer

4.7.1 Treatment

SuDS should be incorporated into a development to ensure surface water is being treated adequately before discharging to a watercourse. Developers should use a Simple Index Approach[9] or similar to provide evidence that the surface water arising from the development will be adequately treated before leaving site.

When discharging to a waterbody, the treatment measures must be approved by SEPA.

4.7.2 Adoption and Maintenance

An adoption plan and a letter of provisional agreement from the relevant parties must be provided. A maintenance schedule/ statement should be provided for all components of the drainage network including any SuDS. It should be made clear what will be adopted privately, by Scottish Water or WDC with evidence of agreement provided.

Pumped surface water drainage should be avoided, where possible. Pumped surface water drainage is only recommended if Scottish Water adopt it. If this is not possible, then the onus is on the developer to confirm that the property owners ensure a robust maintenance programme is adhered to. WDC cannot take

[9] CIRIA, (2015). The SuDS Manual

responsibility for the rectification for any failure. Further information is available within Sewers for Scotland for design guidance on surface water pumping requirements.

In general WDC will adopt above ground SuDS with a design standard up to 1 in 200 year event plus climate change. Confirmation is required that Scottish Water will adopt all oter features. Road gullies in adopted roads will be adopted by WDC.

Any underground features (other than gullies and manholes) proposed for adoption will manage road drainage only e.g in curtilage draiange and open space runoff will not be adopted or accepted into road draiange systems.

Maintenance plans should be provided. The outfall and infall of any SuDS feature must be accessible from public roads (ideally) or by a minimum 3m wide grasscrete path. There must not be any filter trenches or similar under adoptable footways. Swales adjacent to carriageways should be protected from vehicle overrun by at least a 100mm kerb, or bollards/planting. There should be no trees on top of SuDS.

4.7.3 Soakaways

If a soakaway is proposed then the adequacy of soil (ground investigations) and other investigations (i.e., porosity tests) will be required to demonstrate the proposals are feasible, prior to determination.

The applicant must demonstrate the soakaway can manage the design storm event without posing a flood risk to properties (neighbouring and proposed) and that it can drain in a suitable time to accommodate successive events. Dry pedestrian access must be maintained at all times.

The soakaway must not be located within 5 metres of building foundations and take account of seasonal variations in the groundwater table.

4.8 Additional Road Drainage Requirements

The specification for the construction of road drainage is detailed in the Manual of Contract Documents for Highway Works (MCHW) Volume 1: Specification for Highway Works[10] (the Specification).

4.8.1 Sub-grade drainage

It is important to provide efficient permanent drainage of the sub-grade and any other permeable layer of the road. Ideally, the water table should be prevented from rising to within 0.6 metres of the formation level. This requirement is additional to those of the surface water drainage detailed below.

4.8.2 Camber, crossfall and gradients

Carriageways should be cambered with a fall of 2.5% from the centreline to the channel except on curves where, to eliminate adverse camber, a crossfall of 2.5% between upper channel and centre line should be formed with increased crossfall between centre line and lower channel to allow for a 25mm centre line increase

[10] https://www.standardsforhighways.co.uk/search?suite=MCHW&mchwVolume=1

when boned channel to channel. For roads surfaced with block paving, 2.5% crossfall should be provided throughout. At a junction, the carriageway of the minor road should be graded into the channel of the major road. Footways and footpaths should be constructed with a crossfall towards the road channel. Channel gradients should not be flatter than 0.8%.

4.8.3 Gullies, connections and chambers

Gullies should be trapped and constructed in accordance with Clause 508 of the Specification. Gully gratings and frames must be positioned with grating bars running at right angles to the kerb and be of the captive variety.

Connections should be constructed in accordance with Clause 508 of the Specification. They must be formed with junction pipes unless the Roads Authority has specifically approved the use of saddles.

Chambers should be constructed in accordance with Clause 507 of the Specification and as detailed in drawings F3 to F12 as appropriate to that type.

Gullies provided at all low points and otherwise gullies are required at the frequency specified in DMRB CD 526 - Spacing of road gullies[11]. Section 3.4.9 of the SCOTS National Roads Development Guide details the acceptable channel distance between gullies for a road comprising carriageway and two 2m-wide footways. The spacing may require to be altered according to the road layout (e.g. at junctions) and special measures will be required where the grade is necessarily flatter than 0.8 per cent (sags, crests, etc.). Irrespective of design spacings, a gully should be positioned:

- just upstream of the tangent point at road junctions;
- short of the point where adverse camber is removed when applying super elevation; and
- at any local low point.

The following road layout requirements should also be considered when positioning drainage:

- There should be no gullies on pedestrian crossing points.
- Gullies should be provided upstream of main ped/cycle crossing points to reduce likelihood of ponding at the crossing.
- Gullies should be just upstream of raised features
- Gullies should be just upstream of tangent points at junctions
- There should be no manholes in front of driveways
- Driveways should shed water to landscaping rather than onto the road. This should also be the case for permeable driveways which will silt-up or compact over time.

[11] DMRB, CD 526 - Spacing of road gullies, Jan 2020

4.9 Approvals

Throughout the planning process the DIA will form the basis of statutory consultation with the appropriate bodies:

- Scottish Water (drainage connection consent);
- West Dunbartonshire Council (planning permission and road construction consent);
- Scottish Environment Protection Agency (CAR licences/ conditional prohibition notice).

Early consultation should be made with Scottish Water regarding that organisation's provision of surface water sewers for the drainage of roofs and paved areas within the curtilage of premises and the foul water drainage system. The Scottish Environmental Protection Agency must also be consulted with regard to the provision of Sustainable Drainage Systems (SuDS) in accordance with the SuDS Manual.

Where discharging into an existing watercourse or public sewer, road drainage should additionally meet the requirements of Scottish Water (as the drainage authority) and Scottish Environment Protection Agency (SEPA).

The connection of road drainage systems to the public network should be undertaken only on the authority and to the requirements of Scottish Water.

WDC, as a building standards authority, must be satisfied that adequate provision has been made for drainage and flood risk. Any proposed scheme should be designed and constructed to meet the technical standards for compliance with the Building Standards (Scotland) Regulations 2003.

Only drainage from the roads will be adopted by WDC.

There should also be no private sewers under an adopted road – there should be a disconnection chamber installed on private sewers directly behind the adopted road kerb.

5 ROADS CONSTRUCTION CONSENT PROCESS

5.1 Process

A Developer, or his appointed agent, must make application by post to **Roads Services, 16 Church Street, Dumbarton, G82 1QL** for a Road Construction Consent or by email to **roads@west-dunbarton.gov.uk**. This is required for any new vehicle or pedestrian access way which links an existing road to 3 or more dwellings or commercial properties under separate ownership.

Figure 5-1 illustrates the various stages of RCC processes and associated Quality Assurance procedures.

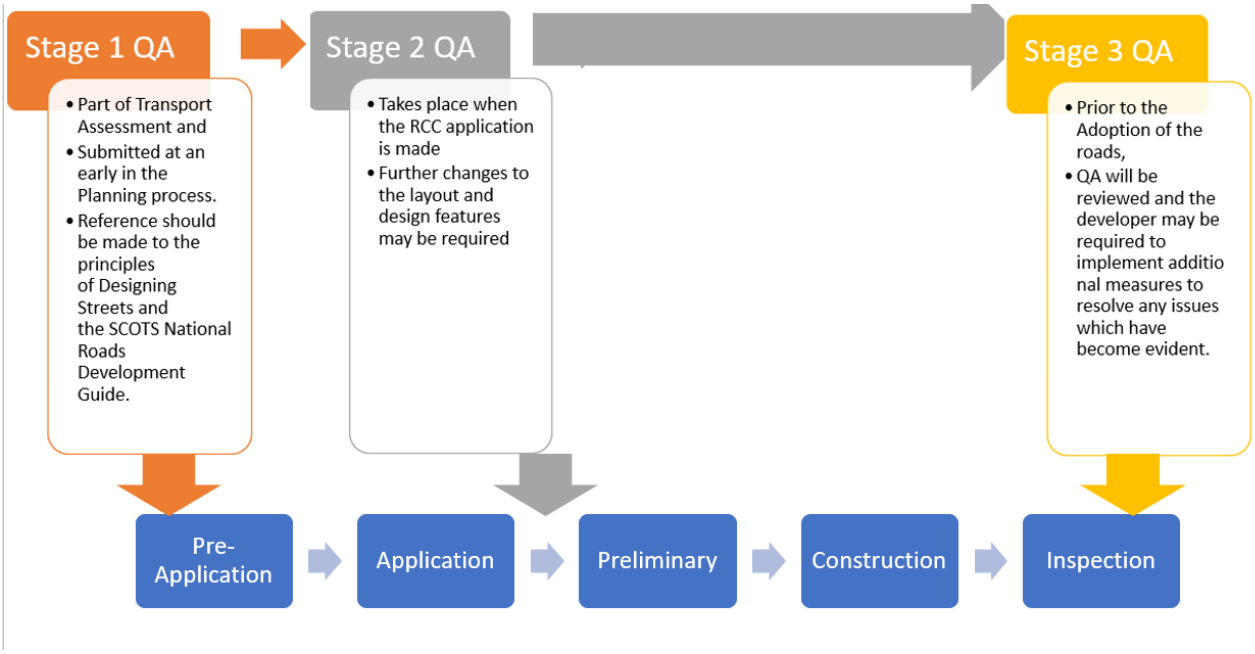


Figure 5-1 RCC Process Diagram

5.1.1 Pre-application stage

A Transport Assessment following the Scottish Government's Transport Assessment Guidelines[12] will be required at the earliest possible opportunity. The Transport Assessment should include both a Travel Plan framework and a Quality Audit, as defined by the Designing Streets guidance.

The Transport Assessment should include both a Travel Plan framework and a Quality Audit, as defined by the Designing Streets guidance[13].

As part of the preliminary consultations, WDC may identify required changes to the transport network. If these cannot be resolved through the Planning process, it may be necessary for Planning Conditions to be imposed.

Furthermore, a financial contribution may be established by means of a Section 75 agreement under the Town and Country Planning (Scotland) Act 1997 or by a separate legal agreement with the Council.

[12] Transport Scotland, Transport Assessment Guidance,

[13] Scottish Government (2010), Designing Streets: A Policy Statement for Scotland

5.1.2 Application Stage

The roads design proposals must be designed in accordance with Designing Streets Guidance and the SCOTS National Roads Development Guide[14], and also take cognisance of the Design Manual for Roads and Bridges (where appropriate). It should be noted there are no regional variations within the WDC area applicable to the SCOTS National Roads Development Guide.

The following must be produced in accordance with the technical guidance stated above and in table for a Road Construction Consent:

1. Site location plan;
2. Neighbour notification plan with CC2 form;
3. Proposed road layout (with colour key as per appendix 2 indicating all proposed roads for adoption by Council and private parking courts to be maintained by residents/factors);
4. Swept Path Analysis;
5. Landscape Plan;
6. Proposed setting out;
7. Drainage layout, including SUDS;
8. Utilities layout;
9. Longitudinal sections;
10. Cross Sectional Sections;
11. Construction details;
12. Road signs and road marking details;
13. Street lighting layout including wiring diagrams;
14. Structural details;
15. Traffic signals.

The Developer shall also give notice of the application to all owners of land which will front, abut or be bounded by the proposed road. Notification shall also be served upon the statutory undertakers and any other person or body who might have a material interest in the application such as The Scottish Government, the Civil Aviation Authority, SEPA etc informing them where the plans may be seen. The Council shall be informed of those parties upon whom notice has been served. The serving of such notice must be done by Recorded Delivery. Note the previous, or coterminous, advertising of a planning application does not negate the requirement to advertise for the RCC.

[14] SCOTS (2015),National Roads Development Guide

Receipt of the application will be acknowledged in writing within 5 working days and such receipt will detail the application reference number and the Officer who will be dealing with the application.

Those persons notified of the application have a period of 28 days to view the plans and make any comments. The application will not be processed until this notification period has expired. Should any objections to the application be received, the Council will attempt to address the concerns raised with a view to the objections being withdrawn. In the event the objection is maintained, the application will be referred to the Executive Director Place for decision. The Council will keep the Developer fully informed in such circumstances.

A Stage 2 Road Safety Audit, with the scheme designer's responses to any issues raised therein, is required as part of the application. The need for this will be waived if it has already been submitted as part of the planning application and the appropriate measures have been incorporated into the design to resolve the issues raised in the audit.

The details of the Principal Designer and Principal Contractor if know at time of submission must be provided as part of the application.

5.1.3 Preliminary Stage

The details of the application will be assessed and a Preliminary RCC will be prepared together with a list of comments detailing any amendments required to the submitted drawings and any further information which is necessary.

Please note that the issue of the Preliminary RCC does not authorise the commencement of work on site. Also the indicative Road Bond value given at this stage may change if subsequent design changes are made.

The developer must ensure that the scheme proposal accords with the Construction (Design & Management) Regulations 2015. Prior to construction commencement the name and address of the Client, Principal Designer and Principal Contractor and the Construction Phase Plan must be submitted. A copy of the Health and Safety File which covers all aspects of the roadworks must be submitted at the end of the project prior to adoption taking place. A copy of recommended maintenance regimes for SUDS infrastructure is also required prior to adoption proceeding.

The Developer (not the agent) must confirm in writing their acceptance of the Preliminary RCC. Upon receipt of this documentation the Final Road Construction Consent will be prepared for the signature of Executive Director – Place (or that of his designated deputy). The Final Road Construction Consent document and 1 set of all the drawings duly signed will be returned to the Developer for their retention.

If the developer is unable to meet the Councils requirements or if an objection is being maintained, the application will be referred to the Chief Officer, Roads and Neighbourhood. The referral will also contain a recommendation to either grant with specified conditions or refuse the Consent. A Developer may, on request, be heard by the Council (Regulatory Committee).

The Council will approve all applications for RCC where the proposed roads conform in all respects to the design requirements and specifications adopted by the Council. The Council expect that the Developer will apply for all roads within an RCC to be added to the List of Public Roads. Where the road(s) in an RCC are

not put forward for adoption, then the means of maintenance should be submitted to the Council to ensure that there is no liability to the Council on subsequent failures (e.g. overland flooding resulting from blocked gullies on adjacent estate roads that have not been put forward for adoption). This assurance would be required prior to release of the final road bond.

The Council will generally decide on RCC **within three months of the receipt** of a valid application as outlined above. The Developer will be informed of the decision by letter to the address given on his application.

5.1.4 Construction Stage

The contractor must obtain the necessary permits to occupy and work on the public road. Contractors must contact the West Dunbartonshire Council's Roads Network Programmer to book a time slot to undertake the necessary works and to discuss his requirements for a dilapidation survey of the surrounding roads and footways. The scope of the survey will be at the discretion of the Transport and Environment Manager and shared with WDC. The Council requires a minimum of 2 weeks notice of any work on the RCC, or work associated with the RCC on the public road, commencing.

Road construction can not start until the Council has granted the Final RCC. Where the development is for residential use, security in accordance with the 1985 Security for Private Road Works (Scotland) Regulations (as amended) must be lodged with the Council prior to house building operations commencing. Note a copy of the Bond is not acceptable and the original should either be hand delivered or sent by recorded delivery to the specified address. No security is required for industrial/office/retail development or for residential developments carried out by a registered Housing Association or Government Agency.

A new road must be constructed in accordance with the details provided by the Developer and the Full RCC as approved and granted by the Council. Unforeseen conditions on-site may however require changes to these. If these are minor changes (e.g. to detail) they may be mutually agreed between the Developer and the Transport Design and Delivery Manager or his delegated representative but where the changes are of a larger scale (e.g. to layout) then an application for an Amendment to the RCC must be made by the Developer. No works involved in such changes should be undertaken until the Development Control Manager gives written confirmation.

The Developer must complete the construction of a road covered by RCC **within three years** of the date of issue of the Consent. If substantive construction has commenced on site, but has not been completed, by the end of the three year period then the Developer shall apply in writing to the Council to agree a period of continuation of the Consent. If no substantive construction has commenced on site by the end of the three year period then the Developer must apply for a new RCC as outlined above. No road construction shall be undertaken without an operative RCC.

5.1.5 Construction Method Statement

A Construction Method Statement for the development is required and is required to include a section on Construction Traffic Management for plant and contractors vehicles both on- and off-site, and will also include mitigation measures to control dust, noise and floodwater.

The documents should be constantly monitored and reviewed to account for changing circumstances. The following areas should be covered:

- hours of construction work/ business – care should be taken to avoid adding to congestion at peak times/ school times;
- details of wheel-washing facilities including confirmation that these will be maintained in working order and will be used to prevent deleterious materials being carried onto the public road;
- details of how/ when the surrounding roads and paths will be swept to keep clear of soil falling from loads;
- details of whether off-site parking for construction vehicles or contractors will be needed and where this will be accommodated;
- confirmation that pedestrian routes around the site will be remain accessible or suitable alternative arrangements made;
- site map showing:
    - building construction order, taking into account different routes if there are multiple developers;
    - any temporary haul roads required;
    - any temporary parking restrictions required. Location of site compound;
    - location of site car park – if the site is to be divided between developers, the CMS should confirm that all contractors will be able to use the car park, or alternative provision made;
    - location of material storage area;
    - construction vehicle turning area;
    - wheelwash area;
    - pedestrian routes within the site;
    - area map showing routes along WDC roads;
- details of how SuDS features (e.g. porous paving) and existing surfaces will be protected during works;
- details of how surface water run-off will be controlled during construction;
- details of how contractors, visitors and suppliers will be informed of the existence of these policies, and how they will be enforced;
- where the construction traffic will significantly increase traffic on a local road, details of the dates of dilapidation (condition) surveys should be given, and a commitment made to restore these;
- where traffic is expected to be significantly different to the ‘average’ traffic on a road, swept paths should be shown for tight bends etc. and mitigating factors proposed.

5.1.6 Inspection

Council officers shall have access at all times in connection with the construction of roads covered by Road Construction Consent. The officers will be permitted to take samples and to measure the thickness, strength or quantity of materials used, or take any dimensions or level in order to satisfy themselves that the design requirements and specifications adopted by the Council from time to time are being, or have been, complied with. The testing of all materials which are to be laid or inserted within or on the prospectively adoptable carriageway and footways is a statutory requirement and must be carried out, by a NAMAS/ UKAS accredited laboratory and all at the developer's expense. The results of all tests are to be forwarded to the Transport Design and Delivery Manager or his delegated representative. In addition the Developer must inform the appropriate Council officers, giving a **minimum of 2 working days notice**, of the following stages of work. It should also be noted that the developer will be charged in respect of the inspection of these works.

Carriageways and Footways, Footpaths or Cycleways

(a) Intention to commence work. This includes commencement on or adjacent to a Public Road.

(b) Setting Out.

I Commencement of excavation (inspect sub-soil conditions).

(d) Commencement of laying capping layer and or sub-basI(e) Commencement of installing concrete log.

(f) Completion of kerbing.

(g) Commencement of laying base.

(h) Commencement of laying binder course to carriageway.

(i) Commencement of laying surface course to carriageway.

(j) Commencement of laying sub-base to footways/ footpaths.

(k) Commencement of laying binder course to footways/ footpaths.

(l) Commencement of laying surface course to footways/ footpaths.

(L) Commencement of any other works within the pavement structure.

Road Drainage

(a) Setting Out.

(b) Breaking into existing pipe runs – before installation of saddle connection or inspection chamIs.

(c) Completion, bedding and haunching, but before concrete surrounding or haunching, and completion of inspection chambers – before backfilling (tests where applicable).

(d) Completion of backfill (tests where applicable).

Traffic Signals, Road Lighting and Illuminated Traffic Signs

(a) Intention to commence.

(b) Determination of exact location of plant by Developer on site (Street Lighting officer to be in atteInce).

(c) Commencement of column and sign erection.

(d) Commencement of caI laying.

(e) Commencement of electrical work (N.B. no connections allowed to existing Council supplies except by Street Lighting officer).

(f) Commencement of electrical testing and commissioning of installation (actual connection dates must be noted).

Traffic Signs and Road Markings

(a) Commencement of installation of signs.

(b) Verification of position of signs in accordance with the apprId drawings.

(c) Completion of all road markings

Outstanding Works Defined By Council Officers After Fl Inspections

(6) (a) Completion of each item of outstanding works as a result of non-conforming works identified on the daily inspection sheets.

Structures

(a) Intention to commence.

5.1.7 Quality Audits

Quality Audits are a three-stage process, echoing the stages of the Road Safety Audits. They are required for all developments with 50 dwellings or more and may be necessary for smaller developments if particular design issues are identified. Figure 1-1 illustrates where Quality Audits fit within the RCC process.

The Quality Audit process should include a review of the pedestrian and cycle facilities within the site and how they link into the wider network to provide access to employment, education, healthcare, and leisure destinations. This is to ensure that developments are not designed in isolation but are connected successfully with the local community. The desire-lines of pedestrians and cyclists from all parts of the development should be considered. Access to public transport should be appraised to ensure good connections to neighbouring towns and regional centres.

Each stage of the Quality Audit should include the appropriate Road Safety Audit, providing a detailed and impartial appraisal of the proposed road network, including any alterations to existing roads. It should consider the interaction between vehicles and all other road users with regard to balancing the potential risks against their likelihood, and fully considering all design aspects such as visibility, speed control, pedestrian and cycle crossing points. Particular attention should be paid to the experiences of people with mobility, visual and hearing impairments, and other disabilities.

A typical audit includes the following elements:

- audit of visual quality;
- review of how the development will be used by the community;
- Road Safety Audit;
- inclusive access audit (walking and wheeling);
- cycling audit;
- public transport audit.

Following submission of the initial Quality Audit we may require changes to the development layout and design before WDC can support the Planning Application. Alternatively or additionally, we may recommend additional Planning Conditions and, where necessary, S75 contributions.

A Stage 2 review of the Quality Audit will take place when the RCC application is made and further changes to the layout and design features may be required.

Prior to the Adoption of the roads, a Stage 3 review of the Quality Audit will be undertaken and the developer may be required to implement additional measures to resolve any issues which have become evident.

5.1.8 Adoption

The Developer shall give notice of his intention to make application to the Council for the roads in his RCC to be entered on a 12 month pre adoption period. This should only be submitted once all of the roads associated with the RCC are substantially constructed. The Stage 3 road safety audit must be submitted with this form together with a maintenance methodology for any SUDS materials or infrastructure to be adopted. Note that staged adoption of an RCC will only be considered in exceptional circumstances.

The formal one year pre adoption period will not commence until all remedial works are completed to the satisfaction of the Development Control Manager. The Council will formally inspect the road and provide the Developer with a list of any outstanding works related to the Road Construction Consent. These must be completed.

One month prior to the end of the maintenance period, the Developer may make formal application for the road(s) to be added to the List of Public Roads on FORM CC6. The application shall be accompanied by “as-built” copies of road infrastructure and road drainage adoption drawings compliant with the latest version of AutoCAD held by the Council format and a stage 4 road safety audit. As Built Drawings/Details should also be provided in GeoTIFF to be included in WDC’s GIS inventory database.

Correspondence from the Street Lighting Engineer and Structures Manager (as appropriate) confirming that they have adopted all of their respective apparatus should also accompany the As Built Package.

In addition a certificate of adoption of all sewers must accompany the application and the Health & Safety file and SUDs maintenance regime.

5.2 Design Principles

5.2.1 Functions of roads

5.2.1.1 Road user hierarchy

The road network should enable all road users to move safely for all trip purposes. It should provide access to and from individual premises and allow connections to services, employment opportunities and leisure destinations.

All premises should be fully accessible, with particular regard to the needs of people with mobility or sensory impairments. The road user hierarchy (Figure 5-2) defined in the National Transport Strategy applies.

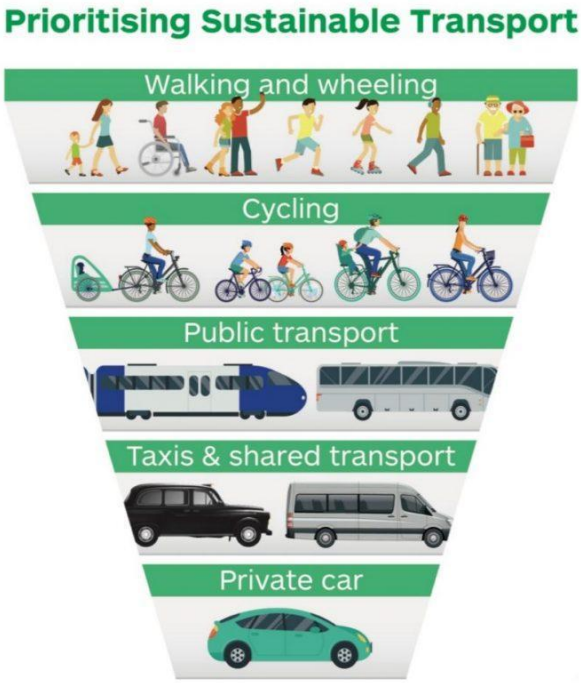


Figure 5-2 transport hierarchy from the National Transport Strategy

Sustainable transport hierarchy from the National Transport Strategy showing walking and wheeling as the highest priority mode of transport, followed by cycling, public transport, taxis & shared transport, then the private car, in that order.

The national policy statement Designing Streets sets out the tensions between the 'movement function' and the 'place function' of different roads. While it is appropriate to design motorways for the efficient movement of cars and lorries, residential areas should be designed primarily as places where people live. Where streets (for example, shopping areas which are also through-roads) have both a place and a movement function, these should be balanced appropriately.

Figure 5-3 Diagram from Designing Streets illustrating relative place and movement functions of streets

Quality Audits should be undertaken at an early stage in the design to ensure that sufficient weight has been placed on facilities for active travel in line with aspirations for sustainable communities.

It is important that higher density areas of development are concentrated around the bus routes and transport nodes as this will support local bus services and encourage sustainable transport choices.

5.2.2 Road Categories

While recognising the above, it is accepted that for practical purposes it is necessary to segment the road network into broad categories:

There is a general assumption that most roads and streets will be adopted by the Roads Authority i.e. become 'public roads', and therefore they must be suitable for access by everyone, including people with visual or mobility impairments, in accordance with Roads for All[15] guidance.

[15] https://www.transport.gov.scot/publication/roads-for-all-good-practice-guide-for-roads/

Full consideration should always be given to Designing Streets[16] guidelines with reference to the National Transport Strategy[17] road user hierarchy. It will usually only be cases where the development is served by or is close to higher speed roads, that the Design Manual for Roads and Bridges[18] will be referenced.

Table 5-1 Road categories

Description	Main Distributor Road	General Access Street	Residential Street	Non-residential Street
Accesses and frontage	Road between strategic routes or linking urban centres. It would generally be classified	Multi-modal corridor with significant pedestrian, cycle, bus and vehicle activity, typically serves fewer than 300 dwellings. May be classified.	Road with primarily residential uses with emphasis on pedestrians and cyclists	Designed for commercial uses and will often need to accommodate frequent heavy goods vehicles
Speed Limits	Junction spacing requirements apply. Vehicles should be able to enter and leave premises in a forward gear	Frontages encouraged, but vehicles should be able to enter and leave premises in a forward gear	Multiple frontages and driveways by definition	No residential accesses. Frontage access to premises permitted
Typical carriageway width	20-60mph which may be supported by traffic calming features in appropriate areas	20-30 mph which should be supported by traffic calming features	20mph with traffic calming features every 30m	20-30mph
Sight distances	5.5m - 7.3m or greater–5.5m – 6.5m	4.8m - 5.5m		
Footways, paths and verges	According to design speeds	(3.7m minimum over shor–stretches)	5.5m - 7.3m	
Turning and cul-de-sacs	Where speed limit is 30mph or lower, footways should be provided on both sides.	Desirable minimum = 45m;		
Accesses and frontage	Where speed limit greater than 30mph, a parallel shared-use path is required on at least one side of the road, and this should be segregated from the carriageway by a 2m verge.	Absolute minimum = 33m	Minimise straight sections of road	Desirable minimum = 45m
Speed Limits	Wherever a footway is not provided, a 2m wide verge is essential.	Footways required on both sides of the road, unless there is a segregated path system and it can be demonstrated		

[16] https://www.gov.scot/publications/designing-streets-policy-statement-scotland/

[17] https://www.transport.gov.scot/publication/national-transport-strategy-2/

[18] https://www.standardsforhighways.co.uk/dmrb/

Description	Main Distributor Road	General Access Street	Residential Street	Non-residential Street
		that pedestrians are unlikely to walk along the road.		
Typical carriageway width	N/A		Footway required on at least one side of the road and on both sides where buildings are accessed.	Footway required on at least one side of the road and on both sides where buildings are accessed.
Sight distances	Road between strategic routes or linking urban centres. It would generally be classified	Wherever a footway is not provided, a 2m wide verge is essential.		
Footways, paths and verges	Junction spacing requirements apply. Vehicles should be able to enter and leave premises in a forward gear	Loop roads and through-roads are preferred over culs-de-sac which create dead-mileage for deliveries. Culs-de-sac may serve up to 25 properties and require turning heads which can accommodate occasional large vehicles and refuse vehicles[1]	HGVs and refuse vehicles must be able to turn within the site. Loop roads are preferred to reduce reversing movements.	
Turning and cul-de-sacs	20-60mph which may be supported by traffic calming features in appropriate areas	Multi-modal corridor with significant pedestrian, cycle, bus and vehicle activity, typically serves fewer than 300 dwellings. May be classified.	Road with primarily residential uses with emphasis on pedestrians and cyclists	Designed for commercial uses and will often need to accommodate frequent heavy goods vehicles
Accesses –nd frontage	5.5m - 7.3m or greater	Frontages encouraged, but vehicles should be able to enter and leave premises in a forward gear	Multiple frontages and driveways by definition	No residential accesses. Frontage access to premises permitted
Speed Limits	According to design speeds	20-30 mph which should be supported by traffic calming features	20mph with traffic calming features every 30m	20-30mph
Max Gradient	5%			
Min. Gradient	0.8%			

5.2.3 Road and Footway Construction Specifications

WDC's specification for carriageway and footway construction is detailed in Table 5-2 and Table 5-3 respectively. These tables should be read in conjunction with Figure 5-4 which shows a typical carriageway and footway cross-section.

Table 5-2 Carriageway Construction

Road Type	Sub-base	Roadbase/Basecourse		Wearing Coure
Traffic Distributor Road or Industrial Roads (3.5 M5A)	225 mm (cl 803)	200mm Dense Macadam Combined Roadbase and Basecourse (cl 903)		40mm Rolled Asphalt (cl 910)
		For two stage construction		
		140mm Dense Macadam Roadbase (cl 903)	60mm Dense Macadam Basecourse (cl 906	
Residential Core Road (1.5 M5A)*	300mm (cl 803)	160mm Dense Macadam Combined Roadbase and Basecourse (cl 903)		40mm Rolled Asphalt (cl 910)
		For two stage construction		
		100mm Dense Macadam Road base (cl 903)	60mm Dense Macadam, Basecourse (cl 906)	
Housing Road and Parking areas contiguous with the road and Housing Courts (0.5 M5A*)	300mm (cl 803)	130 mm Dense Macadam Combined Roadbase and Basecourse (cl 903)		40mm Rolled Asphalt (cl 910)
		For two stage construction		
		80mm Dense Macadam Roadbase (cl 903)	50mm Dense Macadam Basecourse (cl 906)	
Non-contiguous Car Parking Area (0.08 M5A*)	250mm (cl 803)	80mm Dense Macadam Combined Roadbase and Basecourse (cl 903)		As for Residential Roads or 40mm Close Graded Macadam (cl 912)
		60mm Dense Macadam (cl 903)		65mm Open Graded Macadam (cl 916) Combined Basecourse/ Wearing Course
Pedestrian vehicular Shared Surface Housing Road cul-de-sac or Minor Commercial Access (O.S MSA*)	225mm (cl 803)	175mm Type 1 Granular Material (cl 803)	50 mm Bedding Layer of Sharp Sand or Crushed Rock(Appendix 7/1)	200x 100x80mm thick Concrete Rectangular Block Paving (cl 1043) or 200 x 100 x 65mm Clay Pavers (cl 1044)
	300mm (cl 803)	For two stage construction		
		75mm Dense Macadam Basecourse (cl 906)	30mm Bedding Layer of Sharp Sand or Crushed Rock (Appendix 7/1)	

** MSA = Million Standard Axles.*

Table 5-3Footway, Footpath and Cycle Track Construction

Type	Sub-Base	Roadbase	Basecourse	Surface Course
Flexible Surfacing	50mm Granular Sub-base Type 1 (cl 803)	100mm Type 1 Granular Material (cl 803)	50mm AC14 open surf 160/220 (BS EN 13108-1) or AC close surf 160/220 (BS EN 13108-1)	30mm HRA 15/10F surf 40/60 des (BS EN 13108-4). After layng 6-10mm coloured stone chippings or other approved shall be rolled into the surface at the rate 0.8kg/sq.m.
Precast Concrete Flags (Not suitable for cycle tracks)	150mm Granular Sub-base Type 1 (cl 803)		25±10mm Bedding Layer for small slabs or 40±10mm Bedding Layer for large slabs of Sharp or Crushed Rock Fines (Appendix 11/1)	Footways and Footpaths: Slabs 400 x 400 x 65mm (cl1104(s)) *Footpaths only:* Slabs 450, 600 or 900 x 600 x 65mm (cl1104(s))
In Situ Concrete	150mm Granular Sub-base Type 1 (cl 803)		75mm 25/37.5 Concrete (cl 1704)	40mm Granolithic (cl1106 A)
Concrete Block Paving or Clay Pavers	150mm Granular Sub-base Type 1 (cl 803)		40±10mm Bedding Layer of Sharp Sand or Crushed Rock Fines (Appendix 11/1)	200 x 100 x 65mm thick Rectangular Concrete Block Paving (cl 1107) or Clay Pavers (cl 1108)

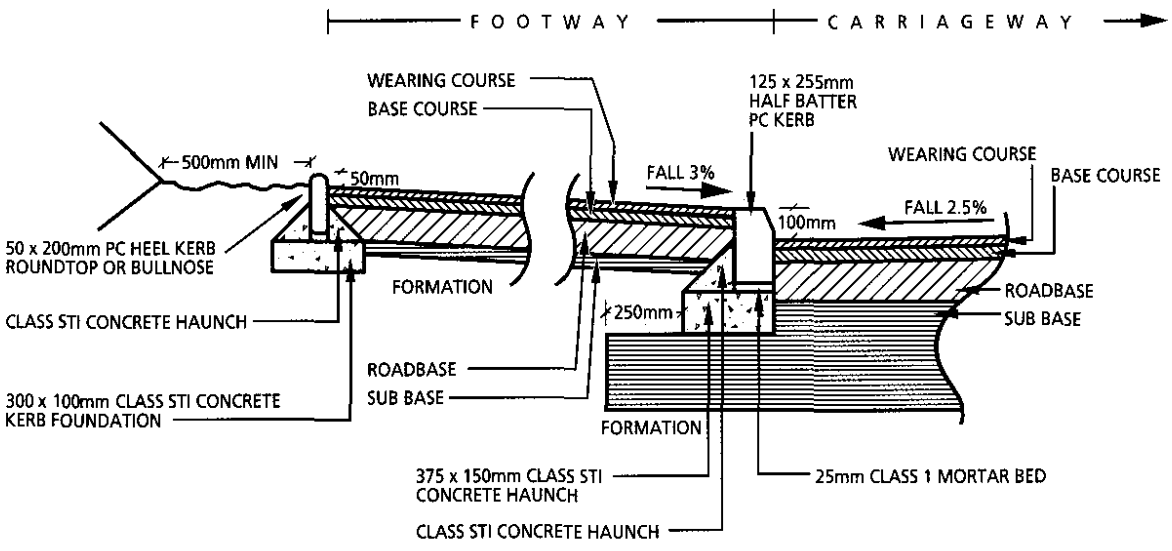


Figure 5-4 Carriageway and Footway Construction Detail

5.3 Walking and wheeling

Reference should be made to DMRB CD143 – Designing for walking, cycling and horse-riding[19].

5.3.1 Network

A comprehensive and accessible network of footways and paths should be provided within all developments to give access to all dwellings, and to allow permeability within and through the site. The network should reflect desire-lines to surrounding destinations and ideally be more direct than the equivalent vehicular route. There must be appropriate crossing points with raised tables/ dropped kerbs.

Continuous footways are generally required on both sides of the road, but, if development is to one side of the road only, the requirement for a footway on the opposite side of the road may be relaxed.

5.3.2 Footway and path widths

Those destinations that will generate or attract substantial footfall such as shopping areas, schools, bus routes, train stations, clinics, parks and play areas should be identified at an early stage in the planning process. This will influence the layout of the active travel network, while the predicted level of use will dictate the width of the paths, and whether segregation of cyclists and pedestrians is necessary. All adoptable footways and shared use paths should be well lit.

Footways should not deviate from the desire line for parking bays or junction mouths. There should be an adoptable footway to every front door/driveway. Where a pedestrian desire line crosses a junction mouth and the radius is very large, the corner radius should be tightened to reduce the crossing distance. Only if this is not possible, the crossing may be stepped back from the desire line.

Table 5-4 details appropriate widths for footpaths and pedestrian areas intended for adoption. These widths may require to be increased to facilitate maintenance of the footpath and/ or underlying services.

Where there is a possibility that parked vehicles will overhang the footway, the footway width should be correspondingly wider, or a verge provided.

Table 5-4 Footway Widths

Type of footpath	Width (m)
Minor pedestrian routes	2
Major pedestrian routes	3
Shopping precinct	3
Footbridge	2.5
Underpass	2.5
Sh–red-use paths[20]	3 - 4

[19] https://www.standardsforhighways.co.uk/search/9b379a8b-b2e3-4ad3-8a93-ee4ea9c03f12

[20] https://www.transport.gov.scot/media/50323/cycling-by-design-update-2019-final-document-15-september-2021-1.pdf

5.3.3 Kerbs

Full-height (125mm) kerbs are generally required. This not only reduces the propensity for drivers to park on the footway, but also provides a level of protection for pedestrians and properties from storm water. Kerbs are an important navigational aid for people using long-canes, and where they are not present, additional guidance features such as a building line at the back of the footway, or upstands/ tapboards should provide an alternative. There must be a vertical difference of 100mm between road and a garden in case of flooding

There should not be a kerb between adoptable parking bays and adoptable carriageway. 0-5mm kerbs are required for driveways and for all ped crossings. There should be dropped kerbs on every pedestrian desire-line, with tactile paving on main pedestrian routes. Tactile paving is essential where the crossing is at grade, in order to allow partially-sighted people to detect the edge of the footway)

There should not be any kerbs across the carriageway. Raised tables, for example, should be formed in tar. The only times kerbs across the carriageway will be acceptable is where there is a change of material which warrants it, but these occasions should be kept to a minimum.

5.3.3.1 Surfacing

Pavoirs are discouraged on the adopted road but, where they are used, they must be on straight sections of road only. There must be no paviors on junctions or areas with significant turning movement. Raised tables should be formed in tar with red chip (preferred) or imprint

There should not be any paviors on raised table slopes, or within 2m of apex or the start of the raised table to avoid need for kerbs on the apex or at the bottom of the ramp

Pavoirs must not be used for footways (unless constructed to road standards, as vehicle over-run causes damage, and no effective weedkillers are available). Channel kerbs across the carriageway are required to retain pavoirs where these are used

5.3.4 Surveillance

The layout should allow paths to have natural surveillance from surrounding buildings, particularly on routes to schools. High fences on both side of a path are discouraged as these can reduce the feeling of security. Lighting should eliminate any dark corners, and planting should be designed so as not to obscure light-sources.

5.3.5 Accessibility

All paths and footways must be accessible for people of all abilities, having regard to Roads for All[21] and Inclusive Mobility guidance[22]. These state that the maximum accessible gradient for a path is 5% therefore,

[21] https://www.transport.gov.scot/publication/roads-for-all-good-practice-guide-for-roads/

[22] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1044542/inclusive-mobility-a-guide-to-best-practice-on-access-to-pedestrian-and-transport-infrastructure.pdf

where the road gradient is greater than this, the footway will require a different alignment in order to achieve the requirements. Path and footway gradients above the minimum 5% should be designed as ramps (see Roads for All, Section 4.1.13). Steps should have double handrails on both sides and tramtrack tactile paving (parallel to steps at top and bottom)

Raised tables with tactile paving are required at every main desire line crossing. Tactile paving should be parallel to direction of travel, not necessarily parallel to kerb. Min. depth of tactile paving is 800mm (2 tiles)

Where active travel routes cross the carriageway, desire-lines should be carefully considered, and traffic speeds restricted by physical measures if possible. At junctions, for example, corner radii should be tight to slow vehicles and facilitate the shortest crossing distance for pedestrians. On the busiest desire-lines, tactile paving is required in line with Roads for All guidance. Controlled crossing facilities are likely to be required at busy locations adjacent to shops, schools, community facilities and similar.

In limited circumstances, footbridges and underpasses may be appropriate to cross motorways, dual carriageways, watercourses and railway lines. These crossings should be designed to be obviously more convenient, pleasant and safe to use than any alternative pedestrian route. This will likely require elevating or depressing the carriageway to ensure that footways and paths have minimal changes in level.

Steps pose problems not only for prams and wheelchairs but also for maintenance vehicles and should never form the sole pedestrian route. However, since some people find walking on any sloping surface difficult or impossible, steps should be provided in addition to ramps wherever possible, designed in accordance with Roads for All.

5.3.6 Cycle Facilities

On residential streets, cyclists will normally be expected to travel in the carriageway. Elsewhere they should be provided with dedicated or shared-use facilities, which should integrate with the surrounding network, and be designed in accordance with Transport Scotland's Cycling by Design guidance. Table 5-5 sets out here are various facilities which may be considered.

Table 5-5 Type of Cycling Facilities

Type	Description
Segregated cycleways	Separated from vehicle flows by a kerbed change in level or physical barrier, and from pedestrian movements with a change in surfacing, painted line or, in a limited number of cases, a change in level or other feature.
Shared-use paths	The Land Reform Act 2003 gives cyclists access to all off-road routes and therefore any new path remote from the carriageway will be open to pedestrians, wheelchair-users, cyclists and horseriders. These shared-use paths should be at least 3m wide (much more in busy places) and, in built-up areas, be provided with street lighting.
On-road cycle lanes	Not normally considered to provide sufficient segregation, and are not permitted on new developments which should be designed with dedicated cycle facilities. However, in limited circumstances, sometimes the only option is to retrofit a cycle lane to an existing road, and two types can be considered: Man–atory Cycle Lane - this prohibits all vehicles except pedal cycles. Ad–isory Cycle Lane - vehicles are permitted to drive along the lane if absolutely necessary, for example, due to width restraints on the carriageway. These lanes are prone to obstruction by cars parking. Neither Mandatory nor Advisory cycle lanes require a Traffic Regulation Order.

Type	Description
Contra-flow cycle lanes	When retro-fitting existing streets to accommodate new cyclist flows, contra-flow cycle lanes should be provided on one-way streets. One-way streets are not expected on greenfield developments.

5.4 Buses

5.4.1 New or Augmented Local Bus Services

Major new developments must be served by new or augmented local bus services. Roads which may be regularly used by buses should be suitable in width, alignment and construction. The minimum carriageway width for bus routes is generally 6m within a 20mph area. Gradients on raised tables and speed ramps on bus routes should be a maximum of 5%. Swept paths should be checked for a 13.5m bus. Bus routes should be in a continuous loop and avoid turning heads.

For larger developments, the developer will be expected to contribute funding for bus services until a viable level of service can be established. Higher density developments are likely to reach viable levels of service at an earlier point.

Where an existing service is to be extended from its terminal point into the new development, a new layover site will be required. The developer should hold early discussions with relevant bus operators to agree the location and design of the layover. Where the new development links two existing roads, it may be possible to route existing bus services through the site; in this case, layover facilities may not be required.

Bus routes, in order to be practical, must be reasonably direct and connect the centres of residential, business and shopping areas. There should be ready access to buses for clinics, housing designed specifically for older people or those with special needs, schools, shopping centres and other areas of intense pedestrian activity.

5.4.2 Bus Stops

In line with Inclusive Mobility[23] guidance, no house or workplace should generally be more than 400m walking distance from the nearest bus stop. In most circumstances, bus stops should be provided on both sides of the road, so that buses stop 'tail-to-tail' and move away from each other and there should be a pedestrian crossing (drop kerbs or controlled crossing, as appropriate) between the stops. There should be a suitable place to cross the road to get to the opposite bus stop. A standard bus requires 20m length to pull in and pull away.

Bus stops benefit from passive surveillance (overlooking) to reduce the risk of anti-social behaviour, and walking and cycling routes to the bus stops should be direct, attractive and well-lit. An area of hardstanding will be required, along with a bus stop pole, flag and timetable case. Destinations such as town centres, schools and clinics should be provided with bus shelters and adjacent cycle parking.

Where bus shelters are to be provided, these should be sited so as not to obstruct footways or sight-lines, and the specification should be discussed with relevant council departments. Consider how busy bus stops will be

[23] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1044542/inclusive-mobility-a-guide-to-best-practice-on-access-to-pedestrian-and-transport-infrastructure.pdf

and if the shelter should be set back. If there is a verge, additional hardstanding will be required between the footway and the carriageway

Policy 13 of NPF4 supports the promotion of electric vehicle charging infrastructure and electric vehicle forecourts, especially where fuelled by renewable energy. Prior to the submission of a planning application, the provision of vehicle chargepoints should be fully considered and discussed with us.

6 ROAD LAYOUTS AND FACILITIES GUIDANCE

Reference should also be made to DMRB CD 116 Geometric design of rou–dabouts[24], CD 122 - Geometric design of grade separated junc–ions[25] and CD 123 - Geometric design of at-grade priority and signal-controlled junctions for technical guidance[26].

Primary reference for technical design guidance should be made to The National Roads Development Guide Part 3, Section 3.1.

Drainage design guidance is provided in Section 4.

6.1 Junction Design and Shared Surfaces

6.1.1 Residential Streets

Within residential areas, traffic speeds should be physically constrained by localised narrowing of the carriageway, raised tables and chicanes. Priorities at junctions in these traffic calmed areas may be ambiguous, as long as a raised table across the whole junction brings attention to the various roads converging there.

Where two roads intersect, a right angled T-junction should normally be formed with the major road, defined as that carrying the greater volume of traffic, continuous through the junction.

6.1.2 Junction Geometry

In general the geometric layout should clearly establish the priority of the major road to approaching drivers. We may additionally require that the appropriate road signs and/or markings are provided to emphasise this priority.

Junctions should be sited on level ground or in sags rather than at or near the crests of hills. Gradients should level out as they approach the junction.

Where possible, T-junctions on curves should be sited so that the minor road is on the outside of the curve.

Where two minor roads approach a major road from opposite sides, a staggered junction should normally be used instead of a crossroads. Right/ left staggers (where minor road traffic crossing the major road first turns right out of the minor road, proceeds along the major road and then turns left) are preferred to left/ right staggers.

Junction spacing is related to the likely volumes and speeds of traffic and the distance required by moving vehicles to take up position between junctions for particular turning movements. The need to maintain road safety dictates the spacing and location of major access points.

[24] https://www.standardsforhighways.co.uk/search/7b5ea157-9b3e-4774-9781-7d1656e83338

[25] https://www.standardsforhighways.co.uk/search/3ab9ef31-9880-4e8e-a7eb-f3d218e74ffd

[26] https://www.standardsforhighways.co.uk/search/962a81c1-abda-4424-96c9-fe4c2287308c

Provision should be made at all road junctions for pedestrians to continue along the major road with a minimum of inconvenience, and therefore corner radii should be kept to the minimum required by the swept paths. Raised tables should be provided on pedestrian desire-lines or dropped kerbs if this not practical. Appropriate tactile paving on main pedestrian desire lines is necessary. Depending on the expected volume and speed of traffic, a Road Safety Audit of the junction may be required.

6.1.3 Visibility Splays

The visibility splay at a junction ensures there is adequate inter-visibility between vehicles on the major and minor arms. Figure 6-1 illustrates a typical layout.

Per Designing Streets Guidance, the X and Y distances are determined by the major road type and will be applied on this basis to junctions not specifically listed in the table below. Where, a minor road forms an up-hill approach to the major road, care should be taken to ensure that objects within the visibility triangle do not interfere with sight-lines. Reference should be made to CD123 of the Design Manual for Roads and Bridges.

An X distance of 2.4 m should normally be used in most built-up situations, as this represents a reasonable maximum distance between the front of the ’ar and the driver's eye. Using an X distance in excess of 2.4 m is not generally required in built-up areas.

A minimum figure of 2 m may be considered in some very lightly-trafficked and slow-speed situations, but using this value will mean that the front of some vehicles will protrude slightly into the running carriageway of the major arm. The ability of drivers and cyclists to see this overhang from a reasonable distance, and to manoeuvre around it without undue difficulty, should be considered. The Y distance should be based on values for Stopping Sight Distance.

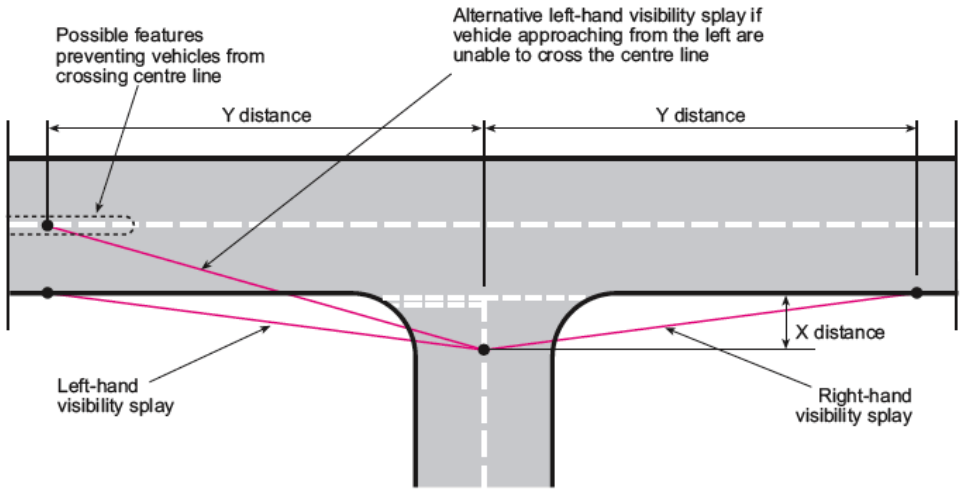


Figure 6-1 Visibility splays at junctions

The radii for corners will be determined by which vehicles use the junction regularly. These should be able to turn without obstructing oncoming traffic although some larger vehicles may need to use the full width of road.

Refer to paragr–ph 2.5 in CD 109 - Highway link design[27] (standardsforhighways.co.uk) for the relationship between design speeds and speed limits.

No frontage access or lay-by parking will normally be permitted in the immediate vicinity of a road junction, or where parked vehicles would interfere with junction sightlines.

6.1.4 Shared Surfaces

Shared surfaces and level footways are not encouraged in residential areas because, unless there is a high volume of pedestrian activity, traffic speeds may increase.

Shared surfaces may be adopted only where it can be demonstrated that

- traffic speeds will be physically constrained to less than 10mph; and
- the space will not fill up with parked cars

Per the SCOTS National Roads Development Guide, consideration to shared surface transitions and provision for pedestrian passage and disabled users must be demonstrated in application plans as well as regard for locating and protecting street lighting columns. On shared surfaces an upstand of 40mm should normally be provided except at junctions with footpaths and private accesses where kerbs should be flush with the walking surface.

6.2 Raised tables in shared spaces must be accessible (i.e. the ramps should be shallower than 5%) but should be avoided if possible. Access and Turning Layouts

6.2.1 Turning Areas

New road layouts should, where possible, be designed so that service and delivery vehicles do not need to reverse on the public road. This is best achieved by ensuring that premises are accessible from two directions. A cul-de-sac will only be accepted where traffic volumes are expected to be low, but the dangers of reversing vehicles should not be overlooked. Per Designing Streets Guidance, turning areas should be proved by means of swept-path analysis.

The dimensions of turning areas should suit the characteristics of the largest vehicles to use the facility regularly as illustrated in Figure 6-2. In residential roads, this i“ taken to be the "L”rge Rigid Vehicle" defined in the Freight Transport Association's Designing for Deliveries[28]; this vehicle is 2.5m wide with a 6.1m wheelbase within an overall vehicle length of 10m. For potential bus routes, use a 13.5m bus model.

In non-residential developments, it may be necessary to cater for 15.5m long articulated vehicles or 18m long draw-bar trailers.

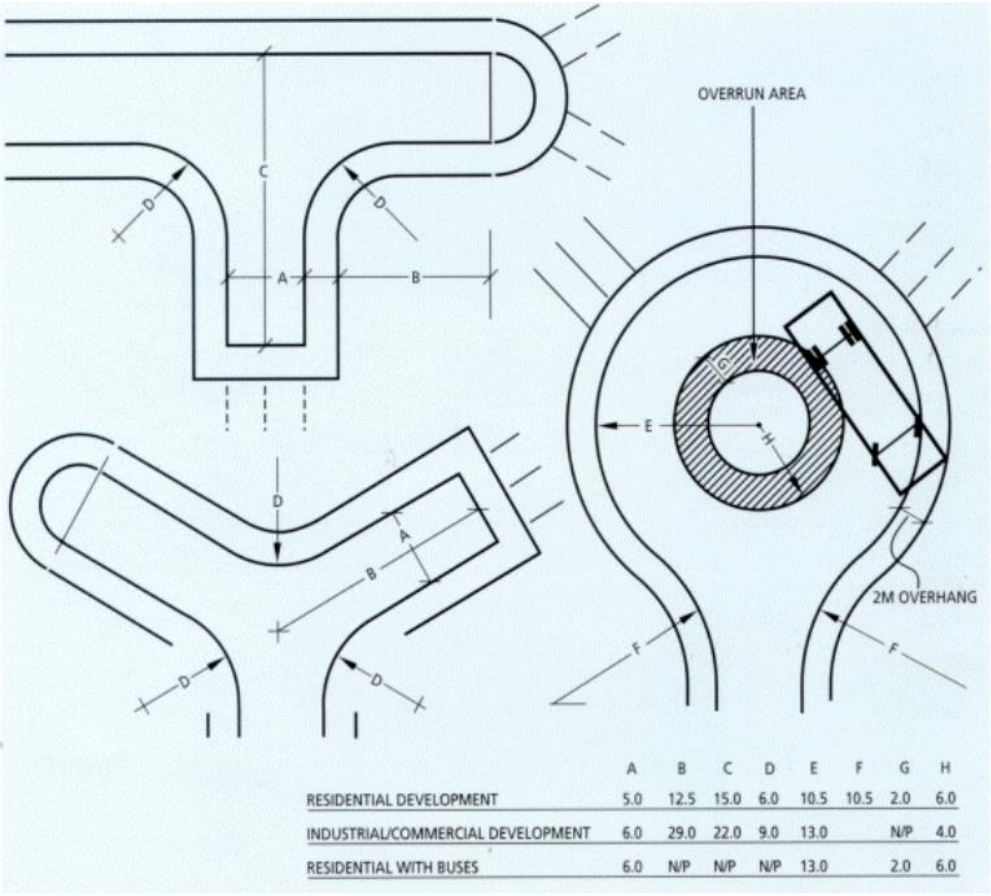
[27] https://www.standardsforhighways.co.uk/search/c27c55b7-2dfc-4597-923a-4d1b4bd6c9fa

[28] Designing for Deliveries Guide, Logistics UK, 2016

Where there is no adjacent footway, turning areas should be provided with a 2m wide verge or margin to allow for any overhang of vehicle bodies when manoeuvring.

The layout of a development should be designed to discourage casual parking in turning areas. This may be achieved by either locating turning circles well clear of frontage development or arranging that premises and designated parking bays take access via the turning area.

In residential areas the use of less formal shapes for turning heads may be acceptable, but the shape should still incorporate the basic turning head dimensions.



	A	B	C	D	E	F	G	H
RESIDENTIAL DEVELOPMENT	5.0	12.5	15.0	6.0	10.5	10.5	2.0	6.0
INDUSTRIAL/COMMERCIAL DEVELOPMENT	6.0	29.0	22.0	9.0	13.0		N/P	4.0
RESIDENTIAL WITH BUSES	6.0	N/P	N/P	N/P	13.0		2.0	6.0

Figure 6-2 Dimensions of turning areas based on typical use

6.2.2 Building Standards Requirements

In accordance with Building Standards (Scotland) Regulations, it should be easy to take household waste containers to a collection point adjacent to the public road suitable for emptying or removal by the Waste Collection Authority i.e. there should be no steps along the route, and the distance should be reasonable. The Waste Collection Authority may designate a collection point which ensures that multiple waste containers are unlikely to be left clustered on the footway. People should not have to walk more than 45m to take private waste bins to the collection point on the adopted road

The width of emergency vehicle routes and their proximity to buildings is detailed in Building Standards (Scotland) Regulations[29]. This document specifies a minimum width of 3.7m between kerbs.

The standards also refer to avoidance of “dead end routes”. Fire and rescue service vehicles should not have to reverse more than 20m from the end of an access road. Where any dead-end route is more than 20m long, turning facilities should be provided. This can be a turning circle or a hammerhead.

6.3 Parking

Full requirements for parking are set out by West Dunbartonshire Council Parking Standards[30]. The guidance provides design guidance on cycling, car and disabled parking as well as requirements for provision based on development types/manage modal shift.

Visitor parking is distributed around site and there is some in adoptable areas

6.3.1 Driveways

Driveway dimensions are 3.3m x 6m (single), 5m x 6m or 3.3m x 11m (double). Driveways should be hard-formed, and permeable to reduce water run-off, and any run-off should be directed away from the road.. Driveway gradients must be < 5% (1:20) in order to be accessible.

Driveways and parking spaces have sufficient space for reversing out (6m of combined carriageway and footway for parking spaces perpendicular to the road). NB. Where shared driveways allow access to plots at right angles, the shared space will need to be 6m wide to enable manoeuvring into individual plots.

Reinforced footway crossings are required for unadopted areas. Bellmouths are required for adopted car parks

Private driveways should serve no more –than 2 properties - otherwise they should be factored

6.4 Utility Services

6.4.1 Public Utilities

In the interests of both the Utilities and their consumers, all mains and services serving more than one proprietor should be located in land which is both publicly maintained and readily accessible. It has been recognised that these criteria are best met by public roads and, as well as making provision for pedestrian and vehicular movement, it is therefore a function of most roads to provide routes for underground services.

All services other than sewers and occasionally water mains, should be grouped in “service strips” located within the limits of the adoptable space with a minimum of service connections across the carriageway.

[29] Scottish Government, Building Standards technical handbook, 2017

[30] https://www.west-dunbarton.gov.uk/media/4319195/wdc-parking-standards.pdf

The proposed location of all services within road boundaries, including those required under the New Roads and Street Works Act 1991[31], should be indicated on plans submitted for Construction Consent as detailed here.

The developer is responsible for contacting the utilities regarding the position of, and connection to, any existing underground plant. All necessary Road Opening Permits must be obtained before any excavation is undertaken in a public road. For sewer connections, permits must be obtained from Scottish Water.

6.4.2 Private Apparatus

Only apparatus which is owned and maintained by a public utility may be placed in or under the public road. Private pipes and cables (including those for shared sprinkler systems) are not permitted within the adopted extents (including those areas that are prospectively adoptable).

6.4.3 Service Strips

The width of a service strip will depend on the number and type of premises serviced. Normally, all domestic services (gas, electricity, lighting, water and internet) will be accommodated in a 2m wide reservation. The position and method of laying cables and pipes should accord with the requirements of the utility companies. It should be ensured that each service runs at a constant depth.

Special arrangements will be required where a service strip is less than 2m wide and local widening in excess of 2m may be necessary to accommodate access chambers or where roads have tight bends. Where service strips are not located adjacent to carriageways their width must allow for access by mechanical plant and/ or vehicles for maintenance or repair. In all cases there must be a permanent and continuous demarcation of the boundary between the service strip and any adjacent private property (e.g. by a fence, wall or concrete edge kerbing).

The service strips are to be available to undertakers as part of the road for the location of their apparatus and the areas will be subject to control by the Roads Authority in the usual way as part of the road. The Developer is held to have agreed the Plan positions and widths of the strips with all relevant undertakers as being suitable for their service. The Developer is to ensure that a Clause is inserted in the formal Deeds of Conveyance of the lands on which the strip lies or fronts, making it clear that the Roads Authority and undertakers have a right of access to the strip at all times without notice and restraining all respective owners and their successors from erecting buildings, walls and fences, or planting trees or hedges, or altering surface levels, or doing anything within the strip, which would be likely to damage pipes, ducts, cables or other apparatus laid or to be laid within the strip or which would be likely to make access thereto more difficult.

Such service strips may not always be appropriate for shared surfaces. With a well-connected layout it may be possible to accommodate services under the vehicle track. This will only be acceptable if two or more routes

[31] https://www.legislation.gov.uk/ukpga/1991/22/contents

for vehicles are available for reaching the same destination, and the siting of utilities and manhole covers does not prevent access to properties, driveways or any rear parking areas.

If a cul-de-sac is proposed, service strips must be accommodated off the vehicle running track, avoiding features such as trees and potential root disturbance. Services could be routed away from main streets through back streets or rear courtyards provided access is secured for, and agreement is obtained from, service/ maintenance authorities.

The route of all services should avoid disruption to the use of on street parking bays.

6.4.4 Maintenance Access

Ready access must be available at all times to all parts of service routes for both routine maintenance and emergency repairs. Manholes, electricity sub-stations, gas governor housing, internet junction boxes and SuDS infall/ outfall should be accessible by large vehicles. The requirements for these utilities should be ascertained at an early stage and they should be positioned to minimise disruptions to vehicle and pedestrian access when routine maintenance is being carried out. Special consideration in this respect will be necessary where services run beneath or adjacent to single lane carriageways and parking bays.

It is essential that any trees adjacent to service strips are located so that their roots will not damage underground services or be damaged themselves during the maintenance of such services.

6.4.5 Surface Treatment

The surface finish of all service strips must form an integral part of the environment and be acceptable for general maintenance by the Roads Authority. Services adjacent to carriageways and parking areas should normally be located under paved footways or be otherwise protected when there would be risks of damage from occasional overriding by vehicles.

6.4.6 Road Furniture and Lighting

All road furniture should normally be located adjacent to, or recessed behind, paths and footways and no furniture or structures should obstruct any road junction sight line. The only services permitted within 0.5m of the rear of the footway are those associated with street lighting columns and joint pillars. Further guidance regarding the provision of road lighting is contained in Section 8.

6.5 Non-residential Developments

6.5.1 Frontage Loading

Where a Non-residential Street provides frontage access to small industrial units then there is a requirement for operational space between the rear of the footway and the front face of the buildings. This space is to ensure that loading/unloading operations, skip storage and so on, can take place without obstructing the carriageway. An element of this operational space may count towards the parking requirements of the development.

In in-fill development it may not always be possible to achieve these standards for service areas. In these cases, WDC should be approached to discuss whether a relaxation of standards is appropriate.

For developments involving larger industrial premises the above layouts are inappropriate and a physical barrier should be provided between road or footway and operational space.

6.5.2 Access to Premises

Vehicular access to commercial premises will normally be taken from the public road via a footway crossing designed to cater for the anticipated traffic volume and maximum weight of vehicle. For major industrial developments, access should be by means of a service road connecting to the main road network at a T-junction. Alternatively, a raised table giving pedestrian priority may be appropriate.

Access roads and parking may be adopted if access by the public is not restricted. For example, in the centre of towns with high parking demand this may allow the Council to control indiscriminate parking. Contact WDC for guidance on this aspect.

6.5.3 Servicing Provision

All new development and redevelopment should, where possible, be designed so that premises can be serviced from vehicles parked off the public road. The Freight Transport Association's (FTA) guide 'Designing for Deliveries' and SCOTS National Roads Development Guide will assist in producing an internal layout suitable for the type of goods vehicle likely to be servicing the development.

6.5.4 Gradients

Gradients on ramps within service areas should not exceed 12 per cent on straight sections and should be less where there is significant horizontal curvature. At breaks of slope, a transitional grade not exceeding 5 per cent should be employed and care should be taken with headroom to allow for the bridging effect of long, high vehicles. A maximum gradient of 2.5 per cent is appropriate for areas where vehicles will be parked for loading/unloading, while the minimum gradient will be governed by drainage considerations.

7 STRUCTURES

7.1 Scope

WDC as Roads Authority is responsible as Technical Approval Authority (TAA) for the approval of structures on its own roads or affecting its roads. This applies whether the Designer is the Council's own, a firm of consulting engineers, an individual or any other organisation. We are also responsible as TAA, where a developer is to hand over a structure for adoption on completion.

These procedures are to be applied to the design, checking and construction of all new structures (whether to be adopted or not), partial renewals and maintenance works affecting the integrity or load carrying capacity of existing structures on the local road network. They are intended to ensure that structures are safe and serviceable, economic to build and maintain, and sustainable with minimal impact on the environment.

7.2 Definitions

Structures include:

- bridges, tunnels, subways, culverts, of clear span greater than 0.9m;
- retaining walls, reinforced earth structures and soil strengthening with more than 1.5m retained height;
- sign-gantries, portal/cantilever signs, highway signs on posts more than 4m high;
- environmental barriers and temporary structures provided for public use;
- high masts more than 20m in height for lighting/cameras;
- cellar roofs and basements which support the road.

The above list is not intended to be exhaustive and in cases of doubt, we will advise on the necessity and requirements for Technical Approval.

7.3 Process

Technical Approval can consist of several stages including outline agreement to form of structure within overall scheme concept, development of the Approval in Principle document and certification. It is a continuing process and can involve many discussions between the Designer and the TAA. In order to avoid delays, it is advised that preliminary discussions take place early in the process. Any special criteria and departures from standards should be identified as soon as possible.

Note that as economy of maintenance is a prime consideration in whether an RCC will be issued there is a presumption against the adoption of structures, and developers should make all reasonable efforts to identify a design which avoids the use of additional structures

The Technical Approval Schedule (TAS) is the schedule of standards and technical documents, relating to road structures, to be used in the design, as confirmed by the Designer. The documents must comprise relevant current British Standards and Codes of Practice, appropriate current technical memoranda from the (DMRB), and other relevant documents and publications including the MCHW.

Model Forms and other pro-forma are contained in the DMRB standard CG 300[32] Technical Approval of Highway Structures.

The procedures described and model pro-forma are intended to be contract-neutral and may be amended as necessary to suit specific contract requirements, for example design-and-construct contracts.

7.4 Technical Approval Authority (TAA)

WDC Council is required to:

- examine all proposals at the preliminary design stage and, when satisfied, to endorse the Approval in Principle Form. We will agree the application of selected documents to particular structures and, exceptionally, give directives on principles to be followed in the Approval in Principle document;
- determine, and agree the category of structures and hence the need for Approval in Principle;
- be available for consultation by the Designer or Checker and to give advice on interpretations of Codes and Standards;
- consider at any stage any proposals for additional criteria or for departures from the documents listed in the Technical Approval Schedule, national codes or standards;
- resolve any points of difference which occur between the Designer and Checker;
- receive from the Designer, certificates of compliance with the Approval in Principle (i.e. Design Certificates and Check Certificates), which will also record:
    - Departures from, and aspects not covered by, Codes and Standards;
    - Directives issued by the TAA.

We will not check the calculations nor their translation into design other than to such limited extent as may be required to consider aspects of economic suitability.

It is our responsibility to ensure that these decisions are recorded in the Approval in Principle document and on Design Certificates as appropriate. Rulings given for a particular scheme are not to be applied to another scheme without our agreement.

Exceptionally, where the TAA and the Designer cannot resolve a difference, the Roads Authority will issue a directive on a particular subject.

The agreement of the Approval in Principle or acceptance of the Design and Check Certificates does not relieve the Designer or Checker of the responsibility for the validity and arithmetic correctness of the calculations nor their translations into design details, drawings and specification clauses.

[32] https://www.standardsforhighways.co.uk/search/17dadcc6-8e01-455d-b93e-c827d280839a

8 LIGHTING SPECIFICATION

Lighting levels, materials to be utilised, and the general scope of the works are to be agreed with the Council's lighting engineer (contact) before any design works commence. Unless otherwise specified, any reference to a British Standard shall mean the latest British Standard. Street Lighting should generally be in accordance with the following standards:

- B– EN 13201-2:2015 - Road lighting. Performance requirements;
- B– EN 13201-3:201– - Road lighting - Calculation of performance–;
- BS 5489-1:2020 - Design–of road lighting - Lighting of roads and public amenity areas. Code of practice.

9 SELF CERTIFICATION/ INDEPENDENT CHECKING

WDC implement a self-certification process for the preparation of flood risk and drainage assessments. The design for a proposed development must comply with the requirements above. The Self-Certification Declaration shall be signed confirming this. The declaration must be signed by a senior member of staff within the Designer's organisation. The senior member of staff must be a Chartered Professional with either the Institution of Civil Engineers (ICE) or the Chartered Institution of Water and Environmental Management (CIWEM). By signing the declaration they are confirming that in their professional opinion the application conforms to the requirements noted within this document.

For developments classified as major, under the Town and Country Planning (Hierarchy of Developments) (Scotland) Regulations 2009, an independent check of the application will be required. This involves a separate organisation from the Designer undertaking an independent check of the submission. The Checker must complete the appropriate part of the Self-Certification form which part of the submission that they are checking (DIA, TAA, FRA, RCC). The declaration of the Checker must also be signed by a senior member of staff in the Checker organisation. By signing they are confirming that in their professional opinion the applicant conforms to the requirements noted within this document

When the design and check of the proposals have been completed and the appropriate certificate(s) filled in and signed, a copy of each should be sent to the Planning Department for acceptance and, if appropriate, endorsement. All departures from, and aspects not covered by, standards should be agreed prior to submission and must be recorded on the certificates for endorsement by the Structures and Flood Prevention Manager or Senior Engineer.

All supporting drawings and documents (including revision marks) must be referenced on the signed certificate(s).

The Designer should compile the RCC, DIA and FRA and appropriate certification declaration(s) into one package for review. Piecemeal submissions will not be reviewed, and this may delay a planning application determination.

The relevant checklists should be completed and submitted with the application to show compliance with the guidance within this document. The checklist should provide a summary of the information submitted to support a planning application.

9.1 Subsequent Procedure

The Designer will assume responsibility for the design of the permanent works.

Works cannot commence on-site until the entire procedure is complete, i.e., all relevant certificates have been endorsed by the Structures and Flood Prevention Manager or Senior Engineer.

Design and Check Certificates should be submitted at that the same time.

The Designer must ensure that the design in relation to flooding and drainage is accurately translated into the completed works. The Design must ensure that no changes are made at the Road Construction Consent

(RCC) stage which would pose a flood risk to proposed or neighbouring properties or would impact the effectiveness of the design submitted for planning approval.

Appendix A – FRA Checklist

Application Ref No		Flood Risk Assessment	Provided? (Yes/No)	Submission Section Reference	Reason if No or N/A*
	Full Planning Application/Planning in Principle				
1	Location Plan				
2	Study area description (location, previous land use)				
3	A statement outlining how, in the author(s) opinion, the development proposal complies with current flood legislation and policy.				
4	Plan of site showing pre and post development ordnance datum levels				
5	Pre-Development and post-development overland flow paths for site and surrounding land.				
6	Photographs illustrating important features such as culverts etc.				
7	Catchment description				
8	Hydrology should be derived using FEH22 rainfall catchment description. Comparison of relevant methods such as ReFH2, FEH Rainfall Runoff and statistical where appropriate.				
9	An allowance for climate change should be included per Section 3.4				
10	Information on historic flood events				
11	Details of any existing flood alleviation measures including the level of protection and condition				
12	Identification on the ownership of any water related structures and assessment of their condition				
13	Information on consultations undertaken with others				
14	Assessment of all relevant sources of flooding and level of risk. Sources include fluvial, pluvial, coastal, groundwater, infrastructure.				
15	Assessment of change in flood risk to surrounding sites.				
16	Full details of modelling a schematization, justification on chosen model and software (e.g. why a linked 1D-2D model has been used), appropriate consideration of upstream and downstream boundaries).				
17	Flood maps for the 3.33%, 1%, 0.5%, 0.5%+CC AEP flood events. Flood elevations at key locations. (0.1% AEP+CC for Most Vulnerable category properties, as defined by SEPA).				
18	Details of appropriate model calibration and verification should be provided where possible.				
19	All models should be accompanied by appropriate sensitivity analysis				
20	Blockage scenarios should be provided if the flood site levels are influenced by downstream structures. Results should show impact on water levels should these features become blocked.				
21	Flood water levels from all sources should not encroach within 600mm of FFL's up to and including the 0.5% AEP+CC event.				
22	An assessment of emergency access to and from the proposal up to and including the 0.5% AEP+CC event.				
23	Description of how all flood risks have been identified and appropriately mitigated or managed.				
24	A summary of residual risk after any proposed flood mitigation measures and recommendations for further study/risk reduction.				

Appendix B – DIA Checklist

Application Ref No		Drainage Impact Assessment	Provided? (Yes/No)	Submission Section Reference	Reason if No or N/A*
	Planning in Principle				
1	Indicative drawings showing planned development layout including proposed developed areas.				
2	Areas of impermeable and permeable surfaces contributing to surface water runoff should be quantified and shown on plan drawing.				
3	Indicative layout drawing of the drainage design including all SuDS features.				
4	Drawings showing development in relation to natural surface water and existing receiving watercourses.				
5	Details on the restriction of post development surface water flow.				
6	Details of proposed attenuation and treatment. Attenuation should be provided to the 1% AEP+CC flood event and treatment should follow the simple index approach or similar.				
Full Planning Application					
7	Drawings showing planned development layout including proposed developed areas.				
8	Areas of impermeable and permeable surfaces contributing to surface water runoff should be quantified and shown on plan drawing.				
9	Layout drawing of the drainage design including all SuDS features and manhole numbers (surface water and wastewater)				
10	Drawings showing development in relation to natural surface water and existing receiving watercourses				
11	Drainage strategy outlining the SuDS to be used in the development				
12	Details on the restriction of post development surface water flow. • If there will be a connection to a public sewer, a letter of agreement in principle from Scottish water is required, stating maximum allowable discharge rate to sewer. • If discharging to a body of water, evidence that a maximum discharge rate of 4.5l/s/Ha (of developable area) has been met for the 0.5% AEP+CC event*. *Subject to minimum 75mmØ flow control (~3l/s)				
13	Drawing showing point of discharge, the outfall structure and how it is intended to connect/link into the existing surface water drainage network and/or watercourses.				
14	Details of proposed treatment of surface water using simple index approach or similar.				
15	Storage, attenuation, and discharge calculations are required for all SuDS features				
16	FEH 2022 catchment descriptors preferred, justification required for alternative method.				
17	An allowance for climate change should be included, this is 39% for surface water.				
18	Calculations should be provided of the proposed drainage network for the critical rainfall event for the 3.33%, 1%, 0.5% AEP events, plus an allowance for climate change. MicroDrainage or similar should be used.				
19	Calculations showing no flooding for the 1% AEP+CC event				
20	If flooding occurs in the 0.5% AEP+CC event, overland flow paths of this event must be provided. The level of the flooding must not encroach within 600mm of any FFL.				
21	Confirmation that emergency access to and from the site will be maintained, even during the 0.5% AEP+CC event.				
22	Provide an adoption, vesting and maintenance plan for the SuDS components in the development including details of accountable body responsible for vesting & maintenance.				
23	Description of measures to manage surface water runoff in construction phase				

Appendix C-RCC Checklist

Application Ref No	Road Construction Consent	Provided? (Yes/No)	Submission Section Reference	Reason if No or N/A*
	Forms Required			
	CC1 Application form			
	Neighbour Notification Layout Plan & CC2 form			
	CC3 Form issued to all impacted neighbours			
	Scottish Water Technical Audit			
	Structures Technical Approval			
	WDC Streetlighting approval			
	Drawings Required		–	
	Location Plan - 1:1250 or 1:2500, Nearest classified roads clearly marked? Site boundary to be clearly marked?			
	General Arrangement Plan - 1:500 minimum scale Are Street Designs compliant with Section 5.2.2? Is parking provision compliant with standards in Section 6.3? Are footways/footpaths compliant with standards in Section 5.3? Are shared surfaces compliant with standards in Section 6.1? Are Bus stops marked on drawing and complaint with Section 5.4? Swept path analysis provided to justify where widths deviate from standards? Proposed road to be adopted shown? Road hierarchy / different road types justified? Centre, building and kerb lines shown? Road Number labels and chainages shown? All curve radii shown? All corner radii shown? Junction & forward visibility envelopes defined? Carriageway and footway widths shown? Justification for proposed widths provided? The need for curve widening considered? Turning areas of correct dimensions? Appropriate vehicle tracks provided? Different areas of construction type identified? All cut and fill areas identified.			
	Road Setting Out Plan			
	Road longitudinal sections – Existing & proposed levels shown for all roads. Linear chainages provided? Horizontal and vertical curve radii adequate? Vertical curve lengths adequate for road type? Road crossfall or camber levels provided? “High” and “Low” points shown? Max. gradient of paths is 1 in 20 or follows Roads for All Guidance for ramps, Min gradient of paths and roads is 0.8% to reduce risk of ponding, Stepped alternative to all ramps, Max. gradient of roads is 1 in 12, Confirm that there are no abrupt changes in level at surrounding roads and paths			
	Kerbing Layout - to be compliant with Section 5.2 & 5.3.3			

	Drop kerb vehicle access shown? Drop kerb pedestrian crossings shown?			
	Surfacing materials - to be compliant with Section 5.2 & 5.3.3			
	Vehicle swept path analysis – in accordance with Designing Streets Guidance			
	Road adoption plan (incl. litter bins, grit bins and bus shelters) Is there at least 1 grit bin per site and 1 per 50 houses or 1 per 100 linear metres? Are road numbers, plot numbers and changes clearly shown? Is there an adoptable path to every front door or driveway? Have any remote footpaths been distinguished on road adoption plan?			
	Land Factoring Plan (incl. litter bins) Contact details of factor must be clearly marked Car chargers should be shown and responsibility of the factor Any bollards and other street furniture shown? Litter bins should be provided at all bus shelters, and at the beginning/end of remote paths. Confirm locations of adoptable bins with Amenity Services. Grit bins must not obstruct the carriageway or footway and will generally need an area of hardstanding Grit bins to be located where they can be filled by a lorry i.e. adjacent to a road			
	Signs and lines drawing Traffic sign and road marking details provided? Give Way markings should be provided at major junctions Shared-use paths should have appropriate signage 20mph repeater signs should be specified where appropriate			
	Traffic signals layout and Operational Details Intended speed limits clarified? Details provided of any traffic calming features? Spacing of traffic calming suitable for proposed speed limits? Traffic calming features suitable for all vehicles likely to use the roads? Traffic calming is safe for other road users? The location of service strips/runs is shown? Landscaping proposals don't adversely impact road design requirements (e.g. visibility).			
	Street lighting layout and calculations			
	Structural Details and Assessment			
	Electric Vehicle Infrastructure			
	Road Construction Details All carriageway & footway details shown? Form of different paving details justified? Tactile paving details provided? Footways on sharp corners designed for potential vehicle overrun? All kerb types specified and meet Guidelines? All kerb upstands shown and meet Guidelines? Kerb log detail provided and meets Guidelines? All material information fully specified? Named product information sheets included? Traffic calming construction details adequate? Traffic sign sizes and specifications provided? Traffic sign pole and foundation details shown? Road marking sizes & specifications provided? Bollard details & other street furniture shown?			

	Gully and drainage chamber details shown? Details for road drainage treatment and storage features shown? Typical details for service locations provided? Depth of services increased if located within carriageway to take it below the road formation? Details provided for tree pits within the road?			
	Additional Road Construction Details			
	Drainage Layout (including SUDS) – Have DIA checklist requirements have been met (Appendix B)? Confirm all SUDS features included in Planning Drawings and approved in principle All crossfalls, superelevation & cambers shown? Gully locations shown on plan with road number labelling and longitudinal chainages? Gully spacing sufficient for road size & gradient? Gullies positioned to limit water running across carriageways at junctions and transition points? Gullies located to avoid repeat vehicle loading? Double gullies & tails provided at all low points? Sufficient kerb upstand provided around gullies at low points to prevent overtopping? Gullies suitably sized with 150mm pipe tails? Suitable concrete surround to gully and tails? Gully grates of suitable grade for location? Drainage to avoid run-off from driveways? Drainage needed to avoid overland flow from neighbouring land running onto road?			
	Drainage Construction Details			
	Drainage Longitudinal Sections			
	Manhole schedule			
	Other documentation			
	Construction Method Statement			
	Traffic Management Plan			
	Quality Audit Report			
	Safety Audit			
	Road Bond Info			
	Ground investigation report available and submitted.			
	CBR information gathered along roads at 25m spacing.			