

# AFRICAN DEVELOPMENT BANK GROUP



## CREATING AND EMBEDDING THREE ROAD SAFETY MANUALS FOR AFRICA

*Girma Berhanu BEZABEH (Dr.- Ing.)*

*Principal Transport Engineer*

*3<sup>rd</sup> September 2014*

# Outline of Presentation

---

1. **Background**
2. **The Preparation of the RS Manuals**
3. **Design and Configuration of the Manuals**
4. **New Roads and Schemes: Road Safety Audit**
5. **Existing Roads-Proactive Approaches**
6. **Existing Roads-Reactive Approaches**
7. **Tailored Road Safety Training**
8. **The Way Forward**



# BACKGROUND

- ❑ **Road Crash is increasing and worsening the Socio-economic Problem in Africa:**
  - **Road crash costs each African country 1-5% of their GDP every year:**
    - ❖ **According to the recent survey, road crash is costing**
      - ✓ **Nigeria ---- US\$ 6 billion**
      - ✓ **Morocco ---- US\$ 1.6 billion**
  - **Road deaths are concentrated among vulnerable road users; about 65%**
  - **Road crash generates poverty: 75% of the casualties working age 16-65**
- ❑ **Road crash is expected to rapidly increase in Africa with growth in vehicle ownership, road network development, population and urbanization**
- ❑ **The level of road safety awareness in African countries is encouragingly increasing, but the commitment is very low and managerial, technical and financial capacities are limited and vary between countries**
- ❑ **Since 2011, AfDB has mainstreamed road safety in its operations to scale-up its support on comprehensive multisectoral road safety investments**
- ❑ **The Bank focuses on interventions that generate and transfer knowledge, strengthen capacity, achieve quick and visible results**



# THE PREPARATION OF THE RS MANUALS

- ❑ **The African Development Bank commissioned TRL Limited with BRRC for the preparation three road safety manuals tailored for African conditions and road safety training focusing on the use of the Manuals**
- ❑ **The three road safety manuals planned include:**
  - **Road Safety Audit (RSA);**
  - **Road Safety Inspection (RSI); and**
  - **Blackspot Treatment**
- ❑ **The execution of the assignment required:**
  - **Review and assessment of the applicability and relevance of manuals and guidelines readily available in the region and worldwide,**
  - **Identification of best practices; and**
  - **Development of manuals to specific African conditions**





# THE PREPARATION OF THE RS MANUALS

---

- ❑ The Project Team after the review of international, regional and national manuals and best practices made various considerations and proposed a more achievable and logical method of road safety management and that fulfils the need to tailor the manuals to African conditions
- ❑ In the development of the RS Inspection, the considerations include :
  - the concern on the lack of clarity surrounding the term ‘Road Safety Inspection’ --- maintenance inspections, RSA of an existing road, and systematic review of the safety of the road network;
  - The possibility of most countries in Africa to undertake detailed reviews of all roads
- ❑ In response to these, a ‘two stage process’ has been developed which led to change the Road Safety Inspection manual to the ‘Existing Roads-Proactive Approaches’ manual since this more clearly represents and expresses the intent of the manual



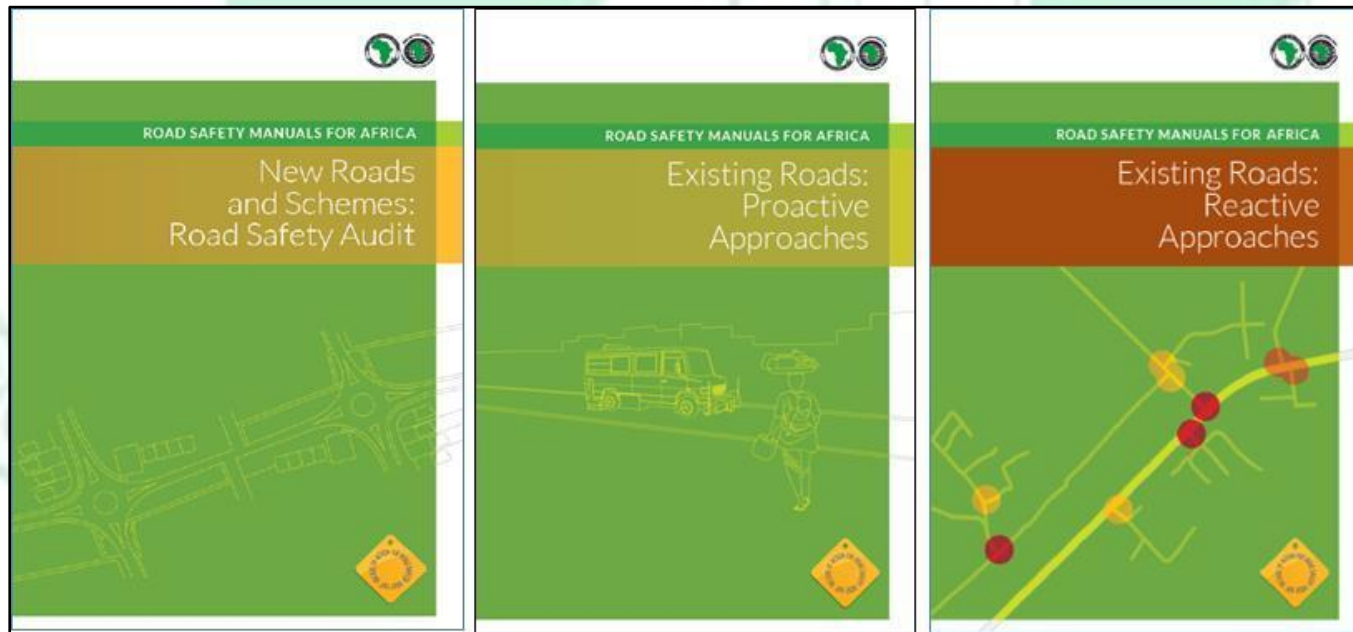
# THE PREPARATION OF THE RS MANUALS

---

- ❑ In the development of the Blackspot Treatment Manual, the Team considered the difficulty that many countries may face to undertake blackspot analysis due to lack of availability of data and required precise crash coordinates
- ❑ The Team developed several additional manual sections that offered guidance on:
  - Outlining the importance of crash data, common issues and how to improve crash data quality and availability;
  - Undertaking blackspot, route/corridor and analysis and treatment; and
  - Monitoring and evaluation.
- ❑ These as well resulted in a similar change of the Blackspot Treatment manual to the 'Existing Roads-Reactive Approaches' as it represented the overall aim of the manual

# DESIGN AND CONFIGURATION OF THE MANUALS

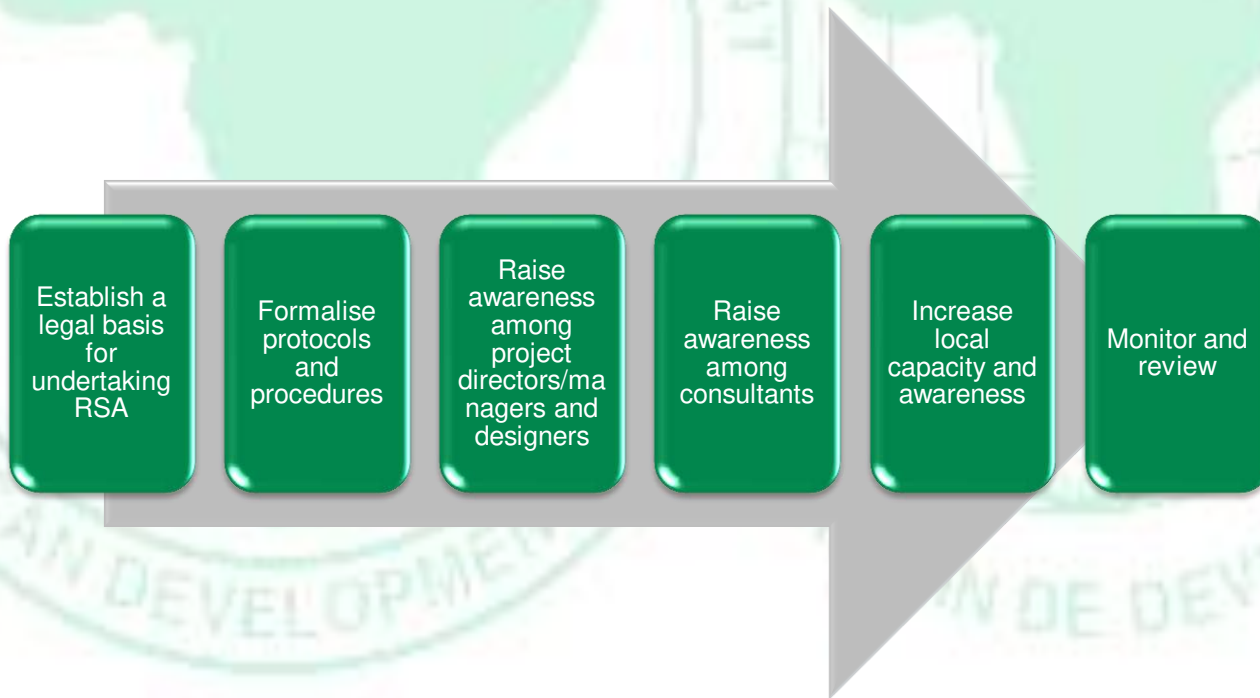
- ❑ The road safety manuals are prepared to incorporate the safe system throughout the life-cycle of a road infrastructure
- ❑ Each of the manuals is designed to be 'standalone' with minimal cross referencing between manuals
- ❑ At the same time, the manuals have been configured in a similar manner to ensure consistency



# DESIGN AND CONFIGURATION OF THE MANUALS

## Similar Sections

- n ***Embedding the Manuals:*** A step-by-step process is described how each approach needs to be taken forward to allow full adoption of the techniques within a country and how to integrate the techniques within an organisation

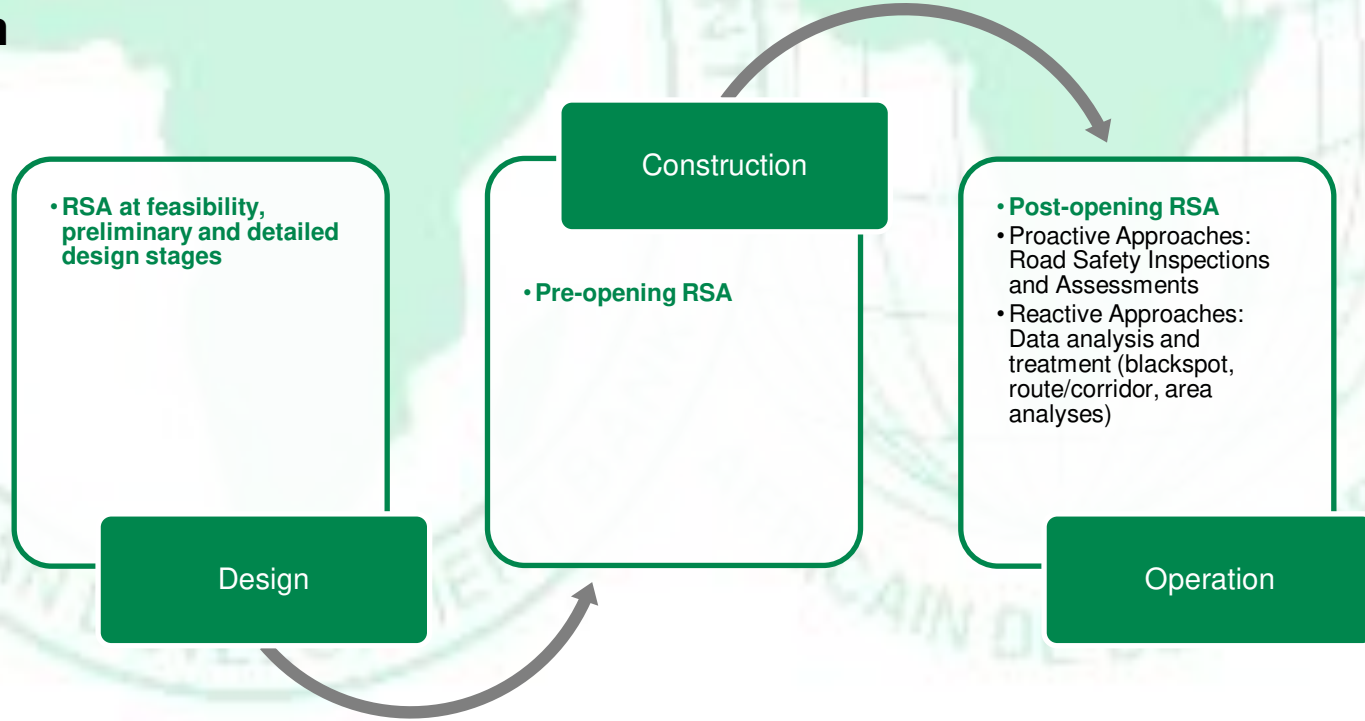




# DESIGN AND CONFIGURATION OF THE MANUALS

## Similar Sections

- **Safe System and the Concept of Each Approach:** A section describing the scope of the techniques included in each manual together with the fundamental philosophies and adoption to the Safe System in a wider perspective of how each Manual Fits into a Wider Road Safety Management System



# DESIGN AND CONFIGURATION OF THE MANUALS

---

## Similar Sections

- ❑ ***Personnel, Equipment and Safety Requirements:*** Each manual specifies personnel and equipment requirements of each technique; and the personnel requirements have been developed based on international best practice but allowing local staff to become part of a team to increase their experience quickly.
- ❑ ***Development of Treatment Plan:*** The two manuals for existing roads provide guidance on the development of treatment plan which involves technical and economic appraisals to select the best option. These processes are all based on international best practice, whilst providing relatively straight forward methods that can be applied when minimal data are available
- ❑ ***Monitoring and Evaluation:*** The manuals also have a section outlining the procedure of assessing the effectiveness of treatments in specific local conditions so that the treatments are monitored and evaluated to build an evidence base on what works and what does not work

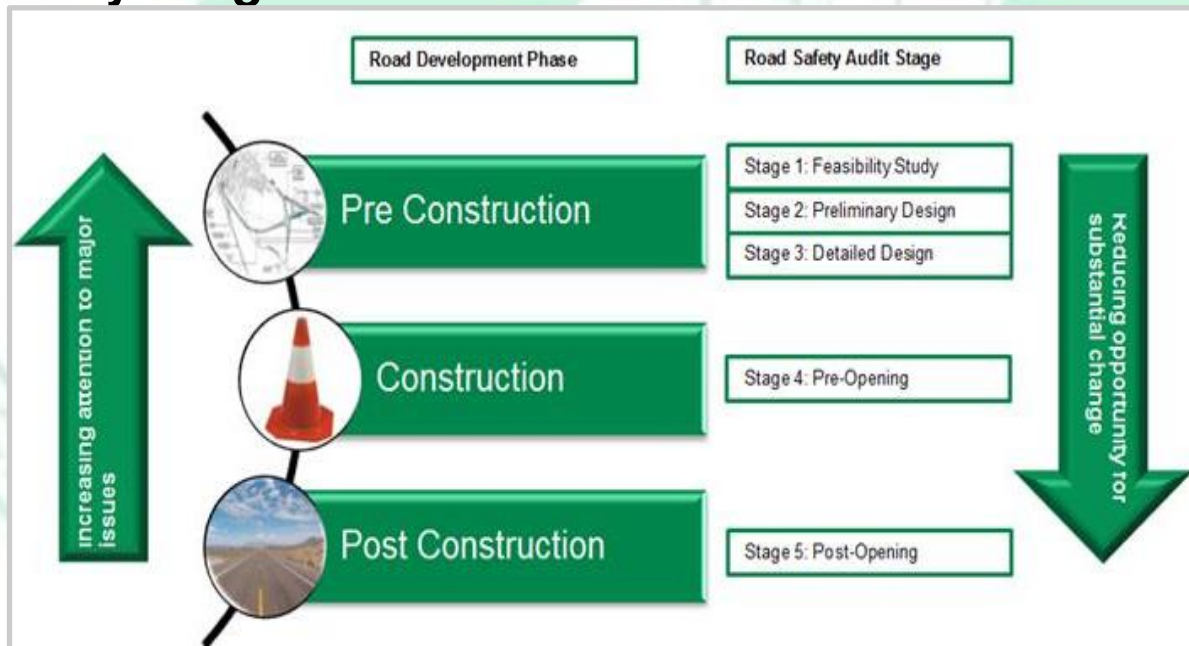
# NEW ROADS AND SCHEMES: ROAD SAFETY AUDIT

---

- ❑ The manual is structured to lead users through the full process, starting with a basic understanding of the context of RSA and the safety implications of new schemes together with the issues that should be considered as part of the design process
- ❑ The manual is organized to be complementary to the other manuals and concentrate on the areas where RSA differs from the safety considerations of existing roads and
- ❑ It establishes RSA as a key element in the design cycle of any organisation as a principal goal for its long term success
- ❑ The economic benefits of RSA and ways of embedding the process into the design cycle are explained in the early part of the manual and references are given to studies showing the benefit of such an approach

# NEW ROADS AND SCHEMES: ROAD SAFETY AUDIT

- ❑ The RSA manual identifies five stages of audit to cover the audit process comprehensively across a range of different scheme sizes and complexities
- ❑ The importance of starting RSA as soon as possible in the design and construction process is emphasised, and consequently Feasibility Stage RSA is included





# NEW ROADS AND SCHEMES: ROAD SAFETY AUDIT

- ❑ The RSA manual recommends Audit stages varying with scheme complexities

Scheme Type	Audit Stage				
	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Major Scheme National Road	x	x	x	x	x
Major Scheme Regional Road		x	x	x	x
Major Scheme Local Road		x	x	x	
Minor Scheme National Road			x	x	
Minor Scheme Regional Road			x	x	
Minor Scheme Local Road			x	x	

# NEW ROADS AND SCHEMES: ROAD SAFETY AUDIT

- ❑ The manual outlines on how to identify and contract a RSA Team; and provides a step-by-step guidance on the RSA process throughout the audit to comply with the safe system



- ❑ The Manual provides two sets of prompts for use at each stage of audit to ensure that all items are considered by the RSA Team

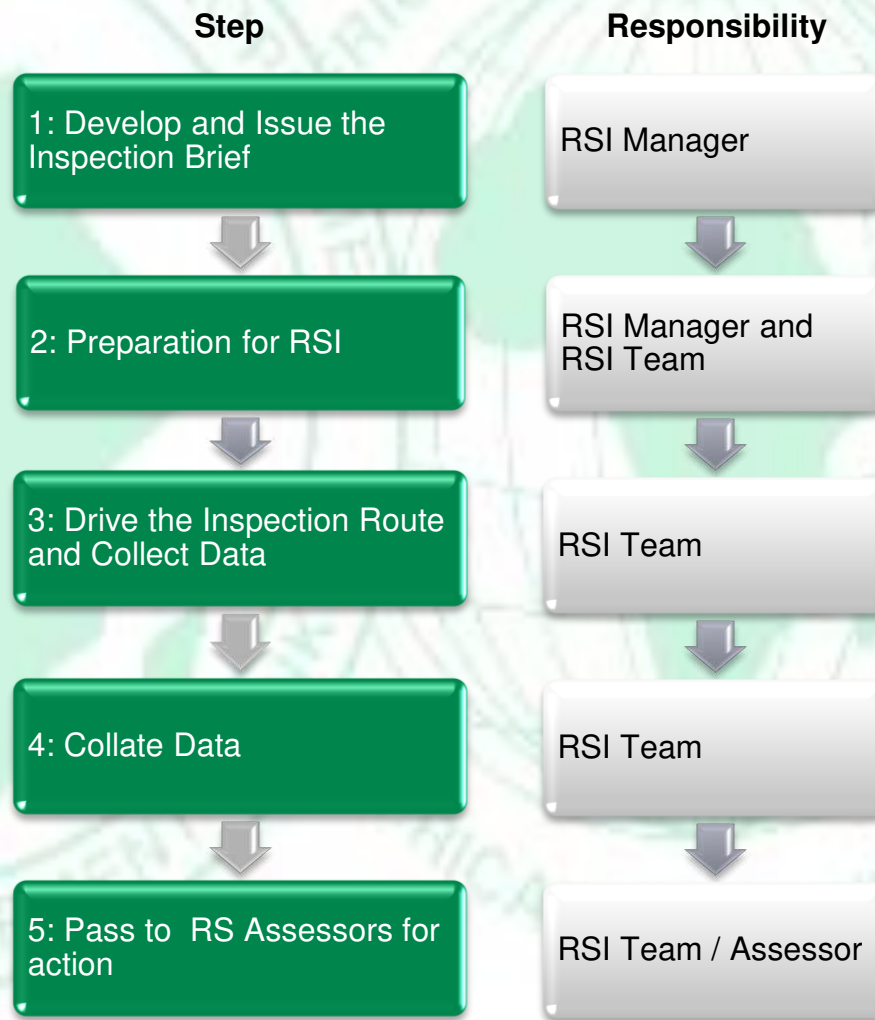
# EXISTING ROADS: PROACTIVE APPROACHES

- ❑ The Proactive Approaches Manual describes scheduled, proactive approaches to managing the safety across a road network
- ❑ The ‘two stages process’ in the Proactive Approaches Manual are:
  - Stage 1: RSI is to be undertaken as high level road safety reviews, primarily a mechanistic data collection exercise, undertaken across a significant proportion of the road network every 3-5 years.
  - Stage 2: RS Assessments are more detailed and are undertaken on roads that have been identified as ‘high risk’ in Stage 1 by specialist staff experienced in collision investigation or RSA to consider the findings and develop the detailed road safety treatment plan



# EXISTING ROADS: PROACTIVE APPROACHES

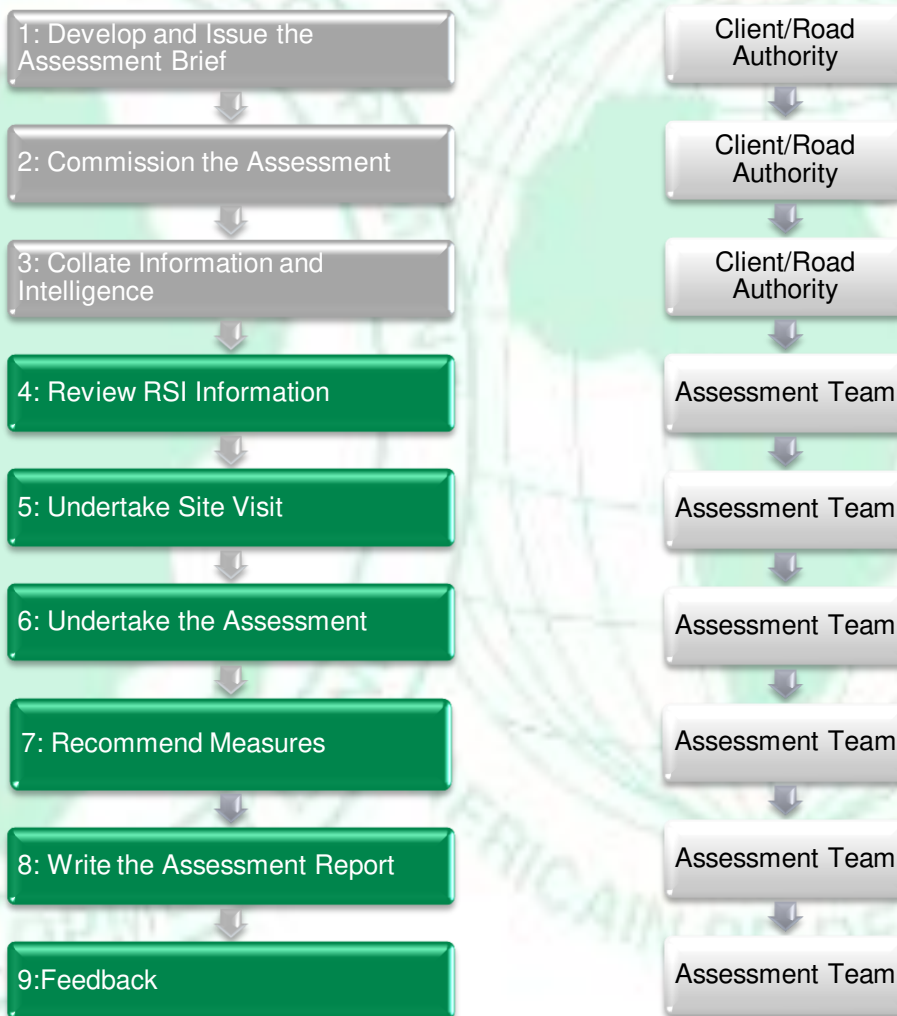
## RSI Process Flow Chart





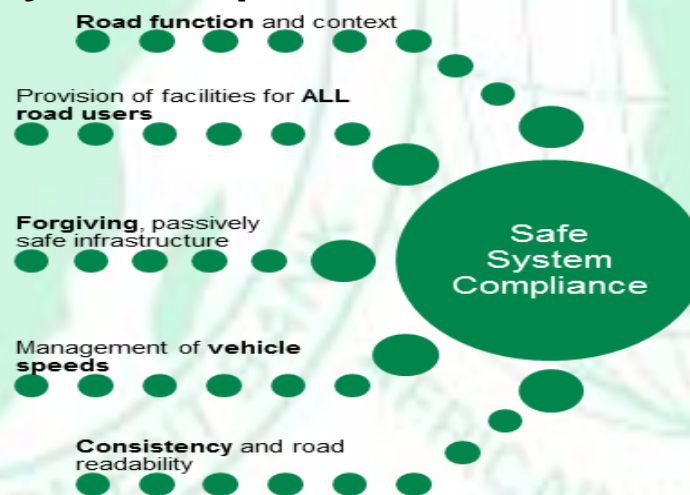
# EXISTING ROADS: PROACTIVE APPROACHES

## Assessment process flow chart



# EXISTING ROADS: PROACTIVE APPROACHES

- ❑ The assessment relies on the understanding and appreciation of a road safety expert to assess site circumstances and road user behaviour to determine the scale of any problem
- ❑ The Manual recommends the use of conflict studies as optional means of unsafe road sites
- ❑ The RS Assessment considers the high level issues as the RSA Manual to comply with the safe system requirements



- ❑ Similar to the RSA, two sets of prompts are provided to facilitate the RS Assessment

# EXISTING ROADS: REACTIVE APPROACHES

- The Reactive Approaches manual is designed to provide guidance on identifying high risk locations known as blackspots, routes or areas, across the road network using crash data and developing treatment programme

## No crash data

- Improve data including coordinates
- Undertake reviews in response to community or police intelligence

## Crash data exist but with limited location information

- Improve data including coordinates
- Area analyses

## Crash data exist and include the road name/route

- Improve data including coordinates
- Route/corridor analyses
- Area analyses

## Crash data exist and include precise crash coordinates

- Blackspot analyses
- Route/corridor analyses
- Area analyses

## EXISTING ROADS: REACTIVE APPROACHES

---

- ❑ The Reactive Approach techniques require a reliable crash data with precise coordinates for the location of crashes
- ❑ The availability of crash data in Africa is known to be poor, and the data often lack the detail required in order to support spatial analyses
- ❑ Taking note of this, the first of the technical sections therefore aims to provide clear guidance on how to improve crash data system
- ❑ The manual presents:
  - Importance of data;
  - Sources and types of data;
  - Data Availability and quality issues; and
  - Improving data availability and quality



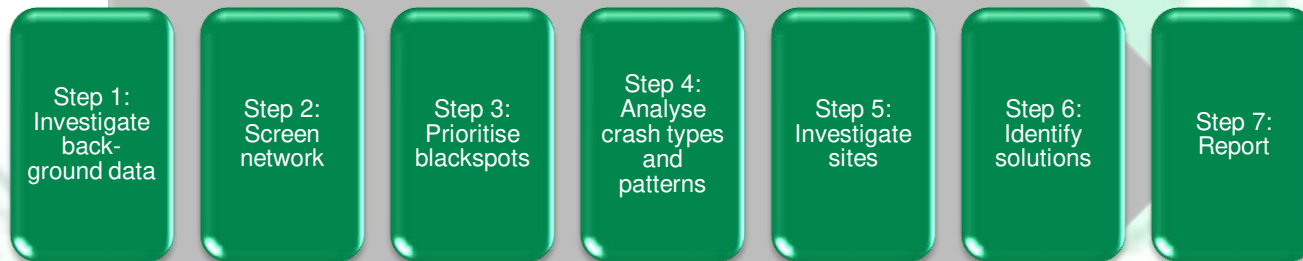
# EXISTING ROADS: REACTIVE APPROACHES

---

- ❑ **The manual provides a Data Analysis and Investigation under which three applications of the reactive approaches which can be done at three distinct levels of detail dependent upon the quality of the crash data available**
  - **Blackspot Analyses - concerned with identifying locations on the network where there are exceptionally high concentration of crashes;**
  - **Route/Corridor Analyses - undertaken to identify high risk sections that require further investigation and treatment; and**
  - **Area Analyses - applied where it is possible to identify common crash themes by area for an area-wide treatment**

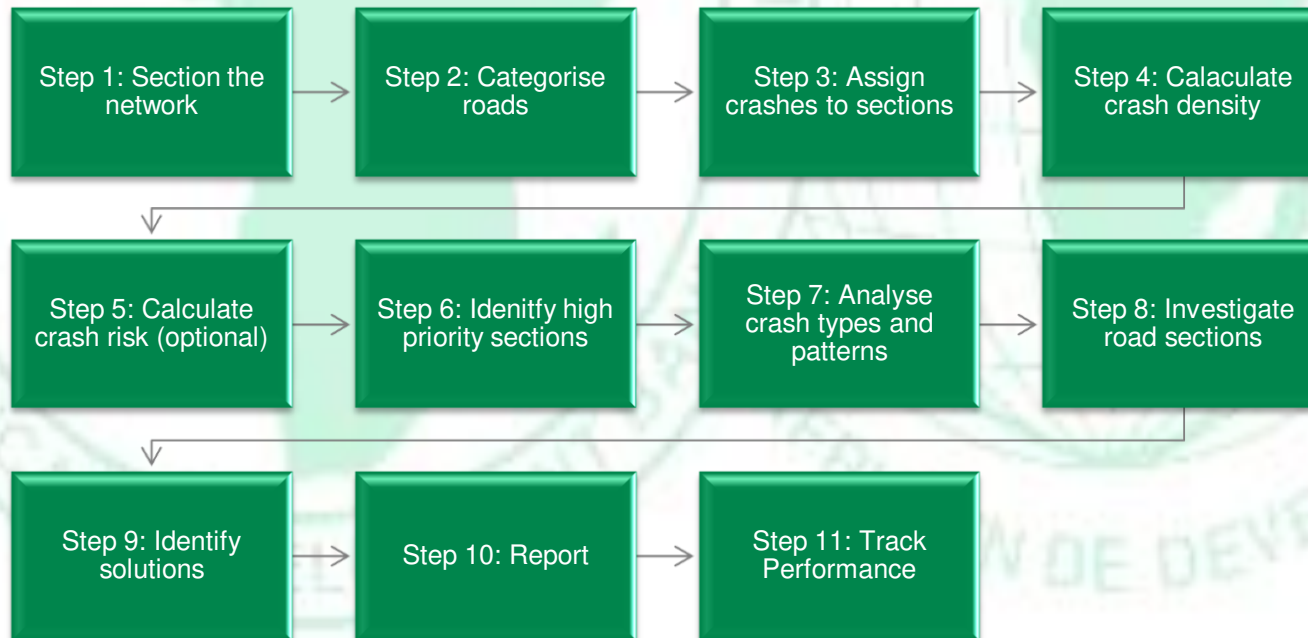
# EXISTING ROADS: REACTIVE APPROACHES

- ❑ ***The Blackspot Analysis and Investigation Section:*** provides detailed guidance on how to undertake Blackspot Analysis and subsequently investigate a site to identify potential solutions
- ❑ A step-by-step process with seven distinct steps has been developed for undertaking a complete blackspot analysis and investigation leading to the development of a treatment plan for technical and economic appraisals to select the best treatment



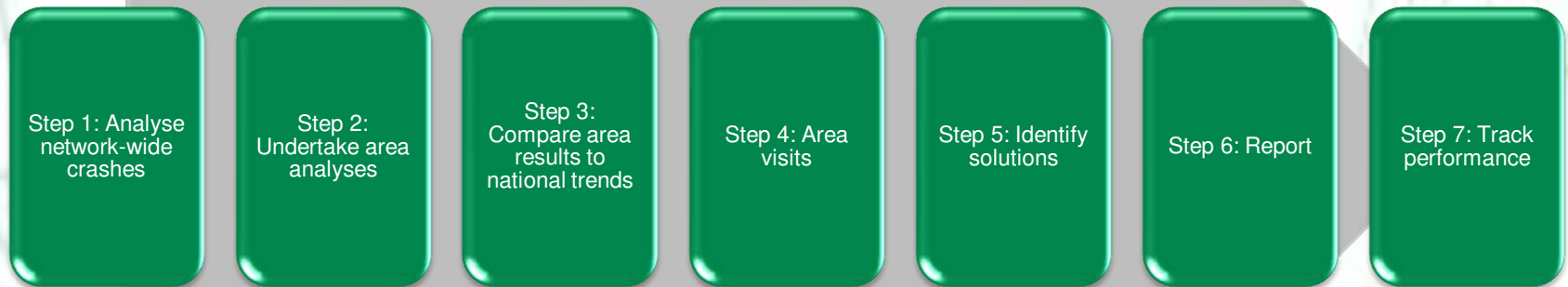
# EXISTING ROADS: REACTIVE APPROACHES

- ❑ ***The Route/Corridor Analysis and Investigation Section:*** provides detailed guidance on how to undertake Route/Corridor Analysis and subsequently investigate a road section to identify potential solutions
- ❑ The manual provides the following step-by-step process with distinct steps for undertaking a complete route/corridor analysis and investigation to identify and treat high risk sections



# EXISTING ROADS: REACTIVE APPROACHES

- ❑ ***The Area Analysis and Investigation Section:*** provides detailed guidance on how to undertake Area Analysis and subsequently investigate an area to identify potential solutions
- ❑ The following step-by-step process is described for area analysis that has been developed





# TAILORED ROAD SAFETY TRAINING

---

- ❑ **Alongside the production of the three manuals, a four-day training course has been developed and delivered to support the use of the manuals**
- ❑ **The training provided an introduction to road safety across the pillars of the Decade of Action for Road Safety as well as practical training using the procedures developed in each of the freestanding manual**
- ❑ **The training was delivered to road safety professionals from 17 Africa countries from 7 to 10 July 2014 in Abidjan through a series of lectures, discussions and practical workshop exercises**
- ❑ **The training has given participants an appreciation of the current road safety issues, best practice and opportunities for intervention through practical application of the manuals**
- ❑ **The training materials provided the basic structure and experiences for future road safety trainings planned by the Bank**



# THE WAY FORWARD

- ❑ **The African Development Bank recognizes that the manuals alone will not make a substantive difference to road safety and the challenge is how to ensure that the manuals and the approaches described in them are used widely across Africa**
- ❑ **As a way forward for overcoming this challenge, the Bank plans to:**
  - ❑ **Embed the manuals into AfDB policy/procedures;**
  - ❑ **Publish and disseminate the manuals;**
  - ❑ **Organize workshops (at managerial and technical levels) to create awareness on the use and embed the manuals in African Countries;**
  - ❑ **Develop special curriculum for training of RS Specialists in line with the use of the manuals;**
  - ❑ **Select regional centres of excellence for road safety, conduct training of trainers, and support the training of African RS specialists;**
  - ❑ **Facilitate knowledge exchange, case studies and evaluation; and**
  - ❑ **Enhance international and regional collaboration to build managerial and technical RS capacity in Africa**



---

***Thank You***

