

Dundee City Council Road Safety Audit Procedures



AUGUST 2005

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(i) Definitions

Road Safety Audit:	The evaluation of road schemes during design and construction to identify potential safety hazards that may affect any type of road user before the scheme is opened to traffic, and to suggest any practical measures to eliminate or mitigate those problems. This is a formal process resulting in a signed Road Safety Audit Report.
Road schemes:	All works that involve permanent a significant change to the existing road layout, including signing and markings.
Major road scheme:	A road scheme where the total cost of road works on the entire scheme is greater than £200,000. In addition, such a scheme can be defined at the discretion of the Director of Planning & Transportation or appropriate nominee.
Development Scheme:	Any public or privately funded scheme where planning approval is sought from Dundee City Council.
Client Organisation:	The organisation with responsibility for commissioning the various phases of scheme design and/or supervision of construction. In most cases the client will be Transportation Division or Planning Division or Developers. Occasionally schemes will be commissioned by other Council Departments, for example Economic Development.
Client Project Manager:	The person within the Client Organisation responsible for ensuring the progression of the scheme design in accordance with these procedures.
Design Team:	The Team commissioned by the Client Organisation to undertake the various phases of scheme design and/or supervision of construction. In most cases the internal consultant will be the Engineering Division or Transportation Division.
Design Team Leader:	The person within the Design Team responsible for managing the scheme design.
Road Safety Audit Team:	A Road Safety Audit Team of at least two people, independent of the Design Team, comprising staff with road safety engineering training and experience, which considers the scheme from a road safety point of view. The Dundee City Council Road Safety Audit Team will comprise staff from the Transportation Team.
Audit Team Leader:	The person nominated and approved as Audit Team Leader.
Audit Brief:	The instructions prepared and approved by the Client Organisation and Design Team for the Audit Team defining the scope and details of the scheme to be audited, including sufficient information for the audit to be undertaken.
Exception Report:	A report prepared by the Client Project Manager in association with the Design Team Leader in response to the Road Safety Audit Report. The Exception Report should give reasons why any recommendations from the Road Safety Audit Report have not been adopted.

(ii) Dundee City Council Contact Details

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(iii) Document Structure

This 'Dundee City Council Road Safety Audit Procedures' document is structured into 2 Parts.

- **Part A** gives a general overview of Road Safety Audits and their purpose and provides details of the scope and types of scheme suitable for Road Safety Audit in addition to other general information. This part of the document should be read by all parties undertaking a Road Safety Audit in Dundee.
- **Part B** provides details of procedures to be followed on each specific category of road or development scheme and only the category pertinent to the scheme need be referred to.

PART A

1 Introduction

These procedures describe the process for the management of Road Safety Audits in Dundee City Council.

1.1 Background

Road Safety Audits have been introduced by many Road (or Highway) Authorities in different parts of the world over recent years. Section 39 of the 1988 Road Traffic Act places a statutory duty on local authorities to prevent accidents on new roads. This is now generally interpreted as a duty to carry out Road Safety Audits. Furthermore, Road Safety Audits have been mandatory on Motorways and Trunk Roads in Scotland since the early 1990s. The basis of the process is that safety engineers involved in accident investigation and prevention use their accumulated knowledge of common safety issues to ensure that accident causation factors are not repeated in new and altered road layouts.

1.2 General

The procedures are based on the Industry Standard DMRB HD 19/03, the Scottish Executive Internal Advice Note SIAN 2/94, and the Institution of Highways and Transportation Guidelines for the Safety Audit of Highways. Extensive internal consultations have been carried out at Dundee City Council in order to apply these industry standards to the City's needs.

These procedures apply to all non-trunk road schemes originating within the City Council, and to development schemes designed and implemented on non-trunk roads in Dundee.

1.3 Purpose of Road Safety Audit

The primary purpose of a Road Safety Audit is to identify potential road safety hazards within the scheme design. This check should concentrate on making the design as safe as is possible, as opposed to re-designing the scheme.

A Road Safety Audit should consider only those matters that have an adverse effect on road safety. A Road Safety Audit is not a check of compliance with design standards, as a technical audit as part of the design process will check for compliance. A road safety audit does not consider structural safety.

In carrying out a Road Safety Audit the Audit Team should consider road safety issues for all road users, under all operating conditions. Road users include pedestrians, cyclists, and people with mobility and sight impairment, equestrians, public transport users, as well as drivers, riders and passengers of all classes of motor vehicles.

Road safety audit recommendations for dealing with identified road safety hazards should make allowance for the fact that strategic decisions on route choice and junction type reflect a balance of factors including safety. Audit recommendations requiring major changes in these areas are therefore unlikely to be acceptable, other than at an early stage of design and subject to their overall practicability.

1.4 Quality of Road Safety Audit

It is the responsibility of the Head of Transportation to ensure that the quality and consistency of Road Safety Audit Reports are monitored, in line with these procedures.

2 Scope of the Road Safety Audit Procedures

2.1 Purpose of Dundee City Council Procedures

The purpose of this Road Safety Audit Procedures document is

- to set out Dundee City Council's policy;
- to set out standard procedures to be followed;
- to provide a guide for all parties involved in road and development schemes in Dundee.

This document will be used to identify when a scheme requires an audit and to identify the roles and responsibilities of all parties in the audit process to ensure all schemes are designed with safety in mind.

2.2 Who is the document aimed at?

The document will provide a guide to all clients, designers and road safety audit teams and will be used by:

- Clients – Planning and Transportation Department Divisions, Other Council Departments, Developers
- Designers – Transportation Division, City Engineer Division, Private Consultants
- Road safety audit teams – Planning & Transportation Department Road Safety Audit Team, Private Consultant Road Safety Audit Teams
- Development Control officers - Planning and Transportation Department

3 Type of Schemes Suitable for Road Safety Audit

3.1 Scheme Categories

These procedures apply to all road schemes and development schemes that significantly alter or extend the road network for which Dundee City Council is the Road Authority.

All road and development schemes in Dundee fall into one of three categories depending upon the client involved. These categories are as follows:

- 1 Schemes where Dundee City Council is the Client
- 2 Private Development Schemes
- 3 Schemes under £10,000.

Part B of this document gives details of the procedure to be followed for each of these categories.

3.2 Exempt Schemes

Schemes can only be exempted from Road Safety Audit at the discretion of the Director of Planning & Transportation. In those cases where a scheme is exempted, a reason should be stated and documented within the scheme details.

3.3 Temporary Traffic Management

These Road Safety Audit procedures do not apply to temporary traffic management schemes. The safety implications of temporary traffic management schemes will be considered as part of the procedures currently carried out by Dundee City Council under the New Roads and Street Works Act 1991.

3.4 Trunk road schemes in Dundee

The A972, A92 and A90 Trunk roads run through Dundee, and the Scottish Executive (SE) is the Road Authority for these roads; these are currently maintained on behalf of the SE by BEAR. The Road Safety Audit process on these roads is the responsibility of the SE. However, the procedures documented here will apply in those situations where a scheme on a Trunk road ties in to a local road.

It should be noted that the SE Road Safety Audit procedures include Road Safety Audits on temporary traffic management schemes.

4 Road Safety Audit Stages

Road Safety Audit is not a single procedure undertaken once for each scheme, but is a process that ensures safety is considered at all stages of design, from concept to completion and beyond.

Road schemes should be subject to Road Safety Audit at the following stages:

Stage F: Feasibility Safety Audit on appropriate development schemes

Feasibility Safety Audits shall only be undertaken on developer led schemes where the opportunity exists for the safety audit to assist in defining the choice of road alignment or junction type. The Safety Audit shall include a site visit. The Development Control officer in accordance with Part B Section 2 of this procedure document shall determine the requirement for a Feasibility Road Safety Audit.

Stage 1: Preliminary design

Stage 1 Safety Audits shall be undertaken at the completion of preliminary design and for development schemes before planning consent, where possible. The Safety Audit shall include a site visit.

Stage 2: Detailed design

Stage 2 Safety Audits shall be undertaken on completion of the detailed design and is concerned with the more detailed aspects of a road or development scheme such as layout of junctions, position of signs, carriageway markings, lighting provision etc. Stage 2 Audit shall include a review of the issues raised in the Stage 1 Audit Report. The Safety Audit shall include a site visit.

Stage 1 and 2 Safety Audits may be combined where appropriate, with the agreement of the Director of Planning & Transportation or appropriate nominee.

Stage 3: Upon scheme completion

Stage 3 Safety Audits shall be undertaken when the road scheme is substantially complete and preferably before the works are opened to road users. However, all Stage 3 audits must be undertaken within one month of opening. Stage 3 Road Safety Audits can be carried out in two parts for major road schemes. These are stage 3a) - (prior to completion) and 3b) - (immediate post-opening).

All Stage 3 Road Safety Audits shall include a site visit in both daytime and darkness conditions.

A representative from Tayside Police and from the Dundee City Council Road Maintenance Team shall be invited to all Stage 3 Road Safety Audits. The responsibility for production of the Road Safety Audit in these cases remains with the Road Safety Audit Team. The Police and Maintenance representatives are present as additional experts and do not formally constitute part of the Road Safety Audit Team.

Stage 4: Monitoring

It is the responsibility of the Team Leader, Transportation

to monitor the accident record on all schemes that have been subject to a Road Safety Audit. This monitoring should include a formal note of the accident record at both 12 months and 36 months after substantial completion.

(Note: For Stages F, 1, 2, 3 it is the responsibility of the Client Project Manager and the Design Team Leader to satisfy themselves that the information presented to and by the Road Safety Audit Team is appropriate for each stage of the Road Safety Audit.)

Appendix A to Part A of this document provides a checklist that can be used as a guide for issues to be considered at the various stages. It should be noted that this is a guide for information only and is by no means an exhaustive list of all issues.

5 The Construction, Design and Management (CDM) Regulations 1994

The CDM regulations were introduced in 1994 with the intention of improving the planning and coordination of health and safety matters during construction and the subsequent maintenance of a project. In summary, the regulations require designers to identify hazards (often done through risk assessments) with a view to, where possible, eliminating risk for those constructing or subsequently maintaining the project. Where risks cannot be eliminated they must be reduced to the extent feasible, then any residual risk identified so that the contractor can take account of this in determining safe methods of construction and maintenance.

The Road Safety Audit is a separate process and not one required by the CDM Regulations. In principle this audit is concerned with the future operational safety of the scheme and does not deal with construction and maintenance issues relating to the project. It is important to note that where redesign is required as a consequence of the Road Safety Audit, then the designer should conduct a further assessment of the hazards as required by the CDM Regulations.

At the end of a project a Health and Safety File is required to be produced which records all relevant information and details of any known hazards incorporated within the scheme, which may impact on future maintenance or be relevant to contractors carrying out alterations to the scheme. Where appropriate, any relevant comments from the Road Safety Audit should also be included within the Health and Safety File.

APPENDIX A - ROAD SAFETY AUDIT CHECKLIST OF MAJOR ISSUES TO BE CONSIDERED**(SOURCE: IHT ROAD SAFETY AUDIT GUIDELINES AND DMRB HD 19/03)****Checklist for Stage F - Feasibility****F.1 - General**

· General

Possible Issues

Consistency of standards with adjacent road network, especially at tie-ins

Secondary effects on surrounding road network

Where a preferred scheme is being chosen, relative safety performance of options

F.2 - Routes

· Routes

Possible Issues

Impact of standard of route, related to design flows and speed, on safety

Overtaking opportunities

Consistency of junction arrangements, access control

Frequency of junctions (public and private) related to safe access

Horizontal and vertical alignments consistent with visibility requirements, both along the road and at junctions

Facilities for pedestrians, cyclists and equestrians

Provision for unusual aspects of traffic composition (heavy concentrations of particular types of road user), or environment (e.g. sunrise / sunset glare, fog, or wind)

F.3 - Area Schemes

· Area Schemes

Possible Issues

Designation of functions for different elements of the road hierarchy

Scheme consistent with overall safety plan

CHECKLIST FOR STAGE 1 – COMPLETION OF PRELIMINARY DESIGN**1.1 - General**

Item	Possible Issues
· Departures from Standards	What are the road safety implications of any approved Departures from Standards or Relaxations?
· Cross-sections	How safely do the cross-sections accommodate drainage, ducting, signing, fencing, lighting and pedestrian and cycle routes?
· Cross-sectional Variation	What are the road safety implications if the standard of the proposed scheme differs from adjacent lengths?
· Drainage	Will the new road drain adequately?
· Landscaping	Could areas of landscaping conflict with sight lines (including during windy conditions)?
· Public Utilities/Services Apparatus	Have the road safety implications been considered?
· Lay-bys	Has adequate provision been made for vehicles to stop off the carriageway including picnic areas? How will parked vehicles affect sight lines?
· Access	Can all accesses be used safely? Can multiple accesses be linked into one service road? Are there any conflicts between turning and parked vehicles?
· Emergency Vehicles	Has provision been made for safe access by emergency vehicles?
· Future Widening	Where a single carriageway scheme is to form part of future dual carriageway, is it clear to road users that the road is for two-way traffic?
· Adjacent Development	Does adjacent development cause interference/confusion e.g. lighting or traffic signals on adjacent road may affect a road user's perception of the road ahead?
· Basic Design Principles	Are the overall design principles appropriate for the predicted level of use for all road users?

1.2 - Local Alignment

Item	Possible Issues
· Visibility	Are horizontal and vertical alignments consistent with required visibility? Will sight lines be obstructed by permanent and temporary features e.g. bridge abutments and parked vehicles?
· New/Existing Road Interface	Will the proposed scheme be consistent with standards on adjacent lengths of road and if not, is this made obvious to the road user? Does interface occur near any hazard, i.e. crest, bend after steep gradient?
· Vertical Alignment	Are climbing lanes to be provided?

CHECKLIST FOR STAGE 1 – COMPLETION OF PRELIMINARY DESIGN - continued**1.3 - Junctions****Item**

- Layout

Possible Issues

Is provision for right turning vehicles required?
 Are acceleration/deceleration lanes required?
 Are splitter islands required on minor arms to assist pedestrians or formalise road users movements to/from the junction?
 Are there any unusual features that affect road safety?
 Are widths and swept paths adequate for all road users?
 Will large vehicles overrun pedestrian or cycle facilities?
 Are there any conflicts between turning and parked vehicles?
 Are any junctions sited on a crest?

- Visibility

Are sight lines adequate on and through junction approaches and from the minor arm?
 Are visibility splays adequate and clear of obstructions such as street furniture and landscaping?

1.4 – Non Motorised User Provision**Item**

- Adjacent Land
- Pedestrian/Cyclists

Possible Issues

Will the scheme have an adverse effect on safe use of adjacent land?
 Have pedestrian and cycle routes been provided where required?
 Do shared facilities take account of the needs of all user groups?
 Can verge strip dividing footways and carriageways be provided?
 Where footpaths have been diverted, will the new alignment permit the same users free access?
 Are footbridges/subways sited to attract maximum use?
 Is specific provision required for special and vulnerable groups i.e. the young, elderly, mobility and visually impaired?
 Are tactile paving, flush kerbs and guard railing proposed?
 Is it specified correctly and in the best location?
 Have needs been considered, especially at junctions?
 Are these routes clear of obstructions such as signposts, lamp columns etc?
 Have needs been considered?
 Does the scheme involve the diversion of bridleways?

- Equestrians

CHECKLIST FOR STAGE 1 – COMPLETION OF PRELIMINARY DESIGN - continued**1.5 – Road Signs, Carriageway Markings And Lighting**

Item	Possible Issues
· Signs	Are sign gantries needed?
· Lighting	Is scheme to be lit? Has lighting been considered at new junctions and where adjoining existing roads? Are lighting columns located in the best positions e.g. behind safety fences?
· Poles/Columns	Will poles/columns be appropriately located and protected?
· Road Markings	Are any road markings proposed at this stage appropriate?

STAGE 2 CHECKLISTS – COMPLETION OF DETAILED DESIGN

The Audit Team should satisfy itself that all issues raised at Stage 1 have been resolved. Items may require further consideration where significant design changes have occurred.

Note if a Scheme has not been subject to a Stage 1 Audit, the items listed in Lists 1.1 to 1.5 should be considered together with the items listed below.

2.1 - General

Item	Possible Issues
· Departures from Standards	Consider road safety aspects of any Departures granted since Stage 1.
· Drainage	Do drainage facilities (e.g. gully spacing, flat spots, crossfall, ditches) appear to be adequate? Do features such as gullies obstruct cycle routes, footpaths or equestrian routes? Do the locations of features such as manhole covers give concern for motorcycle/cyclist stability?
· Climatic Conditions	Is there a need for specific provision to mitigate effects of fog, wind, sun glare, snow, and icing?
· Landscaping	Could planting (new or when mature) encroach onto carriageway or obscure signs or sight lines (including during windy conditions)? Could mounding obscure signs or visibility? Could trees (new or when mature) be a hazard to a vehicle leaving the carriageway? Could planting affect lighting or shed leaves on to the carriageway? Can maintenance vehicles stop clear of traffic lanes?
· Public Utilities/Services Apparatus	Can maintenance vehicles stop clear of traffic lanes? If so, could they obscure signs or sight lines? Are boxes, pillars, posts and cabinets located in safe positions? Do they interfere with visibility? Has sufficient clearance of overhead cables been provided? Have any special accesses/parking areas been provided and are they safe?
· Lay-bys	Have lay-bys been positioned safely? Could parked vehicles obscure sight lines? Are lay-bys adequately signed? Are picnic areas properly segregated from vehicular traffic?
· Access	Is the visibility to/from access adequate? Are the accesses of adequate length to ensure all vehicles clear the main carriageway? Do all accesses appear safe for their intended use?
· Skid Resistance	Are there locations where a high skid resistance surfacing (such as on approaches to junctions and crossings) would be beneficial? Do surface changes occur at locations where they could adversely affect motorcycle stability?

STAGE 2 CHECKLISTS – COMPLETION OF DETAILED DESIGN - continued

- Agriculture
 - Have the needs of agricultural vehicles and plant been taken into consideration (e.g. room to stop between carriageway and gate, facilities for turning on dual carriageways)?
 - Are such facilities safe to use and are they adequately signed?
- Fences and Road Restraint Systems
 - Is there a need for road restraint systems to protect road users from signs, gantries, abutments, steep embankments or water hazards?
 - Do the restraint systems provided give adequate protection?
 - Are the restraint systems long enough?
- Adjacent Developments and Roads
 - Has screening been provided to avoid headlamp glare between opposing carriageways, or any distraction to road users?
 - Are there any safety issues relating to the provision of environmental barriers or screens?

**2.2 - Local Alignment
Item**

- Visibility
 - Possible Issues**
 - Obstruction of sight lines by:
 - i. safety fences
 - ii. boundary fences
 - iii. street furniture
 - iv. parking facilities
 - v. signs
 - vi. landscaping
 - vii. structures
 - viii. environmental barriers
 - ix. crests
 - x. features such as buildings, plant or materials outside the highway boundary
 - Is the forward visibility of at-grade crossings sufficient to ensure they are conspicuous?
- New/Existing Road Interface
 - Where a new road scheme joins an existing road, or where an on-line improvement is to be constructed, will the transition give rise to potential hazards?
 - Where road environment changes (e.g. urban to rural, restricted to unrestricted) is the transition made obvious by signing and carriageway markings?

**2.3 - Junctions
Item**

- Layout
 - Possible Issues**
 - Are the junctions and accesses adequate for all vehicular movements?
 - Are there any unusual features, which may have an adverse effect on road safety?
 - Have guard rails/safety fences been provided where appropriate?
 - Do any roadside features (e.g. guard rails, safety fences, signs and traffic signals) intrude into drivers' line of sight?
 - Are splitter islands and bollards required on minor arms to assist pedestrians or formalise road users' movements to/from the junction?
 - Are parking or stopping zones for buses, taxis and public utilities vehicles situated within the junction area?
 - Are they located outside visibility splays?

STAGE 2 CHECKLISTS – COMPLETION OF DETAILED DESIGN - continued

- Visibility
 - Are the sight lines adequate at and through the junctions and from minor roads?
 - Are visibility splays clear of obstruction?
- Signing
 - Is the junction signing adequate and easily understood?
 - Have the appropriate warning signs been provided?
 - Are signs appropriately located and of the appropriate size for approach speeds?
 - Are sign posts protected by safety barriers where appropriate?
- Road Markings
 - Do the carriageway markings clearly define routes and priorities?
 - Are the dimensions of the markings appropriate for the speed limit of the road?
 - Have old road markings and road studs been adequately removed?
- T, X, Y-Junctions
 - Have ghost islands and refuges been provided where required?
 - Do junctions have adequate stacking space for turning movements?
 - Can staggered crossroads accommodate all vehicle types and movements?
- All Roundabouts
 - Are the deflection angles of approach roads adequate for the likely approach speed?
 - Are splitter islands necessary?
 - Is visibility on approach adequate to ensure drivers can perceive the correct path through the junction?
 - Is there a need for chevron signs?
 - Are dedicated approach lanes required?
 - If provided, will the road markings and signs be clear to all users?
- Mini Roundabouts
 - Are the approach speeds for each arm likely to be appropriate for a mini roundabout?
 - Is the centre island visible from all approaches?
- Traffic Signals
 - Will speed discrimination equipment be required?
 - Is the advance signing adequate?
 - Are signals clearly visible in relation to the likely approach speeds?
 - Is “see through” likely to be a problem?
 - Would lantern filters assist?
 - Is the visibility of signals likely to be affected by sunrise/sunset?
 - Would high intensity signals and/or backing boards improve visibility?
 - Would high-level signal units be of value?
 - Are the markings for right turning vehicles adequate?
 - Is there a need for box junction markings?
 - Is the phasing appropriate?
 - Will pedestrian/cyclist phases be needed?

STAGE 2 CHECKLISTS – COMPLETION OF DETAILED DESIGN - continued

Does the number of exit lanes equal the number of approach lanes, if not is the taper length adequate?

Is the required junction intervisibility provided?

2.4 - Non Motorised User Provision**Item****Possible Issues**

- Adjacent Land
 - Are accesses to and from adjacent land/properties safe to use?
 - Has adjacent land been suitably fenced?
- Pedestrians
 - Are facilities required for NMUs at:
 - a) junctions;
 - b) pelican/puffin/toucan/zebra crossings;
 - c) refuges;
 - d) other locations?
 - Are crossing facilities placed and designed to attract maximum use?
 - Are guardrails/fencing present/required to deter pedestrians from crossing the road at unsafe locations?
 - For each type of crossing (bridges, subways, at grade) have the following been fully considered?
 - a) visibility both by and of pedestrians;
 - b) use by mobility and visually impaired;
 - c) use by elderly;
 - d) use by children/schools;
 - e) need for guardrails in verges/central reserve;
 - f) signs;
 - g) width and gradient;
 - h) surfacing;
 - i) provision of dropped kerbs;
 - j) avoidance of channels and gullies;k) need for deterrent kerbing;i) need for lighting.
- Cyclists
 - Have the needs of cyclists been considered especially at junctions and roundabouts?
 - Are cycle lanes or segregated cycle tracks required?
 - Does the signing make clear the intended use of such facilities?
 - Are cycle crossings adequately signed?
 - Do guardrails need to be provided to make cyclists slow down or dismount at junctions/crossings?
 - Has lighting been provided on cycle routes?
 - Has toucan crossing been provided on cycle routes?
- Equestrians
 - Should bridleways or shared facilities be provided?
 - Does the signing make clear the intended use of such paths and is sufficient local signing provided to attract users?
 - Have suitable parapets/rails been provided where necessary?

STAGE 2 CHECKLISTS – COMPLETION OF DETAILED DESIGN - continued**2.5 - Road Signs, Carriageway Markings And Lighting**

Item	Possible Issues
· Advance Direction Sign and Local Traffic Signs	<p>Do destinations shown accord with signing policy?</p> <p>Are signs easy to understand?</p> <p>Are the signs located behind safety fencing and out of the way of pedestrians and cyclists?</p> <p>Is there a need for overhead signs?</p> <p>Where overhead signs are necessary is there sufficient headroom to enable designated NMU usage?</p> <p>Do signs need reflectorisations where road is unlit and is facing material appropriate for location?</p>
· Variable Message Signs	<p>Are the legends relevant and easily understood?</p> <p>Are signs located behind safety fencing?</p>
· Lighting	<p>Has lighting been considered at new junctions and where adjoining existing roads?</p> <p>Is there a need for lighting, including lighting of signs and bollards?</p> <p>Are lighting columns located in the best positions e.g. behind safety fences and not obstructing NMU routes?</p>
· Road Markings	<p>Are road markings appropriate to location?</p> <p>a) Centre lines;</p> <p>b) Edge lines;</p> <p>c) Hatching;</p> <p>d) Studs;</p> <p>e) Text/Destinations;</p> <p>f) Approved and/or conform to the regulations.</p>
· Poles and Columns	<p>Are poles and columns protected by safety fencing where appropriate?</p>

STAGE 3 CHECKLISTS – COMPLETION OF CONSTRUCTION

3.1 - General

Item	Possible Issues
· Departures from Standards	Are there any adverse road safety implications of any departures granted since Stage 2?
· Drainage	Does drainage of roads, cycle routes and footpaths appear adequate? Do drainage features such as gullies obstruct footpaths, cycle routes or equestrian routes?
· Climatic Conditions	Are any extraordinary measures required?
· Landscaping	Could planting obscure signs or sight lines (including during periods of windy weather)? Does mounding obscure signs or visibility?
· Public Utilities	Have boxes, pillars, posts and cabinets been located so that they don't obscure visibility? Are the accesses of adequate length to ensure all vehicles clear the main carriageway?
· Access	Is the visibility to/from access adequate? Are the accesses of adequate length to ensure all vehicles clear the main carriageway?
· Lay-bys	Has adequate provision been made for vehicles to stop off the carriageway including picnic areas? How will parked vehicles affect sight lines?
· Access	Can all accesses be used safely? Can multiple accesses be linked into one service road? Are there any conflicts between turning and parked vehicles?
· Skid Resistance	Do any joints in the surfacing appear to have excessive bleeding or low skid resistance? Do surface changes occur at locations where they could adversely affect motorcycle stability?
· Fences and Restraint Systems	Is the restraint system adequate? In the case of wooden post and rail boundary fences, are the rails placed on the non-traffic side of the posts?
· Adjacent Development	Have environmental barriers been provided and do they create a hazard?
· Bridge Parapets	Is the projection of any attachment excessive?
· Network Management	Have appropriate signs and/or markings been installed in respect of Traffic Regulation Orders?

3.2 - Local Alignment

Item	Possible Issues
· Visibility	Are the sight lines clear of obstruction?
· New / Existing Road Interface	Is there a need for additional signs and/or road markings?

STAGE 3 CHECKLISTS – COMPLETION OF CONSTRUCTION - continued**3.3 - Junctions**

Item	Possible Issues
· Visibility	Are all visibility splays clear of obstructions?
· Road Markings	Do the carriageway markings clearly define routes and priorities? Have all superseded road markings and studs been removed adequately?
· Roundabouts	Can the junction be seen from appropriate distances and is the signing adequate?
· Traffic Signals	Can the signals be seen from appropriate distances? Can drivers see signals for opposing traffic? For the operation of signals. Do phases correspond to the design? Do pedestrian phases give adequate crossing time?
· T, X And Y Junctions	Are priorities clearly defined? Is signing adequate?

3.4 - Non Motorised User Provision

Item	Possible Issues
· Adjacent Land	Has suitable fencing been provided?
· Pedestrians	Are the following adequate for each type of crossing (bridges, subways, at grade)? a) visibility; b) signs; c) surfacing; d) other guardrails; e) drop kerbing or flush surfaces; f) tactile paving.
· Cyclists	Do the following provide sufficient levels of road safety for cyclists on, or crossing the road? a) visibility; b) signs; c) guardrails; d) drop kerbing or flush surfaces; e) surfacing; f) tactile paving.
· Equestrians	Do the following provide sufficient levels of road safety for equestrians? a) visibility; b) signs; c) guardrails.

3.5 - Road Signs, Carriageway Markings And Lighting

Item	Possible Issues
· Signs	Are the visibility, locations and legibility of all signs (during daylight and darkness) adequate?

- Variable Message Signs
 - Are signposts protected from vehicle impact?
 - Will signposts impede the safe and convenient passage of pedestrians and cyclists?
 - Have additional warning signs been provided where necessary?
 - Can VMS be read and easily understood at distances appropriate for vehicle speeds?
- Lighting
 - Are they adequately protected from vehicle impact?
 - Does the street lighting provide adequate illumination of roadside features, road markings and non-vehicular users to drivers?
 - Is the level of illumination adequate for the road safety of non-motor vehicle users?
- Carriageway Markings
 - Are all road markings/studs clear and appropriate for their location?
 - Have all superseded road markings and studs been removed adequately?

PART B**1 ROAD SAFETY AUDIT OF SCHEMES WHERE DUNDEE CITY COUNCIL IS THE CLIENT**

Flowchart 1 is included at page 31 detailing procedures involved in Road Safety Audit. Reference should be made to this flowchart in conjunction with written text.

1.1 Commissioning the Road Safety Audit

It is the responsibility of the Client Project Manager within the City Council to determine the requirement for a Road Safety Audit in accordance with Part A of these Procedures. The Client Project Manager, through the design brief, shall instruct the Design Team to obtain a road safety audit.

(Note: Where road schemes originate within the Transportation Division, the roles of Client Project Manager and Design Team are often combined.)

1.2 Timescales for the Road Safety Audit

The Client Project Manager in consultation with the Design Team should allow an adequate time period within the overall project plan for the Road Safety Audit to take place. Table 1A gives guidance on the number of working days for each stage of audit on minor and major schemes.

Table 1A: Timescale guidance for the Road Safety Audit

Stage of Audit	Minor schemes	Major schemes
1	5 working days notice between request for audit and submission of plans 10 working days between submission of plans and completion of Road Safety Audit	5 working days notice between request for audit and submission of plans 10 working days between submission of plans and completion of Road Safety Audit
2	5 working days notice between request for audit and submission of plans 10 working days between submission of plans and completion of Road Safety Audit	10 working days notice between request for audit and submission of plans 28 working days between submission of plans and completion of Road Safety Audit
3	10 working days notice between request for audit and submission of plans 10 working days between submission of plans and completion of Road Safety Audit	10 working days notice between request for audit and submission of plans 10 working days between submission of plans and completion of Road Safety Audit

Additional time should also be allowed for potential post Audit re-design.

1.3 Appointing the Road Safety Audit Team

The Design Team should in the first instance, attempt to obtain a Road Safety Audit from the Dundee City Council internal Road Safety Audit Team. If this is not practicable, the design team should appoint an independent Road Safety Audit Team.

It will be necessary for the Design Team to demonstrate that the Road Safety Audit has been carried out in accordance with these procedures. In particular, they should demonstrate that the entire Road Safety Audit Team is completely independent from the Design Team and is comprised of at least two staff with appropriate road safety training and experience and relevant Road Safety Audit experience.

(Note: During the course of scheme preparation and construction the Design Team may change, as might the personnel within the Client Organisation and Road Safety Audit Team. It is recommended, however, that where possible the same Audit Team be used throughout the scheme delivery to ensure a consistent approach.

1.4 Training, Skills and Experience Required of External Audit Team

The Design Team must be satisfied that the proposed Audit Team Leader and Audit Team Members have adequate and relevant training, skills and experience. Table 1B lists the training, skills and experience required of the external Road Safety Audit Team. CVs of the Audit Team Leader and Member(s) should be lodged with the Design Team.

Table 1B Training, Skills and Experience Required of External Audit Team

Audit Team Leader: A minimum of 4 years Accident Investigation or Road Safety Engineering experience. Completion of at least 5 Road Safety Audits in the past 12 months as an Audit Team Leader or Member. In order to become an Audit Team Leader the auditor will already have achieved the necessary training to become an Audit Team Member. However, they should also demonstrate a minimum 2 days CPD in the field of Road Safety Audit, Accident Investigation or Road Safety Engineering in the past 12 months.

Audit Team Member: A minimum of 2 years Accident Investigation or Road Safety Engineering experience. Completion of at least 5 Road Safety Audits as Audit Team Leader, Member or Observer in the past 24 months. The Audit Team Member should have attended at least 10 days of formal Accident Investigation or Road Safety Engineering training to form a solid theoretical foundation on which to base practical experience. They should also demonstrate a minimum of 2 days CPD in the field of Road Safety Audit, Accident Investigation or Road Safety Engineering in the past 12 months.

Observer: A minimum of 1-year Accident Investigation or Road Safety Engineering experience. The Observer should have attended at least 10 days of formal Accident Investigation or Road Safety Engineering training.

- The organisation carrying out the Road Safety Audit should have the appropriate level of public liability and professional indemnity insurance for this type of work;
- Staff from Dundee City Council can take part as observers, for training purposes, at any stage of any Road Safety Audit carried out on a road for which the City Council has responsibility.

The Audit Team should list their experience for each of the requirements set out in Table 1B within an Appendix to their Road Safety Audit Report.

The most appropriate candidates for Audit Team Leader and Audit Team Member are individuals whose current employment involves Accident Investigation or Road Safety Engineering on a regular basis. This should ensure that auditors are well versed in the most recent

practices and developments in the field. Additional specialist staff, such as Road Safety Officers and Traffic Signal Engineers, can be brought into specific projects as required.

1.5 The Audit Brief

The Design Team is responsible for preparing and issuing the Audit Brief to the Audit Team. An example of an Audit Brief is shown in Appendix 1A. The Audit Brief needs careful preparation and must include sufficient information to enable an efficient audit to be undertaken. A copy of the brief shall be forwarded to the Client Project Manager for approval in advance of the audit. Any alterations to the brief should be documented along with their reasons by the Client Project Manager.

The Design Team should retain a copy of all information submitted to the Road Safety Audit Team.

If necessary, the Design Team and Road Safety Audit Team can meet to discuss the audit brief.

1.6 Audit Management

The Client Project Manager and Design Team should liaise and ensure that the Audit process is initiated at the appropriate stages. The Design Team will need to demonstrate that the Road Safety Audit has been carried out in accordance with these procedures and by people who are independent of the scheme design.

1.7 A Road Safety Audit Report

A Road Safety Audit Report should include an introductory statement setting out the terms of reference and listing the Road Safety Audit Team members. The statement should describe when the Road Safety Audit was carried out and refer to any plans and other documents checked by the Road Safety Audit Team.

1.7.1 The Draft Report

Road Safety Audit Team members should record their comments on each scheme in a systematic way and use this as a basis for developing the Draft Report. A sample comments list format is shown in Appendix 1B.

A draft report should be produced to include a series of road safety problems and related recommendations for improvement. A sample report format is shown in Appendix 1C. A copy of the draft report should be sent to the Client Project Manager and the Design Team. Following production of this report, and if required, a meeting should be convened involving the Client Project Manager, Design Team and Road Safety Audit Team. The purpose of this meeting is to clarify any issues arising from the Road Safety Audit, and to resolve as many issues as possible.

1.7.2 The Final Report

Following the meeting the final report should then be produced to include a certificate signed by the members of the Road Safety Audit Team. A sample certificate is shown in Appendix 1D.

Once the Road Safety Audit Team has completed the Road Safety Audit, a copy of the final report should be sent to the Client Project

Manager and to the Design Team. A paper copy of the final report, together with all the requested documentation and plans should be archived by the Road Safety Audit Team. The final report should not be amended after this stage.

1.8 Response to the Road Safety Audit

The Client Project Manager will require a response to the Road Safety Audit from the Design Team. A Design Team Response form is included in Appendix 1E, and this should be completed by the Design Team Leader.

The Client Project Manager should instruct the Design Team to make those changes to the design that are agreed as a result of the Road Safety Audit Report. Where all of the Road Safety Audit recommendations are accepted in full, these changes should be made to the scheme and documented. If the changes are substantial, the road scheme shall be re-submitted for Road Safety Audit.

1.9 Exception Report

Where there are any recommended changes that are not agreed, the Client Project Manager should prepare an Exception Report listing all recommendations raised within the Road Safety Audit Report that remain unresolved. The Exception Report should give reasons why recommendations from the Road Safety Audit Report have not been adopted. A sample exception report format is shown in Appendix 1F.

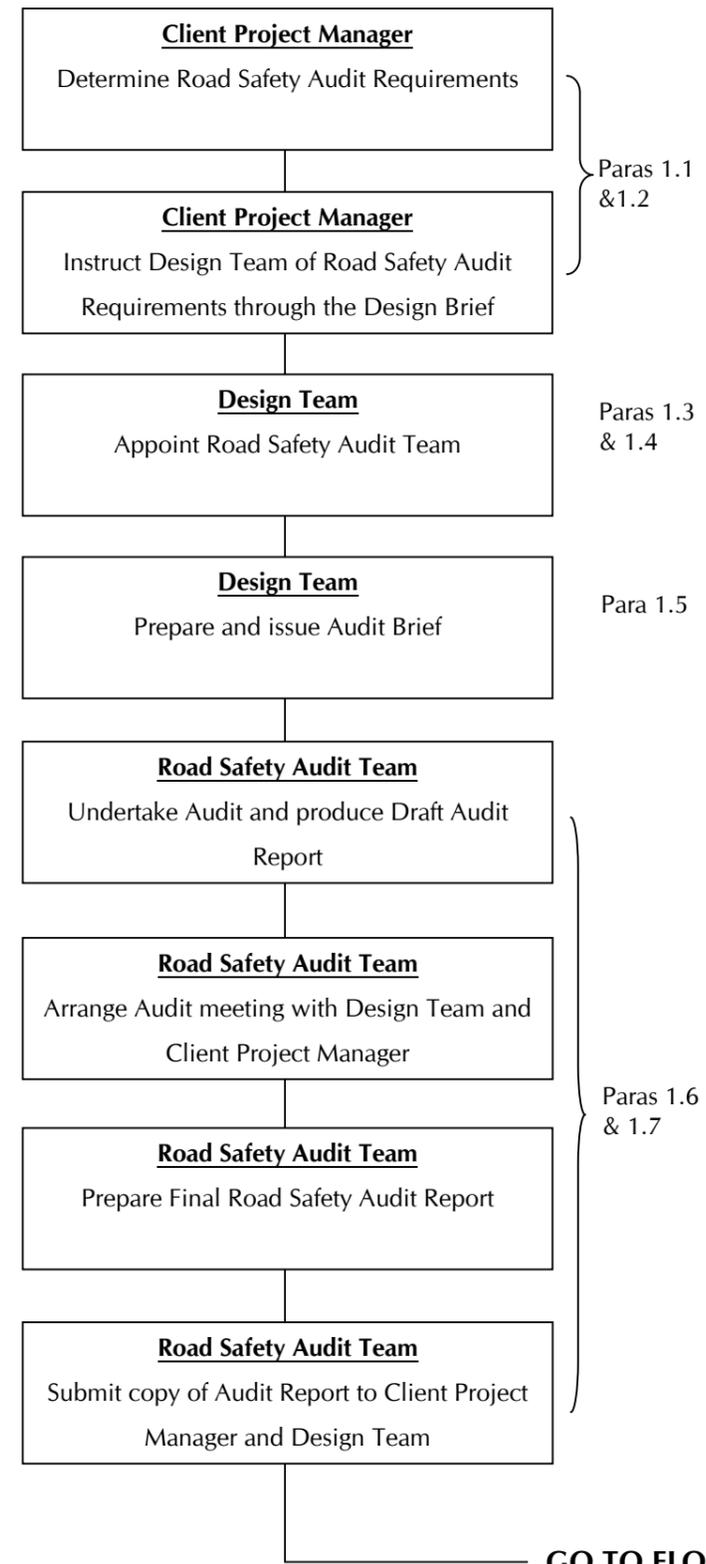
The Client Project Manager should forward a copy of the Exception Report to the Audit Team, and to the Head of Transportation.

1.10 Arbitration

For those issues raised within any Exception Report, it will be necessary to seek arbitration in order to determine whether the outstanding Road Safety Audit recommendations are to be adopted. In such instances, the Head of Transportation will make a recommendation to the Dundee City Council Planning and Transportation Departmental Management Board, which will consider the issues involved and act as the final arbiter.

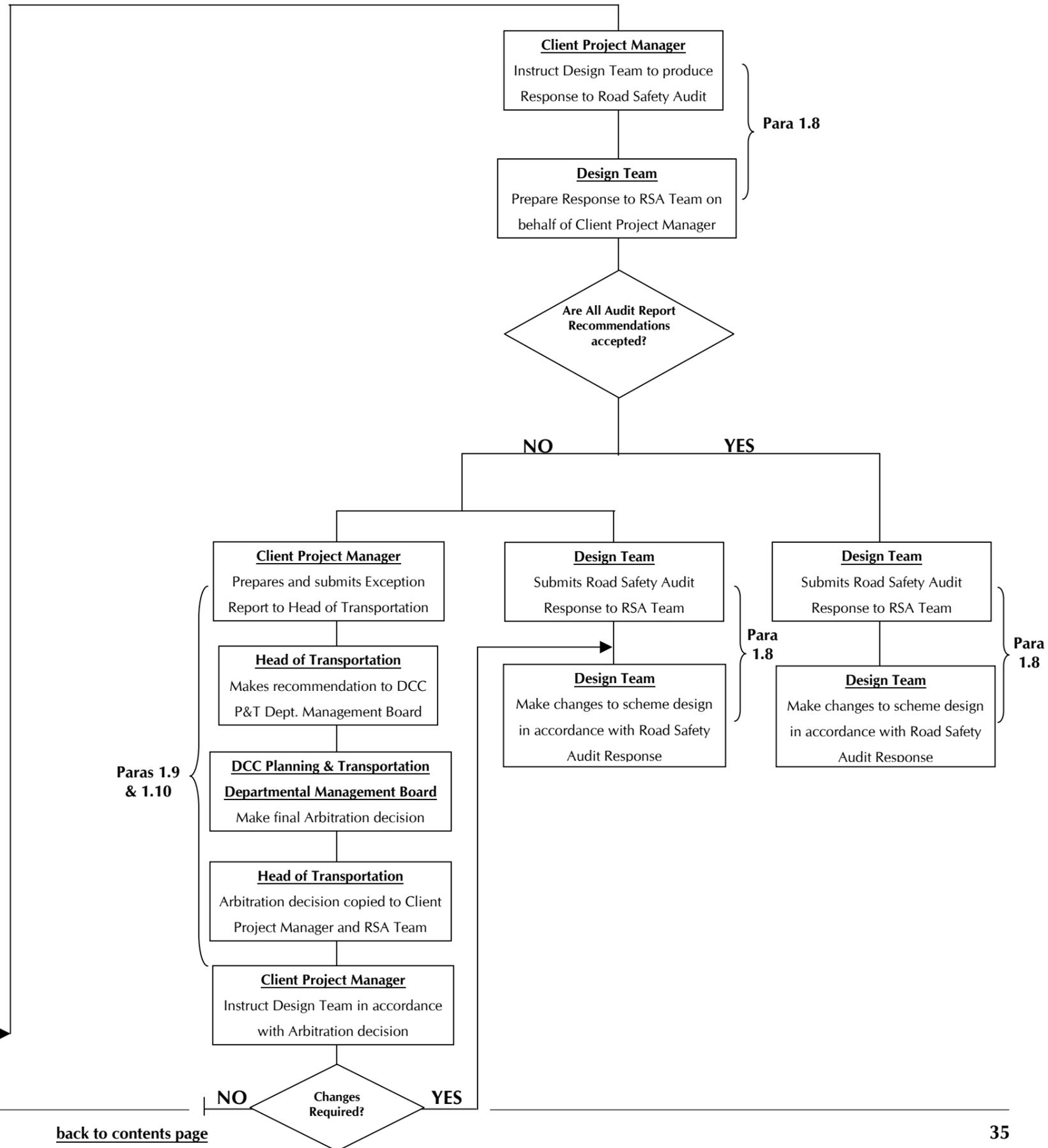
FLOWCHART 1 Part A

- 1.1 COMMISSIONING
- 1.2 TIMESCALES
- 1.3 APPOINTING THE ROAD SAFETY AUDIT TEAM
- 1.4 TRAINING, SKILLS AND EXPERIENCE REQUIRED OF AUDIT TEAM
- 1.5 THE AUDIT BRIEF
- 1.6 AUDIT MANAGEMENT
- 1.7 A ROAD SAFETY AUDIT REPORT



FLOWCHART 1 Part B

- 1.8 RESPONSE TO THE ROAD SAFETY AUDIT
- 1.9 EXCEPTION REPORT
- 1.10 ARBITRATION



FROM FLOWCHART 1 PART A

APPENDIX 1A - CHECKLIST TO BE PREPARED BY THE DESIGN TEAM

Example of audit brief to be prepared by the design team requiring a road safety audit report from the road safety audit team

SCHEME NAME:

AUDIT STAGE: STAGE 1/ STAGE 2/ STAGE 3

TODAY'S DATE:

DATE AUDIT REQUIRED BY:

I request a Road Safety Audit to be undertaken at

This work should be carried out in accordance with Dundee City Council's Road Safety Audit Procedures. The Road Safety Audit report should describe any road safety problems that are identified from information supplied by us to the Road Safety Audit Team. The report will also list recommendations made by the Road Safety Audit Team to reduce the possibility of future accident occurrence.

The following information is submitted for the purposes of the Road Safety Audit:

Design brief		Traffic surveys	
Design checklist		Previous Road Safety Audit reports	
Departures from Standard		Previous Exception Reports	
Scheme plans (see below) Other scheme details e.g. signs schedules (list separately)		Start date for construction Any other information (list separately)	
Accident printout for existing roads affected by the scheme			

The table below gives guidance on appropriate plans for Road Safety Audit. Please note these are minimum requirements and all available plans should be submitted.

Stage 1 – 1:1250/ 1:500	Stage 2 – 1:500 or larger
Alignment, long sections, junction and link details	Road signs, road markings, footways, kerbs, carriageway construction, street lighting, fencing, drainage, cross sections, traffic control details, landscaping,

Signed Name

Design Team

Signed Name

Client Team

THIS FORM SHOULD BE SENT TO THE ROAD SAFETY AUDIT TEAM

APPENDIX 1B - ROAD SAFETY AUDIT TEAM COMMENTS LIST

ROAD SAFETY AUDIT TEAM - ROAD SAFETY AUDIT COMMENTS LIST

SCHEME NAME:

AUDIT STAGE: STAGE 1/ STAGE 2/ STAGE 3

TODAY'S DATE: **DATE AUDIT REQUIRED BY:**

AUDITOR'S NAME **PAGE** . . . **OF**

Plan no.	Road Safety Audit comments	Discussed within audit team	Comment included in report	Reason not included

APPENDIX 1C – SAMPLE REPORT FORMAT

ILLUSTRATIVE REPORT

(Scheme Name)

ROAD SAFETY AUDIT STAGE 2

ROAD SAFETY AUDIT TEAM

(Address)

(Address)

(Address)

(Address)

(Scheme Name)

ROAD SAFETY AUDIT STAGE 2

1 INTRODUCTION

1.1 This report results from a Stage 2 Road Safety Audit carried out on (*scheme type*) on behalf of (*client or design organisation*). The Road Safety Audit was carried out between (*date*) and (*date*) in the offices of (*organisation*).

1.2 The Road Safety Audit team members were as follows:-

Ms. R.S. Practitioner, (*list qualifications*), RSA Team Leader, (*organisation*)

Mr. C.A.D. Technician, (*list qualifications*), RSA Team Member, (*organisation*)

Mr. A.N. Observer, RSA Observer, (*organisation*)

1.3 The audit was undertaken in accordance with the audit brief submitted by (*design organisation*).

1.4 (*For Stage 1 & 2 Audits*) The Road Safety Audit comprised an examination of the drawings relating to the scheme supplied by the design team. Other information was provided in the form of (*list documents*). Ms. Practitioner visited the site on (*date*). A Stage 1 Road Safety Audit (*has/ has not*) been carried out on the road scheme on (*date*).

(*For Stage 3 Audits*) The Road Safety Audit comprised a daylight examination of the site on (*date*). Also present on the site visit were:

Mr. R Goodroad, Maintenance Division, Dundee City Council

Insp. P. Traffic, Road Policing Unit, Tayside Police

Ms. Practitioner visited the site during darkness on (*date*).

1.5 This Stage 2 Road Safety Audit has been carried out in accordance with the relevant sections of Dundee City Council's Road Safety Audit Procedures. The Audit Team has examined only those issues within the design relating to the road safety implications of the scheme, and has therefore not examined or verified the compliance of the design to any other criteria.

1.6 Annex 1 describes the drawings and other information examined by the Road Safety Audit team.

1.7 All of the problems described in this report are considered by the Road Safety Audit team to require action in order to improve the safety of the scheme and minimise future accident occurrence.

1.8 All comments and recommendations are referenced to the detailed design drawings and the locations have been indicated on the A3 plan supplied with the audit brief.

2 ITEMS RAISED AT THE STAGE 1 ROAD SAFETY AUDIT

(list any outstanding issues raised from the stage 1 audit.)

3. ITEMS RAISED AT THIS STAGE 2 ROAD SAFETY AUDIT

3.1 GENERAL

3.2 Problem

Recommendation

3.2 Problem

Recommendation

3.3 SIGNING AND LINING

3.4 Problem

Recommendation

3.5 Problem

Recommendation

3.6 NON-MOTORISED USERS

3.7 Problem

Recommendation

etc...

APPENDIX 1D – CERTIFICATE

4 ROAD SAFETY AUDIT TEAM STATEMENT – STAGES 1 AND 2

We certify that we have examined the drawings and other information listed in Annex 1. This examination has been carried out with the sole purpose of identifying any features of the design that could practically be removed or modified to improve the safety of the scheme. The problems that we have identified have been noted in the report, together with suggestions for improvement which we recommend should be studied for implementation.

signed Ms R.S. Practitioner, RSA Team Leader

date

signed Mr C.A.D. Technician, RSA Team Member

date

ANNEX 1

List of Drawings Examined

Other Information supplied

4 ROAD SAFETY AUDIT TEAM STATEMENT – STAGE 3

We certify that we have examined the site in daylight on *(date)* and in darkness on *(date)*. These examinations have been carried out with the sole purpose of identifying any features of the design that could practically be removed or modified to improve the safety of the scheme. The problems that we have identified have been noted in the report, together with suggestions for improvement which we recommend should be studied for implementation.

signed Ms R.S. Practitioner, RSA Team Leader

date

signed Mr C.A.D. Technician, RSA Team Member

date

OTHERS INVOLVED

Mr. R Goodroad, Maintenance Division, Dundee City Council

Insp. P. Traffic, Road Policing Unit, Tayside Police

APPENDIX 1F – EXCEPTION REPORT

(SCHEME NAME)

STAGE 2 SAFETY AUDIT EXCEPTION REPORT

1.0 INTRODUCTION

A Stage 2 Safety Audit was undertaken for the (*scheme name*) by (*road safety audit team*). The Terms of Reference of the Audit are described in the Audit Brief submitted by (*design organisation*).

This report responds to comments made in the Stage 2 Safety Audit. It should therefore be read in conjunction with that report.

2.0 EXCEPTION REPORT

(List paragraph item number of recommendation from safety audit report and reason for non action. This could be an alternative measure to be implemented or non-acceptance of road safety audit problem.)

Signed

Name

Client Organisation

**THIS FORM SHOULD BE SENT TO HEAD OF TRANSPORTATION AT DUNDEE CITY COUNCIL AND
COPIED TO THE ROAD SAFETY AUDIT TEAM**

2 ROAD SAFETY AUDIT OF PRIVATE DEVELOPMENT SCHEMES

Flowchart 2 is included at page 49 detailing procedures involved in Road Safety Audit. Reference should be made to this flowchart in conjunction with written text. (Note: both private and public development schemes are subject to these procedures.)

2.1 Commissioning the Road Safety Audit

Within the Planning process, at the pre-planning application discussion, the developer can discuss Road Safety issues with the City Council as appropriate.

On submission of an application for planning approval it is the responsibility of the Dundee City Council Development Control officer to determine the requirement for a Road Safety Audit. The criteria to be used in respect of a new development is set out in table 2A. Any scheme meeting one or more of these criteria shall be submitted to the Road Safety Audit process and the Development Control officer shall inform the developer accordingly.

Table 2A: Criteria for Determining when a Development Requires a Safety Audit

<ul style="list-style-type: none"> • where there is a new access to the remaining road network as a result of the development, and the daily flow is expected to exceed 200 vehicles per day (or 20 vehicle movements in the peak hour); • where there is an intensification of an existing access on the road network as a result of the development, and the daily flow is expected to increase by 5% or 200 vehicles per day (or 20 vehicle movements in the peak hour); • where there is a change in junction control as a result of the development, e.g. a roundabout to traffic signals; • for those developments where a Traffic Assessment (TA) is required; • for those developments where there is a significant change in modal split, e.g. an increase in heavy goods vehicles by 20%; • for those developments where there is special consideration to road safety matters, where the development traffic could substantially affect a road with a sensitive existing land use type, e.g. a school, or hospital; • where otherwise deemed necessary by the Roads Authority in the interests of road safety.
--

Following an instruction from the Development Control officer, the Client Project Manager (Developer) shall instruct the Design Team to obtain a road safety audit at the following appropriate stages within the Planning process.

- A Feasibility Safety Audit is usually only required for Outline Planning and shall only be undertaken where the opportunity exists for the safety audit to assist in defining the choice of road alignment or junction type.
- A Stage 1 Safety Audit shall be undertaken at the completion of preliminary design and before deemed planning consent.
- A Stage 2 Safety Audit shall be undertaken on completion of the detailed design and prior to road construction consent being granted.

(Note: a Stage 1 and 2 Safety Audit may be combined where appropriate at the discretion of the Development Control officer and with the agreement of the Head of Transportation or appropriate nominee.)

- A Stage 3 Safety Audit shall be undertaken when the development scheme is substantially complete and preferably before the works are opened to road users.

2.2 Timescales for the Road Safety Audit

The Client Project Manager (Developer) in consultation with the Design Team should allow an adequate time period within the overall project plan for the Road Safety Audit to take place. Table 2B shows the number of working days that should be allowed depending on the type of scheme and stage of audit.

Table 2B: Timescales for Road Safety Audit

Stage of Audit	Minor schemes	Major schemes
F	5 working days notice between request for audit and submission of plans 10 working days between submission of plans and completion of Road Safety Audit	5 working days notice between request for audit and submission of plans 10 working days between submission of plans and completion of Road Safety Audit
1	5 working days notice between request for audit and submission of plans 10 working days between submission of plans and completion of Road Safety Audit	5 working days notice between request for audit and submission of plans 10 working days between submission of plans and completion of Road Safety Audit
2	5 working days notice between request for audit and submission of plans 10 working days between submission of plans and completion of Road Safety Audit	10 working days notice between request for audit and submission of plans 28 working days between submission of plans and completion of Road Safety Audit
3	10 working days notice between request for audit and submission of plans 10 working days between submission of plans and completion of Road Safety Audit	10 working days notice between request for audit and submission of plans 10 working days between submission of plans and completion of Road Safety Audit

Additional time should also be allowed for potential post Audit re-design.

2.3 Appointing the Road Safety Audit Team

The Design Team should appoint an independent Road Safety Audit Team. Dundee City Council has an internal Road Safety Audit Team that may be available to undertake audits. For details contact Transportation Team Leader (contact details on page 6).

It will be necessary for the Design Team to demonstrate that the Road Safety Audit has been carried out in accordance with these procedures. In particular they should demonstrate that the entire Road Safety Audit Team is completely independent from the Design Team, and is comprised of at least two staff with appropriate road safety training and experience, and relevant Road Safety Audit experience.

(Note: During the course of scheme preparation and construction the Design Team may change, as might the personnel within the Client Organisation and Road Safety Audit Team. It is, however, recommended that where possible the same Audit Team be used throughout the scheme delivery to ensure a consistent approach.)

2.4 Training, Skills and Experience Required of External Road Safety Audit Team

The Design Team must be satisfied that the proposed Audit Team Leader and Audit Team Members have adequate and relevant training, skills and experience. Table 2B lists the training, skills and experience required of the external Road Safety Audit Team. CVs of the Audit Team Leader and Member(s) should be lodged with the Design Team.

The Audit Team should list their experience for each of the requirements set out in Table 2B within an Appendix to their Road Safety Audit Report.

Table 2B Training, Skills and Experience Required of External Audit Team

Audit Team Leader: A minimum of 4 years Accident Investigation or Road Safety Engineering experience. Completion of at least 5 Road Safety Audits in the past 12 months as an Audit Team Leader or Member. In order to become an Audit Team Leader the auditor will already have achieved the necessary training to become an Audit Team Member. However, they should also demonstrate a minimum 2 days CPD in the field of Road Safety Audit, Accident Investigation or Road Safety Engineering in the past 12 months.

Audit Team Member: A minimum of 2 years Accident Investigation or Road Safety Engineering experience. Completion of at least 5 Road Safety Audits as Audit Team Leader, Member or Observer in the past 24 months. The Audit Team Member should have attended at least 10 days of formal Accident Investigation or Road Safety Engineering training to form a solid theoretical foundation on which to base practical experience. They should also demonstrate a minimum of 2 days CPD in the field of Road Safety Audit, Accident Investigation or Road Safety Engineering in the past 12 months.

Observer: A minimum of 1-year Accident Investigation or Road Safety Engineering experience. The Observer should have attended at least 10 days of formal Accident Investigation or Road Safety Engineering training.

- The organisation carrying out the Road Safety Audit should have the appropriate level of public liability and professional indemnity insurance for this type of work;
- Staff from Dundee City Council can take part as observers, for training purposes, at any stage of any Road Safety Audit carried out on a road for which the City Council has responsibility.

The most appropriate candidates for Audit Team Leader and Audit Team Member are individuals whose current employment involves Accident Investigation or Road Safety Engineering on a regular basis. This should ensure that auditors are well versed in the most recent

practices and developments in the field. Additional specialist staff, such as Road Safety Officers and Traffic Signal Engineers, can be brought into specific projects as required.

2.5 The Audit Brief

The Design Team is responsible for preparing and issuing the Audit Brief to the Audit Team. An example of an Audit Brief is shown in Appendix 2A. The Brief needs careful preparation and must include sufficient information to enable an efficient audit to be undertaken. A copy of the brief shall be forwarded to the Client Project Manager (Developer) for approval in advance of the audit. Any alterations to the brief should be documented along with their reasons by the Client Project Manager (Developer).

The Design Team should retain a copy of all information submitted to the Road Safety Audit Team.

If necessary, the Design Team and Road Safety Audit Team can meet to discuss the audit brief.

2.6 Audit Management

The Client Project Manager (Developer) and Design Team should liaise and ensure that the Audit process is initiated at the appropriate stages. The Design Team will need to demonstrate that the Road Safety Audit has been carried out in accordance with these procedures and by people who are independent of the scheme design.

2.7 A Road Safety Audit Report

A Road Safety Audit Report should include an introductory statement setting out the terms of reference and listing the Road Safety Audit Team members. The statement should describe when the Road Safety Audit was carried out and refer to any plans and other documents checked by the Road Safety Audit Team.

2.7.1 The Draft Report

Road Safety Audit Team members should record their comments on each scheme in a systematic way and use this as a basis for developing the Draft Report. A sample comments list format is shown in Appendix 2B.

A draft report should be produced to include a series of road safety problems and related recommendations for improvement. A sample report format is shown in Appendix 2C. A copy of the draft report should be sent to the Client Project Manager (Developer) and the Design Team. Following production of this report, a meeting should be convened involving the Client Project Manager (Developer), Design Team and Road Safety Audit Team. The purpose of this meeting is to clarify any issues arising from the Road Safety Audit, and to resolve as many issues as possible.

2.7.2 The Final Report

Following the meeting the final report should then be produced to include a certificate signed by the members of the Road Safety Audit Team. A sample certificate is shown in Appendix 2D.

Once the Road Safety Audit Team has completed the Road Safety Audit, a copy of the final report should be sent to the Client Project Manager (Developer), the Design Team and the Development

Control Officer. A paper copy of the final report, together with all the requested documentation and plans should be archived by the Road Safety Audit Team. The final report should not be amended after this stage.

2.8 Response to the Road Safety Audit

The Client Project Manager (Developer) will require a response to the Road Safety Audit from the Design Team. A Design Team Response form is included in Appendix 2E, and this should be completed by the Design Team Leader.

The Client Project Manager (Developer) should instruct the Design Team to make those changes to the design that are agreed as a result of the Road Safety Audit Report. Where all of the Road Safety Audit recommendations are accepted in full, these changes should be made to the scheme and documented. If the changes are substantial, the road scheme shall be re-submitted for Road Safety Audit.

2.9 Exception Report

Where there are any recommended changes which are not agreed, the Client Project Manager (Developer) should prepare an Exception Report listing all recommendations raised within the Road Safety Audit Report that remain unresolved. The Exception Report should give reasons why recommendations from the Road Safety Audit Report have not been adopted. A sample exception report format is shown in Appendix 1F.

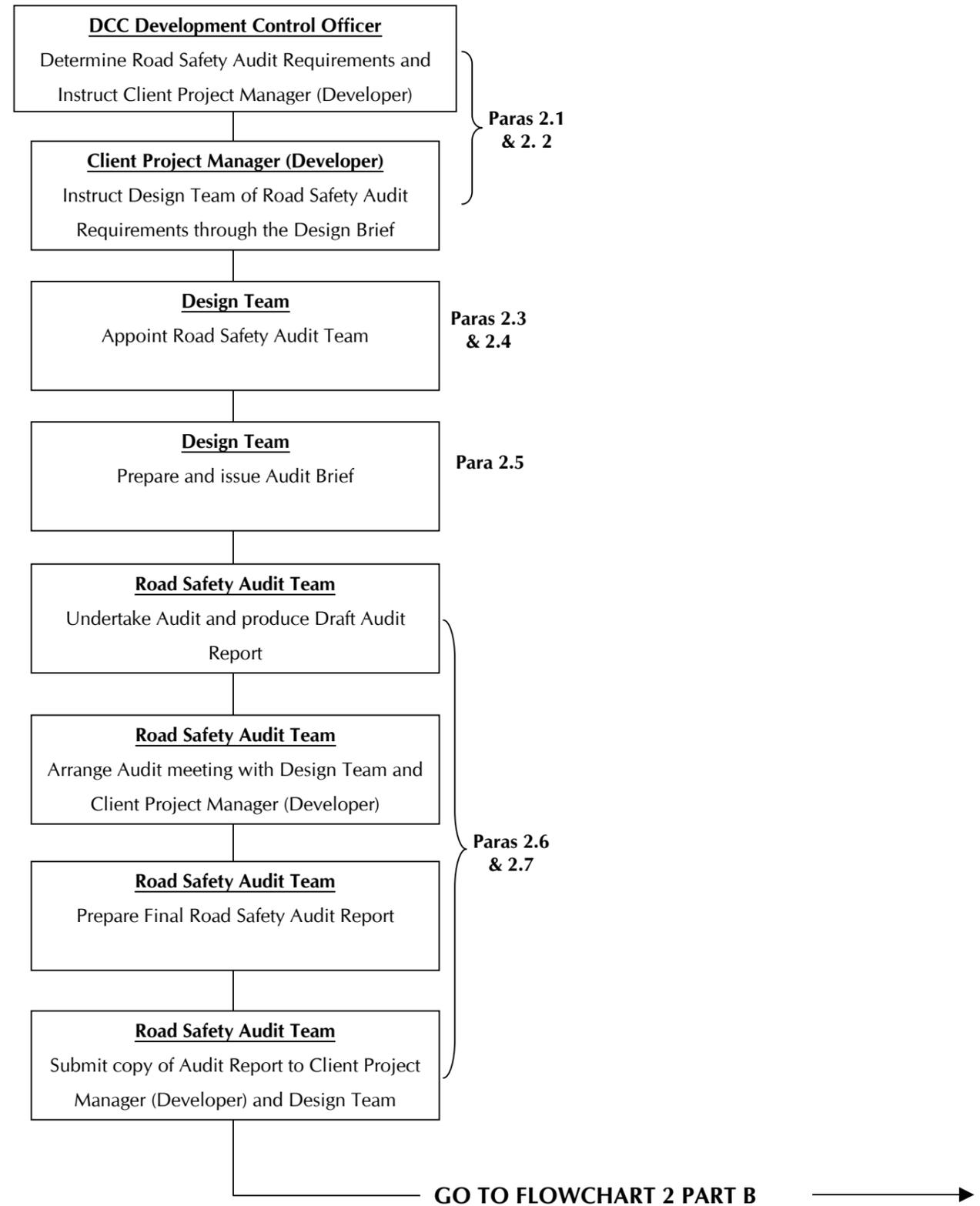
The Client Project Manager (Developer) should forward a copy of the Exception Report to the Audit Team, and to the Head of Transportation at Dundee City Council.

2.10 Arbitration

For those issues raised within any Exception Report, it will be necessary to seek arbitration in order to determine whether the outstanding Road Safety Audit recommendations are to be adopted. In such instances, the Head of Transportation will make a recommendation to Dundee City Council Planning and Transportation Departmental Management Board, which will consider the issues involved and act as the final arbiter.

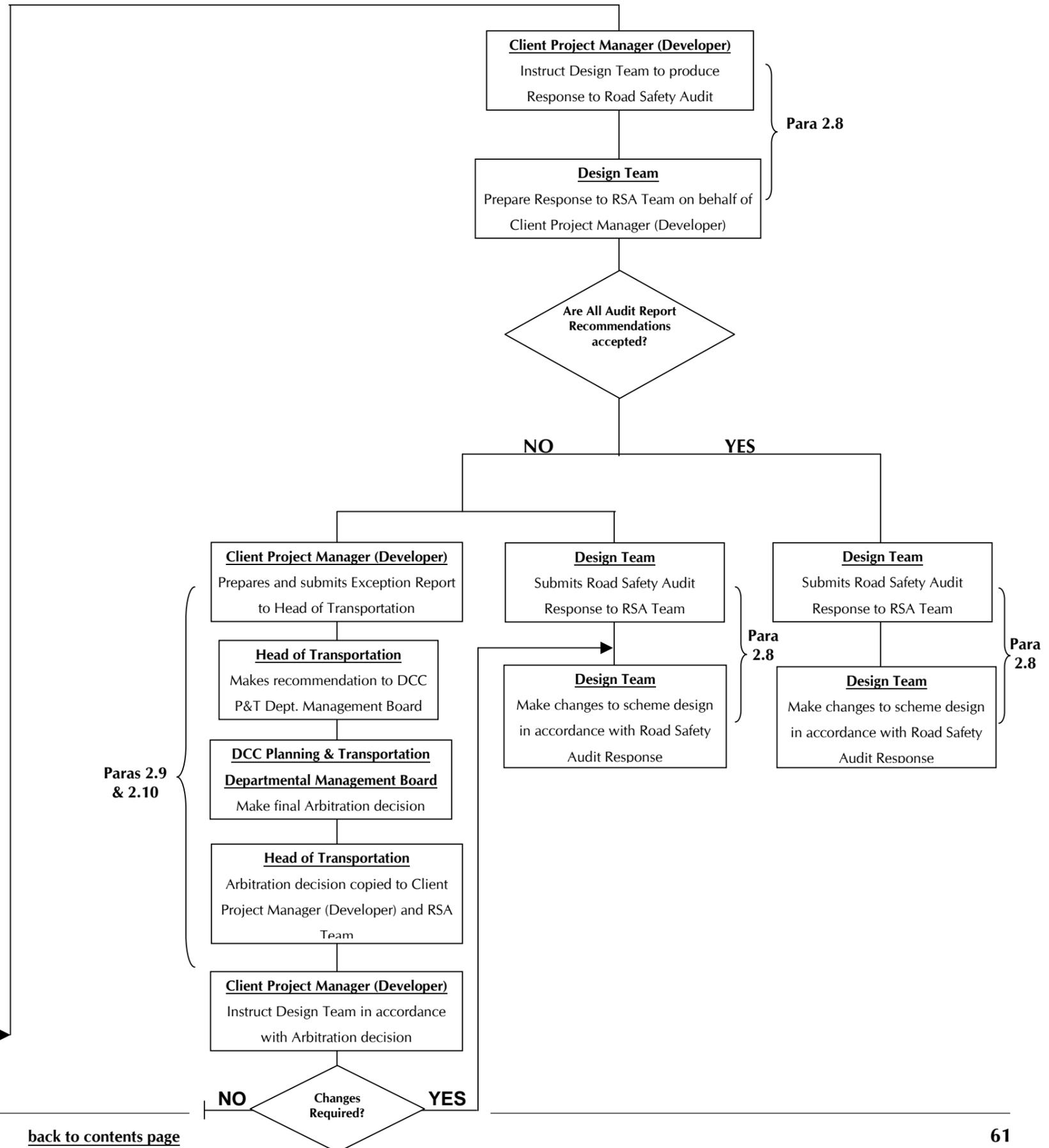
FLOWCHART 2 Part A

- 2.1 COMMISSIONING
- 2.2 TIMESCALES
- 2.3 APPOINTING THE ROAD SAFETY AUDIT TEAM
- 2.4 TRAINING, SKILLS AND EXPERIENCE REQUIRED OF AUDIT TEAM
- 2.5 THE AUDIT BRIEF
- 2.6 AUDIT MANAGEMENT
- 2.7 A ROAD SAFETY AUDIT REPORT



FLOWCHART 2 Part B

- 2.8 RESPONSE TO THE ROAD SAFETY AUDIT
- 2.9 EXCEPTION REPORT
- 2.10 ARBITRATION



FROM FLOWCHART 2 PART A

APPENDIX 2A - CHECKLIST TO BE PREPARED BY THE DESIGN TEAM

EXAMPLE OF AUDIT BRIEF TO BE PREPARED BY THE DESIGN TEAM REQUIRING A ROAD SAFETY AUDIT REPORT FROM THE ROAD SAFETY AUDIT TEAM

SCHEME NAME:

AUDIT STAGE: FEASIBILITY/ STAGE 1/ STAGE 2/ STAGE 3

TODAY'S DATE: **DATE AUDIT REQUIRED BY:**

I request a Road Safety Audit to be undertaken at

This work should be carried out in accordance with Dundee City Council's Road Safety Audit Procedures. The Road Safety Audit report should describe any road safety problems that are identified from information supplied by us to the Road Safety Audit Team. The report will also list recommendations made by the Road Safety Audit Team to reduce the possibility of future accident occurrence.

The following information is submitted for the purposes of the Road Safety Audit:

Design brief		Traffic surveys	
Design checklist		Previous Road Safety Audit reports	
Departures from Standard		Previous Exception Reports	
Scheme plans (see below)		Start date for construction	
Other scheme details e.g. signs schedules (list separately)		Any other information (list separately)	
Accident printout for existing roads affected by the scheme			

The table below gives guidance on appropriate plans for Road Safety Audit. Please note these are minimum requirements and all available plans should be submitted.

Stage F – 1:2500/1:1250	Stage 1 – 1:1250/1:500	Stage 2 – 1:500 or larger
Route and junction options	Alignment, long sections, junction and link details	Road signs, road markings, footways, kerbs, carriageway construction, street lighting, fencing, drainage, cross sections, traffic control details, landscaping,

Signed _____ Name _____

Design Team _____

Signed _____ Name. _____

Client Team _____

THIS FORM SHOULD BE SENT TO THE ROAD SAFETY AUDIT TEAM

APPENDIX 2B - ROAD SAFETY AUDIT TEAM COMMENTS LIST

ROAD SAFETY AUDIT TEAM – ROAD SAFETY AUDIT COMMENTS LIST

SCHEME NAME:

AUDIT STAGE: FEASIBILITY/ STAGE 1/ STAGE 2/ STAGE 3

TODAY'S DATE: **DATE AUDIT REQUIRED BY:**

AUDITOR'S NAME **PAGE** **OF**

Plan no.	Road Safety Audit comments	Discussed within audit team	Comment included in report	Reason not included

APPENDIX 2C – SAMPLE REPORT FORMAT

**ILLUSTRATIVE REPORT
(Scheme Name)
ROAD SAFETY AUDIT STAGE 2**

ROAD SAFETY AUDIT TEAM

(Address)

(Address)

(Address)

(Address)

(Scheme Name)

ROAD SAFETY AUDIT STAGE 2

1 INTRODUCTION

1.1 This report results from a Stage 2 Road Safety Audit carried out on (*scheme type*) on behalf of (*client or design organisation*). The Road Safety Audit was carried out between (*date*) and (*date*) in the offices of (*organisation*).

1.2 The Road Safety Audit team members were as follows:-

Ms. R.S. Practitioner, (*list qualifications*), RSA Team Leader, (*organisation*)

Mr. C.A.D. Technician, (*list qualifications*), RSA Team Member, (*organisation*)

Mr. A.N. Observer, RSA Observer, (*organisation*)

1.3 The audit was undertaken in accordance with the audit brief submitted by (*design organisation*).

1.4 (*For Stage 1 & 2 Audits*) The Road Safety Audit comprised an examination of the drawings relating to the scheme supplied by the design team. Other information was provided in the form of (*list documents*). Ms. Practitioner visited the site on (*date*). A Stage 1 Road Safety Audit (*has/ has not*) been carried out on the road scheme on (*date*).

(*For Stage 3 Audits*) The Road Safety Audit comprised a daylight examination of the site on (*date*). Also present on the site visit were:

Mr. R Goodroad, Maintenance Division, Dundee City Council

Insp. P. Traffic, Road Policing Unit, Tayside Police

Ms. Practitioner visited the site during darkness on (*date*).

1.5 This Stage 2 Road Safety Audit has been carried out in accordance with the relevant sections of Dundee City Council's Road Safety Audit Procedures. The Audit Team has examined only those issues within the design relating to the road safety implications of the scheme, and has therefore not examined or verified the compliance of the design to any other criteria.

1.6 Annex 1 describes the drawings and other information examined by the Road Safety Audit team.

1.7 All of the problems described in this report are considered by the Road Safety Audit team to require action in order to improve the safety of the scheme and minimise future accident occurrence.

1.8 All comments and recommendations are referenced to the detailed design drawings and the locations have been indicated on the A3 plan supplied with the audit brief.

2 ITEMS RAISED AT THE STAGE 1 ROAD SAFETY AUDIT

(list any outstanding issues raised from the stage 1 audit.)

3 ITEMS RAISED AT THIS STAGE 2 ROAD SAFETY AUDIT

3.1 GENERAL

3.2 Problem

Recommendation

3.2 Problem

Recommendation

3.3 SIGNING AND LINING

3.4 Problem

Recommendation

3.5 Problem

Recommendation

3.6 NON-MOTORISED USERS

3.7 Problem

Recommendation

etc...

APPENDIX 2D – CERTIFICATE

3 ROAD SAFETY AUDIT TEAM STATEMENT – STAGES 1 AND 2

We certify that we have examined the drawings and other information listed in Annex 1. This examination has been carried out with the sole purpose of identifying any features of the design that could practically be removed or modified to improve the safety of the scheme. The problems that we have identified have been noted in the report, together with suggestions for improvement which we recommend should be studied for implementation.

Signed Ms R.S. Practitioner, RSA Team Leader

Date

Signed Mr C.A.D. Technician, RSA Team Member

Date

ANNEX 1

List of Drawings Examined

Other Information supplied

3 ROAD SAFETY AUDIT TEAM STATEMENT – STAGE 3

We certify that we have examined the site in daylight on *(date)* 2004 and in darkness on *(date)* 2004. These examinations have been carried out with the sole purpose of identifying any features of the design that could practically be removed or modified to improve the safety of the scheme. The problems that we have identified have been noted in the report, together with suggestions for improvement which we recommend should be studied for implementation.

signed Ms R.S. Practitioner, RSA Team Leader

date

signed Mr C.A.D. Technician, RSA Team Member

date

OTHERS INVOLVED

Mr. R Goodroad, Maintenance Division, Dundee City Council

Insp. P. Traffic, Road Policing Unit, Tayside Police

APPENDIX 2F – EXCEPTION REPORT

(SCHEME NAME)

STAGE 2 SAFETY AUDIT EXCEPTION REPORT

1.0 INTRODUCTION

A Stage 2 Safety Audit was undertaken for the (*scheme name*) by (*road safety audit team*). The Terms of Reference of the Audit are described in the Audit Brief submitted by (*design organisation*).

This report responds to comments made in the Stage 2 Safety Audit. It should therefore be read in conjunction with that report.

2.0 EXCEPTION REPORT

(List paragraph item number of recommendation from safety audit report and reason for non action. This could be an alternative measure to be implemented or non-acceptance of road safety audit problem.)

Signed

Name

Client Organisation

**THIS FORM SHOULD BE SENT TO HEAD OF TRANSPORTATION AT DUNDEE CITY COUNCIL AND
COPIED TO THE ROAD SAFETY AUDIT TEAM**

3 ROAD SAFETY AUDIT OF SCHEMES UNDER £10,000

Many schemes originating in the Transportation Division (and some from outside this Division) cost less than £10,000. The City Council does not have the resources to undertake full Road Safety Audits on these schemes as described in Sections 1 and 2 of Part B.

Such schemes will therefore be subject to a self-audit check by the engineer for the scheme.

3.1 Self-audit

For self-audit schemes, one design stage check and a post construction check will be sufficient. This will involve the completion of a self-check form by the engineer for the scheme. Depending on the outcome of the check, the scheme may be passed to Dundee City Council's Road Safety Audit Team for a full Road Safety Audit.

A form for carrying out these checks is provided in Appendix 3A.

A copy of the completed self-audit form for all schemes, including those originating outside of the Transportation Division, should be sent to the Team Leader, Transportation.

3.2 Director of Planning & Transportation Discretion

Schemes under £10,000 may however be subject to a full Road Safety Audit at the discretion of the Director of Planning & Transportation.

APPENDIX 3A – SELF AUDIT FORM

SELF-AUDIT FORM TO BE USED BY A DESIGN TEAM FOR A SCHEME WITH WORKS UNDER £10,000

SCHEME NAME:

SELF-AUDIT STAGE: DESIGN STAGE/ STAGE 3

TODAY’S DATE:

The following road users’ safety issues have been checked:

Road User	Unresolved safety issues	Comment
Pedestrians		
Children		
People with mobility or sight impairment		
Motor cyclists		
Private motor traffic		
Commercial vehicles		
Buses		
Others		

If three or more issues remain unresolved, this scheme should be passed to the Dundee City Council Road Safety Audit Team for a full Road Safety Audit.

Signed

Name

Countersigned by

Team Leader Division

THIS FORM SHOULD BE SENT TO THE TEAM LEADER, TRANSPORTATION SECTION

