

CHECKLIST 2: PRELIMINARY DESIGN STAGE AUDIT

Issue	Yes	No	Comment
2.1 General topics			
2.1.1 Changes since previous audit			
Do the conditions for which the scheme was originally designed still apply? (for example, no changes to the surrounding network, area activities or traffic mix)			
Has the general form of the project design remained unchanged since previous audit (if any)?			
2.1.2 Drainage			
Will the scheme drain adequately?			
Has the possibility of surface flooding been adequately addressed, including overflow from surrounding or intersecting drains and water courses?			
2.1.3 Climatic conditions			
Has consideration been given to weather records or local experience that may indicate a particular problem? (for example, snow, ice, wind, fog)			
2.1.4 Landscaping			
If any landscaping proposals are available, are they compatible with safety requirements? (for example, sight lines and hazards in clear zones)			
2.1.5 Services			
Does the design adequately deal with buried and overhead services? (especially in regard to overhead clearances, etc)			
Has the location of fixed objects or furniture associated with services been checked, including the position of poles?			
2.1.6 Access to property and developments			
Can all accesses be used safely? (entry and exit/merging)			
Is the design free of any downstream or upstream effects from points of access, particularly near intersections?			
Have rest areas and truck parking accesses been checked for adequate sight distance, etc.?			
2.1.7 Adjacent developments			
Does the design handle accesses to major adjacent generators of traffic and developments safely?			

Issue	Yes	No	Comment
Is the driver's perception of the road ahead free of misleading effects of any lighting or traffic signals on an adjacent road?			
2.1.8 Emergency vehicles and access			
Has provision been made for safe access and movements by emergency vehicles?			
Does the design and positioning of medians and vehicle barriers allow emergency vehicles to stop and turn without unnecessarily disrupting traffic?			
2.1.9 Future widening and/or realignments			
If the scheme is only a stage towards a wider or dual carriageway is the design adequate to impart this message to drivers? (is the reliance on signs minimal/appropriate, rather than excessive?)			
Is the transition between single and dual carriageway (either way) handled safely?			
2.1.10 Staging of the scheme			
If the scheme is to be staged or constructed at different times: <ul style="list-style-type: none"> ▪ are the construction plans and program arranged to ensure maximum safety? ▪ do the construction plans and program include specific safety measures, signing; adequate transitional geometry, etc. for any temporary arrangements? 			
2.1.11 Staging of the works			
If the construction is to be split into several contracts, are they arranged safely?			
2.1.12 Maintenance			
Can maintenance vehicles be safely located?			
2.2 Design issues (general)			
2.2.1 Design standards			
Is the design speed and speed limit appropriate? (for example, consider the terrain, function of the road)			
Has the appropriate design vehicle and check vehicle been used?			

Issue	Yes	No	Comment
2.2.2 Typical cross-sections			
Are lane widths, shoulders, medians and other cross-section features adequate for the function of the road?			
Is the width of traffic lanes and carriageway suitable in relation to: <ul style="list-style-type: none"> ▪ alignment? ▪ traffic volume? ▪ vehicle dimensions? ▪ the speed environment? ▪ combinations of speed and traffic volume? 			
Are overtaking/climbing lanes provided if needed?			
Have adequate clear zones been achieved?			
2.2.3 The effect of cross-sectional variation			
Is the design free of undesirable variations in cross-section design?			
Are crossfalls safe? (particularly where sections of existing highway have been used or there have been compromises to accommodate accesses, etc.)			
Does the cross-section avoid unsafe compromises such as narrowings at bridge approaches or past physical features?			
2.2.4 Roadway layout			
Are all traffic management features designed to avoid creating unsafe conditions?			
Is the layout of road markings and reflective materials able to deal satisfactorily with changes in alignment? (particularly where the alignment may be substandard)			
2.2.5 Shoulders and edge treatment			
Are the following safety aspects of shoulder provision satisfactory: <ul style="list-style-type: none"> ▪ provision of sealed or unsealed shoulders ▪ width and treatment on embankments ▪ crossfalls all of shoulders 			
Are the shoulders likely to be safe if used by slow moving vehicles or cyclists?			
Are any rest areas and truck parking areas safely designed?			

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2.2.6 Effect of departures from standards or guidelines			
Any approved departures from standards or guidelines: is safety maintained?			
Any hitherto undetected departures from standards: is safety maintained?			
2.3 Alignment details			
2.3.1 Geometry of horizontal and vertical alignment			
Do the horizontal and vertical design fit together correctly?			
Is the design free of visual cues that would cause a driver to misread the road characteristics? (for example, visual illusions, subliminal delineation such as lines of trees, poles, etc.)			
Does the alignment provide for speed consistency?			
2.3.2 Visibility; sight distance			
Are horizontal and vertical alignments consistent with the visibility requirements?			
Will the design be free of sight line obstructions due to safety fences or barriers? <ul style="list-style-type: none"> ▪ boundary fences? ▪ street furniture? ▪ parking facilities? ▪ signs? ▪ landscaping? ▪ bridge abutments? ▪ parked vehicles in laybys or at the kerb? ▪ queued traffic? 			
Are railway crossings, bridges and other hazards all conspicuous?			
Is the design free of any other local features which may affect visibility?			
2.3.3 New/existing road interface			
Does the interface occur well away from any hazard? (for example, a crest, a bend, a roadside hazard or where poor visibility/distractions may occur)			
If carriageway standards differ, is the change effected safely?			

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Is the transition where the road environment changes (for example, urban to rural; restricted to unrestricted; lit to unlit) done safely?			
Has the need for advance warning been considered?			
2.3.4 Readability of the alignment by drivers			
Will the general layout, function and broad features be recognised by drivers in sufficient time?			
Will approach speeds be suitable and can drivers correctly track through the scheme?			
2.4 Intersections			
2.4.1 Visibility to and at intersections			
Are horizontal and vertical alignments at the intersection or on the approaches to the intersection consistent with the visibility requirements?			
Will drivers be aware of the presence of the intersection? (especially on the minor road approach)			
<p>Will the design be free of sight line obstructions due to:</p> <ul style="list-style-type: none"> ▪ safety fences or barriers? ▪ boundary fences? ▪ street furniture? ▪ parking facilities? ▪ signs? ▪ landscaping? ▪ bridge abutments? 			
Are railway crossings, bridges and other hazards near intersections conspicuous?			
Will the design be free of any local features which adversely affect visibility?			
Will intersection sight lines be obstructed by permanent or temporary features such as parked vehicles in laybys, or by parked or queued traffic generally?			
2.4.2 Layout, includes its appropriateness			
Is the type of intersection selected (cross roads, T, roundabout, signalised, etc.) appropriate for the function of the two roads?			
Are the proposed controls (Give Way, Stop signals, etc.) appropriate for the particular intersection?			
Are junction sizes appropriate for all vehicle movements?			

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Are the intersections free of any unusual features which could affect road safety?			
Are the lane widths and swept paths adequate for all vehicles?			
Is the design free of any upstream or downstream geometric features that could affect safety? (for example, merging of lanes)			
Are the approach speeds consistent with the intersection design?			
Where a roundabout is proposed: <ul style="list-style-type: none"> ▪ have pedal cycle movements been considered? ▪ have pedestrian movements been considered? ▪ are details regarding the circulating carriageway sufficient? 			
2.4.3 Readability by drivers			
Will the general type, function and broad features be perceived correctly by drivers?			
Are the approach speeds and likely positions of vehicles as they track through the scheme safe?			
Is the design free of sunrise or sunset problems that may create a hazard for motorists?			
2.5 Special road users			
2.5.1 Adjacent land			
Will the scheme be free of adverse effects from adjacent activity and intensity of land use? (if not, what special measures are needed?)			
2.5.2 Pedestrians			
Have pedestrian needs been satisfactorily considered?			
If footpaths are not specifically provided, is the road layout safe for use by pedestrians? (particularly at blind corners or on bridges)			
Are pedestrian subways or footbridges sited to provide maximum use? (i.e. Is the possibility of pedestrians crossing at grade in their vicinity minimised?)			
Has specific provision been made for pedestrian crossings, school crossings or pedestrian signals?			
Where present, are these facilities sited to provide maximum use with safety?			

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Are pedestrian refuges/kerb extensions provided where needed?			
Has specific consideration been given to provision required for special groups? (for example, young, elderly, disabled, deaf or blind)			
2.5.3 Cyclists			
Have the needs of cyclists been satisfactorily considered, especially at intersections?			
Have cycle lanes been considered?			
Are all cycleways of standard or adequate design? Where a need for shared pedestrian/cycle facilities exists, have they been safely treated?			
Where cycleways terminate at intersections or adjacent to the carriageway, has the transition treatment been handled safely?			
Have any needs for special cycle facilities been satisfactorily considered? (for example, cycle signals)			
2.5.4 Motorcyclists			
Has the location of devices or objects that might destabilise a motorcycle been avoided on the road surface?			
Will warning or delineation be adequate for motorcyclists?			
Has barrier kerb been avoided in high-speed areas?			
In areas more likely to have motorcycles run off the road is the roadside forgiving or safely shielded?			
2.5.5 Equestrians and stock			
Have the needs of equestrians been considered, including the use of verges or shoulders and rules regarding the use of the carriageway?			
Can underpass facilities be used by equestrians/stock?			
2.5.6 Freight			
Have the needs of truck drivers been considered, including turning radii and lane widths?			
2.5.7 Public transport			
Has public transport been catered for?			
Have the needs of public transport users been considered?			

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Have the manoeuvring needs of public transport vehicles been considered?			
Are bus stops well positioned for safety?			
2.5.8 Road maintenance vehicles			
Has provision been made for road maintenance vehicles to be used safely at the site?			
2.6 Signs and lighting			
2.6.1 Lighting			
Is this project to be lit? Will safety be maintained if the project is not lit?			
Is the design free of features that make illuminating sections of the road difficult? (for example, shadow from trees or over bridges)			
Has the question of sighting of lighting poles been considered as part of the general concept of the scheme?			
Are frangible or slip-base poles to be provided?			
Are any special needs created by ambient lighting? Will safety be maintained if special treatments are not provided?			
Have the safety consequences of vehicles striking lighting poles (of any type) been considered?			
2.6.2 Signs			
Are signs appropriate for their location?			
Are signs located where they can be seen and read in adequate time?			
Will signs be readily understood?			
Are signs located so that visibility to and from accesses and intersecting roads is maintained?			
Are signs appropriate to the driver's needs? (for example, destination signs, advisory speed signs, etc.)			
Have the safety consequences of vehicles striking sign posts been considered?			
Are signs located so that drivers' sight distance is maintained?			
Where signs are to be located in the clear zone, are they frangible or adequately shielded by a crash barrier?			

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2.6.3 Marking and delineation			
Has the appropriate standard of delineation and marking been adopted?			
Are the proposed markings consistent with the works in the adjoining section of the route?			
Are the previous/adjacent markings to be upgraded? If not, will safety be maintained?			
2.7 Traffic management			
2.7.1 Traffic flow and access restrictions			
Can traffic volumes from the proposed scheme be safely accommodated on existing sections of road?			
Have parking provision and parking control been adequately considered?			
Can any turn bans be implemented without causing problems at adjacent intersections?			
Has the effect of access to future developments been considered?			
Is safety maintained for any traffic diverting to other roads? (for example, to avoid a traffic control device)			
2.7.2 Overtaking and merges			
Are overtaking sight distance and stopping distance adequate?			
Have suitable shoulder widths been provided at lane drop merges?			
Have standard signs and markings been provided for any lane drop?			
Has adequate sight distance been provided to any lane drop?			
Are shoulders wide enough opposite access points and intersections?			
2.7.3 Rest areas and stopping zones			
Are there sufficient roadside stopping areas, rest areas and truck parking areas?			
Are any entries and exits to rest areas or truck parking areas safe?			

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2.7.4 Construction and operation			
If the scheme is to be constructed 'under traffic', can this be done so safely?			
Can the scheme be safely constructed?			
Have the maintenance requirements been adequately considered?			
Is safe access to and from the works available?			
2.8 Additional questions to be considered for development proposals			
2.8.1 Horizontal alignment			
Is visibility adequate for drivers and pedestrians at proposed accesses?			
Is adequate turning space provided for the volume and speed of traffic?			
Are curve radii and forward visibility satisfactory?			
Are sight and stopping distances adequate?			
2.8.2 Vertical alignment			
Are gradients satisfactory?			
Are sight and stopping distances adequate?			
2.8.3 Parking provision			
Is on-site parking adequate to avoid on-street parking and associated risks?			
Are parking areas conveniently located?			
Is adequate space provided in parking areas for circulation and intersection sight distance?			
2.8.4 Servicing facilities			
Are off-street loading/unloading areas adequate?			
Are turning facilities for large vehicles provided in safe locations?			
Is emergency vehicle access adequate?			
2.8.5 Signs and markings			
Have necessary traffic signs and road markings been provided as part of a development?			

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Is priority clearly defined at all the intersection points within the car park and access routes?			
Will the signs and markings be clear in all conditions, including day/night, rain, fog, etc.?			
2.8.6 Landscaping			
Does landscaping maintain visibility at intersections, bends, accesses and pedestrian locations?			
Has tree planting been avoided where vehicles are likely to run off the road?			
2.8.7 Traffic management			
Have any adverse area-wide effects been addressed?			
Will the design keep travel speeds at the safe level?			
Are the number and location of accesses appropriate?			
Are the facilities for public transport services safely located?			
Are any bicycle facilities safely located in respect to vehicular movements?			
Are pedestrian facilities adequate and safely located?			
2.8.8 Other			
Has appropriate street lighting been provided?			
Are any roadside hazards appropriately dealt with?			
Has safe pedestrian access to the development been provided?			
2.9 Any other matter			
2.9.1 Safety aspects not already covered			
Have all unusual or hazardous conditions associated with special events been considered?			
Is the road able to safely handle oversize vehicles, or large vehicles like trucks, buses, emergency vehicles, road maintenance vehicles?			
If required, can the road be closed for special events in a safe manner?			
If applicable, are special requirements of scenic or tourist routes satisfied?			
Have all other matters which may have a bearing on safety been addressed?			