Dorset County Council

Technical Approval and Detailed Design Submissions

Guidance on requirements for detailed design submissions and the technical approval process associated with new highway infrastructure

February 2017

Contents

1. Introduction

This guidance note has been prepared for Developers and Designers to provide advice on the information that the Council require as part of a detailed design submission for new highway infrastructure projects. The document sets out the information the Council requires, how to best present that information and how it is likely to be assessed.

2. The Equality Act

The Equality Act 2010 (the Act) replaced previous anti-discrimination laws with a single Act with the aim of simplifying the law, removing inconsistencies and making it easier for people to understand and comply with. It also strengthened the law in important ways, to help tackle discrimination and inequality. The public sector Equality Duty (section 149 of the Act) came into force on 5 April 2011. The Equality Duty applies to public bodies and others carrying out public functions. It supports good decision-making by ensuring public bodies consider how different people will be affected by their activities, helping them to deliver policies and services which are efficient and effective; accessible to all; and which meet different people's needs.

All parties involved in the design and construction of public infrastructure must have due regard to the Equality Act 2010 and the Equality Duty. This includes Developers and Designers.

In particular, Designers must refer to Inclusive Mobility (DfT, 2005 revision) and Guidance on the Use of Tactile Paving Surfaces (DfT, 2007 revision) to ensure that their designs are inclusive.

3. Planning and Detailed Design

Historically, Developers have sought to satisfy the detailed planning process before commencing the detailed design of highway infrastructure. By doing so, the detailed design and technical approval process can raise issues that can only be resolved by changing the scheme that was approved at the detailed planning stage.

The Council strongly recommend taking a more integrated approach, with highway adoption engineers being fully involved throughout, so that schemes that are approved at detailed planning stage can move through the detailed design and technical approval process without the need for significant changes.

4. Initial Application

Once a development has gained full planning consent the Developer can make a formal application to enter in to an agreement with the Council using the application forms available on the Council's website:

https://www.dorsetforyou.gov.uk/article/387376/Highway-adoptions

The application form must be complete, signed by an appropriate person and supported by the correct deposit and supporting documentation.

At this stage the Council does not need a full detailed design submission, but in order to make an informed decision on whether the proposals are suitable for adoption we require the following:

- A copy of the Full or Reserved Matters Planning Approval Decision Notice.
- One full size copy of the detailed layout approved by the Local Planning Authority
- 1:2500 Site Location Plan.
- A copy of the S106 Agreement.

Following a review of this documentation, the Council will inform you as to whether the application has been successful or not. If successful you will then be invited to make a full detailed design submission.

5. Detailed Design Submission

On receipt of the detailed design submission the Council will assess the contents and will confirm that the submission is either acceptable or if there is additional information required to permit us to commence a technical audit of the submission. The Council cannot undertake Technical Audits of incomplete design submissions.

As a minimum the detailed design submission should contain all items listed below that are relevant to the proposed scheme.

Layout

- Location plan
- Agreement / Land dedication plan
- General arrangement
- Approved planning layout
- Landscape plan
- Road safety audit - Stage 2

Horizontal & Vertical Alignment

- Long sections
- Cross sections

Geometry

- Swept path analysis
- Visibility splay details

Standard Details

- Construction details

Ground Conditions

- Geotechnical report

Services

- Existing services layout
- Proposed services layout

Street Lighting

- Layout
- Lighting design report

Structures

- Layout
- Construction details
- AIP report
- Detailed structural calculations

Drainage

- Layout plan
- Long sections
- Surface water run-off calculations
- Catchment / Impermeable areas plan
- Manhole schedule
- Soakaway schedule
- Drainage constrcution details
- Confirmation of discharge consent

Trees, Vegetation & Grassed Areas

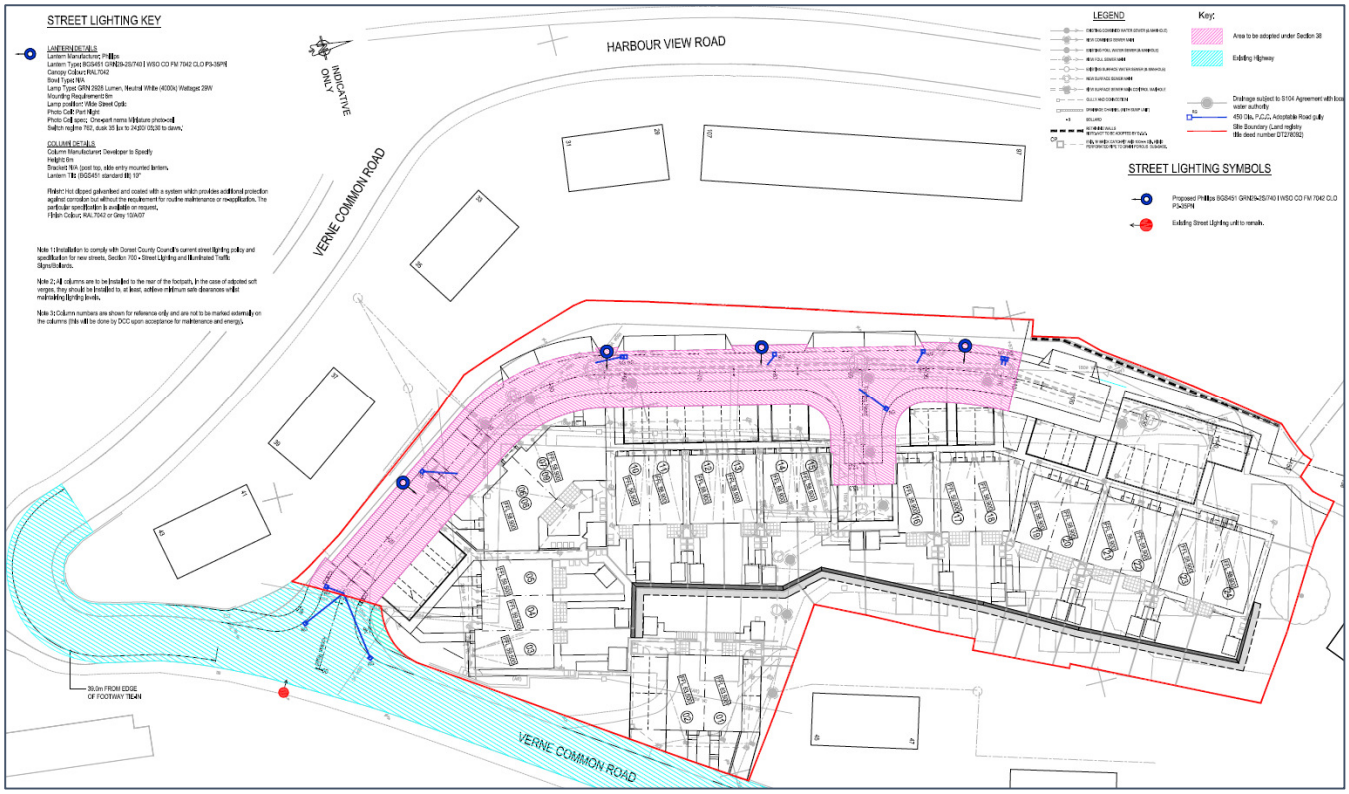
- Tree schedule
- Treeeplanting layout
- Tree pit construction details

6. The Agreement Plan

The agreement plan is the drawing that forms the basis of the legal agreement. It serves as a record of the proposed works, as a land dedication plan and identifies other legal requirements such as easements etc. This is the only drawing that is physically appended to the legal agreement and features (such as areas of shading) are directly referenced ion the text of the agreement. In addition the drawing is used by a number of organisations including the County Council, the District Council and Land Registry, and as such there are quite specific requirements for how the drawing is set out which are listed below.

The Title of plan is 'Section 38 Agreement Plan', 'Section 278 Agreement Plan', 'Land Dedication Plan' or similar	☐
The plan has a clearly identifiable North Arrow	☐
Scale of drawing is recognisable (e.g. 1:250 / 1:500) and shows an appropriate level of detail	☐
The drawing should include as much locational information as possible such as existing road names, existing property names and numbers	☐
If the proposed development is in a rural area which may be difficult for those not familiar with the scheme to locate this plan must include an inset location window at a larger scale.	☐
Does proposed development adequately connect to the existing highway?	☐
Do all link footpaths connect to the existing highway?	☐

The proposed highway must be entirely shaded in pink (avoid obscuring with text boxes etc.)	☐
The title boundary of the freehold title within which all proposed dedication land is located should be illustrated with a solid red line (not so thick as to obscure other necessary detail). Ideally, the full title boundary should be included within the plan.	☐
All land to be dedicated as highway (i.e. shaded pink) should be included within the freehold title(s) owned by the Developer	☐
All new highway drainage detailed and coloured blue	☐
Any public surface water, foul & combined sewers should be detailed in grey / black	☐
Is all new highway drainage contained within the area shaded pink or the existing highway? (If not additional dedication or deed of easement will be required)	☐
Any highway assets proposed for adoption but located outside of the extent of proposed highway (e.g. soakaways) shall be contained within an area shaded yellow to illustrate the extent of easements required. The area shaded yellow should be of sufficient size to facilitate vehicular access and all appropriate maintenance / replacement activities, including storage of arisings, plant etc.	☐
All street lighting apparatus must be clearly shown on drawing with a suitable symbol and coloured blue. The symbology should differentiate between standard & wall mounted columns etc.	☐
All street lighting apparatus should be contained within the area shaded pink or the existing highway. If not either additional dedication or deed of easement will be required.	☐
Any wall mounted street lighting units will require a deed of easement and any private frontage area to the property on which the street light is mounted should be shaded yellow to facilitate access and all appropriate maintenance / replacement activities.	☐
All structures must be clearly indicated	☐
Any trees within the area of proposed highway should be clearly illustrated and shaded blue.	☐
An area of existing highway of sufficient size to accommodate all works required to the existing highway and associated traffic management (not including advance signing) should be shaded blue.	☐
All notes should be relevant and appropriate	☐
The drawing Key / Legend must be clear and include all shading, symbols and coloured line types used within the drawing and should not include any shading, symbols or detail that is not used within the drawing.	☐
Ensure that there is no other spurious detail that may conflict with or confuse the required information	☐



Example of a Section 38 Agreement Plan

7. General Arrangement Drawings

The general arrangement drawing should clearly detail the layout and dimensions of all roads, footways and footpaths proposed for adoption and should illustrate their basic geometry (such as widths, radii etc.), and proposed construction type (e.g. vehicular footway crossing, full carriageway constriction, footway construction).

Demonstrate that all carriageway widths are satisfactory (e.g. carriageway is 5.5m at Site entrance and 5.0m elsewhere)	☐
Any localised carriageway narrowings are satisfactory (<=3.1m or >=3.7m)	☐
All footway widths are satisfactory (2.0m)	☐
All footways provide a definite opportunity to move to an alternative route (no fading out)	☐
All service margins > 1.0m width	☐
All safety margins = 0.5m width	☐
Sufficient width provided for any shared surface areas	☐
Turning head dimensions & geometry satisfactory	☐
Sufficient overhang/margin beyond turning heads	☐
On-street parking provision satisfactory dimensions (2.0m x 6.0m per vehicle)	☐
Unallocated parking bays have satisfactory dimensions (2.5m x 5.0m)	☐

All perpendicular parking spaces leave 6.0m between space/gate & opposite kerb line	☐
0.5m margin between all perpendicular parking spaces and the running carriageway	☐
All gates & garage doors open inwards / “up-and-over” doors not to open out over highway.	☐
Space between rear of footway and garage door/gate = either 4.5m or 0.0m	☐
Space between rear of footway and “up-and over” type garage door = either 4.5m + “up-and over” door requirement or “up-and over” door opening requirement only	☐
No lengths of road greater than 30m without turning provision	☐
0.5m private margin provided between back of highway and all buildings	☐
Demonstrate general compliance with approved planning layout	☐
Any works in existing highway clearly detailed, e.g. area of existing highway to be resurfaced due to stats connections (Not area shaded blue on S38 agreement plan)	☐

8. Horizontal Alignment

The detailed design submission must contain sufficient information to allow the Council to determine that the horizontal alignment of the proposed infrastructure is adequate to safely accommodate all users e.g. HGVs and/or refuse vehicles.

All junction Geometry is satisfactory (Major/minor lane widths & radii)	☐
Swept path analysis is satisfactory	☐
Adequate general forward visibility provided around curves / bends – especially where there is no contiguous footway provision	☐
Adequate visibility provided at junctions	☐
No excessive unobstructed forward visibility without appropriate speed control measures	☐

9. Vertical Alignment & Long Sections

The detailed design submission must contain sufficient information to allow the Council to determine that the vertical alignment of the proposed infrastructure is adequate. It is essential that all required information (such as level data) is provided clearly and accurately.

Both Horizontal & Vertical scales standard and appropriate	☐
Clear level information on drawings	☐
Proposed Centre-line, Proposed LHS & RHS Channels, top of kerb, back of footway & existing ground level detailed	☐
All carriageway gradients are satisfactory (Max. 1:10 & Max. 1:15 within 15.0m of a junction; optimum 1:100, min. permissible 1:150 or 1:200 with channel blocks).	☐
All footway gradients are satisfactory (Refer to Inclusive Mobility)	☐

Sufficient cover depth over all surface water & foul sewers (>1200mm granular bed & surround, 700 -1200mm concrete bed & surround; <700mm ductile iron pipe with cover slab)	☐
Sewer gradients & pipe sizes satisfactory	☐
Back of footway must show no vertical deviation to accommodate localised level access	☐
Ramps – gradients satisfactory (Refer to Inclusive Mobility)	☐

10. Cross Sections

A sufficient number of cross sections, displaying an adequate amount of information must be provided s that the Council can assess gradients and cross falls as well as gain an understanding to road and footway profiles and the intended profile of land directly adjoining the proposed highway.

Cross sections provided at 10m intervals	☐
All carriageway, footway, margin widths should be consistent with the agreement plan & GA	☐
Cross sections must contain a satisfactory level of detail	☐
All Cross-falls are satisfactory (Carriageway Max. 1:40; Footway Max. 1:40, Min 1:100 with longitudinal fall)	☐

11. Construction Details

Construction details must be provided for every asset that forms part of the adopted highway infrastructure. The list below is not exhaustive but is indicative of what is likely to be required within a standard detailed design submission. All construction details shall comply with DCC's Specification for the Construction and Drainage of New Streets, all relevant British Standards and/or any other appropriate standard as required.

Details to be provided may include:

Carriageway Construction Details:	
Typical Carriageway Construction Detail: Residential Access Road	☐
Typical Carriageway Construction Detail: Feeder Road	☐
Typical Carriageway Construction Detail: Local Distributer / Industrial Estate Road	☐
Typical Carriageway Construction Detail: Residential Access Road – Block Paving	☐
Typical Bituminous Ramp detail	☐
Typical Modular Ramp detail	☐
Typical Transverse Feature Band Construction detail	☐
Typical Tie-In to Existing Highway Construction detail	☐
Footway Construction Details:	
Typical Footway Construction Detail	☐
Typical Vehicular Access Construction Detail – Single dwelling	☐

Typical Vehicular Access Construction Detail – Multiple dwellings, Courtyards etc.	☐
Typical Margin construction detail	☐
Typical Tactile Paving Construction Detail	☐
Drainage Construction Details:	
Typical Manhole Detail – Brick – Depth up to 1m	☐
Typical Manhole Detail – Brick – Depth from 1m to 1.5m	☐
Typical Manhole Detail – Pre-Cast Concrete - Depth up to 3m	☐
Typical Manhole Detail – Pre-Cast Concrete - Depth from 3m to 6m	☐
Typical Manhole Detail – Vertical Backdrop Manhole	☐
Typical Pre-Cast Concrete Soakaway Construction Detail	☐
Typical Circular Brickwork Soakaway Construction Detail	☐
Typical Central Drainage Channel Construction Detail	☐
Typical Headwall detail	☐
Gully Pot, Cover & Frame detail	☐
Miscellaneous Construction Details:	
Kerbing Details – BN, HB, HB2, CS1, EF etc. (All used kerb types must have a suitable detail)	☐
Typical Tree Pit Construction Detail – Full Size	☐
Typical Tree Pit Construction Detail – Reduced Size	☐
Typical Tree Pit Construction Detail – Footway	☐
Root barrier detail	☐
Capping Layer / sub-base charts or table	☐

12. Kerbing & Tactile Paving Layout

A detail/drawing should be provided which clearly illustrates all proposed kerbing and edging types and associated vertical faces.

All proposed kerbing should have kerb type & face indicated (including back edgings)	☐
All vertical faces should be suitable to their proposed location (e.g. dropped crossings 0-6mm, vehicular accesses 25mm, standard kerb face 125mm, adjoining grass min. 80mm etc.)	☐
Back edgings must be suitable (e.g. standard EF for normal footways and single vehicle crossings, multiple vehicles crossing should be provided with CS1 channel blocks)	☐
Tactile paving detailed correctly at all uncontrolled pedestrian crossings and any other areas required such as approach to hazards etc.	☐

13. Drainage Layout

The layout of all drainage features, including both proposed highway surface water and public surface water sewers should be clearly set out within a drainage layout drawing. Each asset / pipe run should be clearly labelled with appropriate information to allow it to be cross referenced with the supporting surface water calculations

Horizontal alignment is consistent across all drawings (S38 layout, GA & Drainage layout)	☐
Lengths of drainage runs are satisfactory	☐
Proximity of manhole positions to kerb lines is acceptable (min 1.0m clearance)	☐
Proximity of pipe runs to kerb lines is acceptable (min 1.0m clearance)	☐
Length of gully laterals no greater than 12m	☐
All highway water pipe runs comply with DCC's self-cleansing gradients & desirable velocity ranges	☐
Cover levels and bed / surround types are appropriate	☐
150mm pipe bed and surround must extend 150mm above the top of pipe	☐
Any pipe >= 900mm in diameter is considered to be a highway structure & will require an AIP & structural design calculations submission for approval by DCC Structures	☐
Any pipe/structure equal to or greater than 900mm, when excavated, must leave a minimum of 3.500m usable highway. If not, then such pipes/structures must positioned away from the carriageway construction in areas of open space	☐
Manholes will be required at: ↳ the head of each drainage run; ↳ every change of direction, alignment and/or gradient; ↳ every change of pipe diameter; ↳ every junction of two, or more, highway drains; and ↳ no further than 45.000m from the previous manhole.	☐
Manholes must be positioned away from the crown (centreline) of the carriageway if the carriageway is of a balanced design	☐
All sewers should be constrained to one side of the road for ease of maintenance/excavation whilst maintaining vehicular access	☐
Gully catchment area plan submitted (demonstrating contributing areas of <= 200m² per gully)	☐
No private surface water is positively connected to the highway surface water drainage system	☐
No potential for private surface water discharges on to the highway (e.g. from private drives or private access roads adjoining the highway)	☐
Permeable paving is not permitted within the proposed highway	☐
Soakaways must conform to DCC's standard specification (e.g. lined PCC Ring - NOT crated systems)	☐
Soakaways must be protected by a petrol interceptor unless EA dispensation has been granted	☐

No more than 2 No. gullies draining into any one soakaway	☐
If S104 drainage is present within the highway then developer must supply copy of written approval & intent to enter into a s104 agreement with appropriate Water Authority	☐
Attenuated storage not permitted in highway; must not be supporting the highway (45° line drawn from extremity of highway) unless otherwise approved by DCC structures	☐

14. Drainage Design

The proposed surface water drainage system, whether it is to be a dedicated highway surface water sewer or a combined system, must be supported by appropriate surface water calculations. The Councils preference is for the system to be modelling using an appropriate hydraulic modelling and simulation tool such as Micro Drainage. The variables and constraints which the Council expect to see included within the model for various types of drainage asset are detailed below.

PIPED NETWORKS:

Design Criteria:	
Rainfall Model = FSR for anything other than large scale development where FEH would be more appropriate	☐
M5-60 is appropriate for location of development (circa 19/20mm is not unusual for Dorset)	☐
Ratio R is appropriate for location of development (circa 0.35 is not unusual for Dorset)	☐
No foul sewage is permitted	☐
Volumetric Runoff Coefficient = 0.75	☐
Time Area Diagram:	
Time Area Diagram: The total contributing area should enter the system within 0-2 minutes	☐
Network Design Table:	
All pipe lengths, gradients & diameters must accord with the drainage layout	☐
Time of entry (T.E.) should be no greater than 2 minutes	☐
k value should be correct (0.6mm for standard U-PVC pipe work such as Wavin UltraRib)	☐
Manhole Schedule:	
All Manhole cover levels, depths and diameters should be correct detailed within the Manhole Schedule	☐
Pipeline Schedule:	
The correct pipe number must connect to the correct Upstream & Downstream Manholes in the Pipeline Schedule	☐

Summary Reports:	
The simulation report must contains a Return Period Summary of Critical Results by Maximum Level for 5 year, 30 year and 100 year Return Periods	☐
Check the following sub sections for each of the three summary reports:	
Simulation Criteria:	
Areal Reduction Factor = 1.000	☐
Additional Flow - % of Total Flow = 0	☐
Hot Start = 0	☐
MADD Factor = 0 (not the default of 2)	☐
Hart Start Level = 0	☐
Inlet Coefficient = 0.8	☐
Manhole Headloss Coeff (Global) = 0.5	☐
Flow per Person per Day = 0.000	☐
Foul Sewage per hectare = 0.000	☐
Number of Input Hydrographs = 0	☐
Number of Storage Structure is correct (e.g. Soakaways etc.)	☐
Number of Online Controls is correct (e.g. Hydrobreak Manholes)	☐
Number of Time/Area Diagrams = 0	☐
Number of Offline Controls is correct (e.g. Attenuation Pond)	☐
Number of Real Time Controls = 0	☐
Synthetic Rainfall Details:	
Rainfall Model = FSR for anything other than large scale development where FEH would be more appropriate	☐
Ratio R is appropriate for location of development (circa 0.350 is not unusual for Dorset)	☐
Region = England and Wales	☐
Cv (Summer) = 1.0	☐
Cv (Winter) = 1.0	☐
Margin for Flood Risk Warning = 450mm (not the default 300mm)	☐
DVD Status = OFF	☐
Analysis Timestep = Fine	☐
Inertia Status = OFF	☐

DTS Status = ON	☐
Profile(s) = Summer and Winter	☐
Duration (s) = 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080	☐
Return Period(s) = 5, 30, 100	☐
Climate Change = 0, 10, 30	☐
The Status Column for each Pipe Number (PN) should be checked to ensure that the following criteria is satisfied: OK is acceptable at all return periods Surcharged is acceptable at all return periods No Flood Risk / Flooding permitted at 1in 30(+10%cc) Flood Risk / Flooding permitted at 1in 100(+30%) but needs to be supported by an exceedance route plan demonstrating that all flooded volumes reach a safe point of disposal away from the highway and any buildings etc.	☐
SOAKAWAYS:	
Should be detailed as a 'Lined Soakaway Manhole'	☐
Cover Level should accord with Drainage Layout	☐
Infiltration Coefficient Base = 0	☐
Ring Diameter must correlate with Drainage Layout / Construction Detail	☐
Infiltration Coefficient Side should correlate with the results of the submitted ground investigation report. Note the unit is in m/hr so if you have a m/s infiltration rate in the GI you must multiply by 3600)	☐
Pit Multiplier must be equal to the length of one side of the pit when multiplied by the ring diameter (e.g. if Ring Dia.=1.8m & Pit Multiplier=1.4 – Side of Pit = 1.8 x 1.4 = 2.5 m)	☐
Safety Factor = 2.0	☐
Number Required correlates with number of soakaways proposed	☐
Porosity = 0.3	☐
Cap Volume Depth = The total depth to the invert of the soakaway – 0.450m	☐
Invert Level = Level of the base of the soakaway	☐
Infiltration Depth = Effective depth (i.e. depth of soakaway with apertures between the invert and inlet)	☐

15. Street Lighting

For Section 38 agreements the Council's street lighting team will undertake a single iteration street lighting design free of charge to the developer, or will undertake a technical audit of a third party design if required. The council will undertake a similar service for s278 works, but this work will be done as a time charge payable in advance by the developer.

If opting to use a third party street lighting designer please ensure that both a layout drawing and lighting design are included as part of the detailed design submission.

Clearly indicate whether you require the Council to undertake a street lighting design on your behalf	☐
Any third party street lighting design must comply with DCC's street lighting policy and specification.	☐
All street lighting apparatus must be located within the highway with sufficient working space, and allowing sufficient safety margin from any trafficked area (800mm min for 30mph limit)	☐
Where units are remote from the proposed highway and require easements for future access & maintenance etc. ensure sufficient area is included, and correctly shaded within S38 Agreement plan	☐

16. Landscaping & Trees

Any areas of proposed soft landscaping and/or tree planting must be clearly identified and supporting information provided as part of the detailed design submission. This should include a landscaping plan which accords with the approved planning layout, a tree planting schedule that clearly identifies proposed species of trees and construction details of all proposed trees pits.

Tree & Shrub species are acceptable for highway areas	☐
Tree positions concur with approved planning layout	☐
Tree pits required? (i.e. trees located within hard surfaced areas)	☐
Correct sized pits included within construction details?	☐
Root barrier required? If so is this shown on any drawings?	☐
Suitability of any grassed areas for adoption (sufficient width etc.)	☐
Low fertility subsoil specified for grassed areas	☐

17. Structures

Where a proposed area of highway is supported by a proposed or existing structure, or there is a proposed structure supporting land adjoining the highway it is essential that appropriate structural calculations and design information is supplied to the Council for assessment and approval. Where a structure is proposed to be adopted this must include an initial AIP document as well as subsequent design calculations etc. ; where a private structure adjoins the highway the Council must be provided with the opportunity to check its structural suitability by being provided with a copy if the detailed structural design calculations.

AIP Report prepared / submitted	☐

Detailed design calculations submitted	☐
Structures construction details submitted	☐

18. Road Markings & Traffic Signs

Information on all proposed road markings and traffic signs (either proposed or existing signs to be amended, relocated or replaced) should be provided within the detailed design submission. The information provided should identify location, extent and type of road marking and traffic signs as well as whether any traffic signs require illumination

Junction markings required?	☐
Centre line markings required?	☐
Dragons Teeth markings and associated signs required on bituminous ramps	☐
Street name plate number & locations are satisfactory	☐
Speed limit signing required?	☐
Details of all proposed traffic signs included?	☐
Details of all amendments to existing signage included?	☐
Risk assessment for the use of non-illuminated bollards included?	☐

19. Road Safety Audit

Where new/proposed road layouts conform to standard design principles a road safety will not normally be required. However, where unusual features and/or geometry have been included the council may request that a road safety audit is carried out. If in doubt please discuss with the Highway Development team to confirm whether or not a road safety audit will be required fror your scheme.

Road safety audits are mandatory for all works to the existing highway that affect horizontal or vertical alignment (e.g. all s278 agreement works).

Safety Audit required?	☐
Stage 2 Audit report undertaken / included. DCC's Road Safety team can provide this service upon request	☐
Designer's response to the items raised within the safety audit prepared/included?	☐
RSA recommendations incorporated in to design?	☐

20. General

All drawing notes should be relevant and accurate	☐
All drawing annotations should be relevant and accurate	☐
Check all drawing scales should be standard and appropriate	☐
All drawing titles should be clear	☐

All drawings have a North arrow where required	☐
All drawing keys / legends are clear, wording is correct & all necessary features are included	☐
If any Traffic Regulation Orders are required early engagement with DCC's Development Team is essential to avoid any unnecessary delay	☐