

Cayman Islands Technical Proposal



October 23, 2013

About iRAP

The International Road Assessment Programme (iRAP) is a registered charity dedicated to saving lives through safer roads.

iRAP works in partnership with government and non-government organisations to:

- Inspect high-risk roads and develop Star Ratings and Safer Roads Investment Plans,
- Provide training, technology and support that will build and sustain national, regional and local capability, and
- Track road safety performance so that funding agencies can assess the benefits of their investments.

The programme is the umbrella organisation for EuroRAP, AusRAP, usRAP and KiwiRAP. Road Assessment Programmes (RAP) are now active in more than 70 countries throughout Europe, Asia Pacific, North, Central and South America and Africa.

iRAP is financially supported by the FIA Foundation for the Automobile and Society and the Road Safety Fund. Projects receive support from the Global Road Safety Facility, automobile associations, regional development banks and donors.

National governments, automobile clubs and associations, charities, the motor industry and institutions such as the European Commission also support RAPs in the developed world and encourage the transfer of research and technology to iRAP. In addition, many individuals donate their time and expertise to support iRAP.

For more information

For more information about iRAP and this proposal, please contact:

Julio Urzúa

iRAP Regional Director

julio.urzua@irap.org

+56 2 431 1074

Rob McInerney

Chief Executive Officer

rob.mcinerney@irap.org

+61 405 49 3030

To find out more about the programme, visit www.irap.org.

You can also subscribe to 'WrapUp', the iRAP e-newsletter, by sending a message to icanhelp@irap.org.

© International Road Assessment Programme (iRAP) 2013

iRAP technology including protocols, processes and brands may not be altered or used in any way without the express written agreement of iRAP.

iRAP is registered in England & Wales under company number 05476000.

Registered Office: 60 Trafalgar Square, London, WC2N 5DS.

Version 3, 23/10/2013

Version 2, 21/10/2013

Version 1 - DRAFT, 09/10/2013



Contents

1	Introduction	4
1.1	Global Road Safety Overview	4
1.2	Our Approach to Safety	4
1.3	Focusing on the Cayman Islands	4
1.4	Building Partnerships.....	5
1.5	Inspecting Roads	5
1.6	Star Rating.....	5
1.7	Risk Mapping	5
1.8	Investment Plans	5
1.9	Performance Tracking	5
1.10	Support and Capacity Building	6
2	Proposal	7
2.1	Phase 1: Project Inception Report.....	7
2.1.1	A Ministerial level briefing meeting	7
2.1.2	A half day iRAP workshop	7
2.1.3	Meetings with key agency staff	7
2.1.4	Preparation of an Inception Report.....	7
2.2	Phase 2: iRAP Star Rating and Investment Plan development	7
2.2.1	Steering committee establishment and briefing.....	7
2.2.2	Collection of background data	8
2.2.3	Mobilisation of survey equipment	8
2.2.4	Media launch of survey inspection.....	9
2.2.5	Survey inspection.....	10
2.2.6	Coding of data.....	10
2.2.7	Analysis of data and preparation of star ratings and investment plan	10
2.2.8	Detailed review of results with local stakeholders	11
2.2.9	Preparation of draft report and stakeholder workshop	11
2.2.10	Preparation of final report	11
2.2.11	Training of local experts.....	11
2.2.12	Preparation of Terms of Reference for Phase 3.....	12
3	Local Support	13
4	iRAP Deliverables.....	13

5 iRAP staff..... 14

5.1 iRAP staff members..... 14

5.2 iRAP subcontractors..... 14

6 Preferred Payment Structure..... 14

1 Introduction

Road crashes cause enormous grief to victims, their families and friends. They are also often a factor responsible for tipping a household into financial distress. The loss of a wage-earner due to death or disability can be disastrous, leading a family into lower living standards and poverty. Globally, road crashes cost up to 3 per cent of Gross Domestic Product. We have the opportunity now to change this appalling situation. The United Nations has declared that 2011-2020 will be the Decade of Action for Road Safety. The goal is to halve the forecast level of road deaths by 2020, preventing 5 million deaths and 50 million serious injuries. Safe road infrastructure for all road users will be crucial in achieving this goal. This is where iRAP, as the next generation of road assessment, has an important role to play. Together with safer behaviour, safer speeds and safer vehicles, iRAP can help save millions of lives. This proposal has been developed by iRAP for consideration by the Cayman Islands National Roads Authority (NRA).

1.1 Global Road Safety Overview

An estimated 1.24 million people die on the world's roads each year with a further 20-50 million people injured. Road traffic crashes are one of the top three causes of death for people aged between 5 and 44 years. Current predictions suggest that death from road crashes will be the sixth leading cause of death and the third leading cause of disability by 2020. Initiatives to counter this trend are critical and are the focus of many international organisations. The United Nations General Assembly has recently adopted a resolution to alleviate the "global road safety crisis" and has declared 2011 to 2020 the Decade of Action for Road Safety.

1.2 Our Approach to Safety

iRAP has identified cost effective and often simple infrastructure improvements that can typically prevent one in four deaths on rural and urban roads. Our plans target roads where pedestrians, motorcyclists, car occupants and bicyclists are killed and injured with brutal regularity. The plans identify proven road safety measures that can prevent millions of deaths and save billions of dollars around the world.

1.3 Focusing on the Cayman Islands

The Cayman Islands recorded 9 road traffic deaths in 2011, equivalent to approximately 16.5 traffic deaths per 100,000 inhabitants and almost double the WHO's 2013 figure of 8.7 traffic deaths per 100,000 inhabitants in High Income countries¹. Between 2007 and 2011, an average of over 1,400 accidents were recorded on Cayman Island roads per year, resulting in 40 deaths and 113 serious injuries. These incidents translate into lost productivity, medical expenses and grief. New road construction or rehabilitation projects in the Cayman Islands incorporate road safety features into their design, however there remains a myriad of associated difficulties related to road infrastructure, institutional capacity, inadequate equipment, vehicle quality, and driver behaviour.

1 WHO (2013) Global Status Report on Road Safety (http://www.who.int/violence_injury_prevention/road_safety_status/2013/en/index.html)

1.4 Building Partnerships

At iRAP's heart is a commitment to a spirit of cooperation between organisations involved in making roads safe. iRAP works closely with automobile associations, governments, funding agencies, research institutes and other non-government community organisations to ensure that projects benefit from broad support and diverse expertise.

1.5 Inspecting Roads

Using specially equipped vehicles, software and highly trained analysts, iRAP teams undertake detailed road inspections. These inspections focus on more than 30 different design features known to influence the likelihood of crashes as well as their severity. These features include intersection design, road cross-sections and markings, roadside hazards, footpaths and bicycle lanes.

1.6 Star Rating

Star Ratings of the relative safety of specific road sections are based on the road inspection data collected through road inspection and analysis. iRAP's Star Ratings provide a simple and objective measure of the level of safety „built in' to the road for car occupants, motorcyclists, bicyclists and pedestrians. Five-star roads are the safest, and one-star roads are the least safe. In New Zealand, the government now routinely reports the star rating of the road where fatalities occur to the Minister of Transport.

1.7 Risk Mapping

In regions where detailed crash data is available, iRAP produces Risk Maps that tell us where people are dying and where their crash risk is greatest. The maps capture the combined risk arising from the interaction of road users, vehicles and the road environment.

1.8 Investment Plans

iRAP develops affordable and economically sound Safer Road Investment Plans that save lives. The plans draw on more than 70 proven road improvement options. The options range from low-cost road markings and pedestrian refuges to higher-cost intersection upgrades and full highway duplication. The plans are complemented by best practice advice for engineers, planners, users and others on implementation through the Road Safety Toolkit (<http://toolkit.irap.org>).

1.9 Performance Tracking

Governments and funding agencies need to measure success and the effectiveness of investment. Our Star Ratings and Risk Maps provide objective measures that can be used to track road safety performance, report on road safety outcomes and establish policy positions. In the UK, for example, EuroRAP used Risk Maps to demonstrate that the government had achieved a significant reduction in high-risk primary route roads between 1997 and 2006. In the Netherlands, the government has committed to eliminating one-star and two-star national roads. In Australia, the government has measured the star ratings before and after road upgrades to deliver an immediate measure of the improvement made. In India the use of minimum star rating targets for new road designs has guaranteed the safety of new road investment.

1.10 Support and Capacity Building

One of iRAP's leading aims is to ensure that there is strong local ownership of each programme. Therefore, each new project incorporates strategies for building and sustaining the capacity of stakeholder organisations through training, advice and direct experience in using iRAP technology and software. Regular regional workshops help to ensure that all stakeholders are aware of the latest developments in technology and research. The workshops also help to build professional relationships that support knowledge sharing and best practice.

2 Proposal

2.1 Phase 1: Project Inception Report

Two iRAP representatives – Julio Urzúa and Morgan Fletcher (staff description in section 5 of this Technical proposal) will undertake an inception mission to better define the work programme and to ensure the project plan will meet the needs of all stakeholders. Activities include:

2.1.1 A Ministerial level briefing meeting

This meeting is intended to create political support by explaining to the Cayman Islands authorities the iRAP methodology, global experience and country impact of an iRAP project. It is expected the following agenda:

- iRAP Overview,
- Survey technologies,
- Data Coding,
- Data analysis with VIDA, and
- Policy opportunities and road financing initiatives.

2.1.2 A half day iRAP workshop

This will include an overview of the program, key steps, expected results, identification of project steering committee and road network to be assessed. This half day workshop day will also include field visits to selected typical roads.

2.1.3 Meetings with key agency staff

This meeting will determine the availability of key data needed for the iRAP assessments and the likely effort and key partners required to source this information (detailed in Phase 2).

2.1.4 Preparation of an Inception Report

The report will include a detailed project plan and proposal to undertake the iRAP Cayman Islands assessment (Phase 2).

2.2 Phase 2: iRAP Star Rating and Investment Plan development

The primary deliverable for the iRAP Cayman Island project will be the star rating of the identified roads for each road user and a detailed and prioritised investment concept plan for consideration the Government of the Cayman Islands. The following tasks will be undertaken:

2.2.1 Steering committee establishment and briefing

It is proposed that the steering committee established for the Cayman Islands National Road Safety Strategy Initiative (Streetskill) forms the basis of the Road Safety Steering Committee for this project. The existing committee includes representatives from Department of Vehicle and Drivers' Licensing, the NRA, Royal

Cayman Islands Police Service, Public Works Department, and Government Information Services. iRAP will review the composition of this committee and advise on composition in order to:

- Provide leadership, commitment and support for the iRAP initiative and the safer roads focus of the program,
- Oversee the development of the iRAP inspections and facilitate actions required to contribute to the success of the project, and
- Provide a review of the project outcomes and directions for the future of iRAP in the Cayman Islands.

Ideally, the steering committee will also include representatives from other government organisations (e.g. Finance, Public Transport and Health), universities, mobility clubs or social organisations, other local stakeholder groups, CDB, and iRAP. The steering committee will be locally organised with the assistance of Government of Cayman Islands staff. Figure 1 is an example of a steering committee in Paraguay.



Figure 1 - iRAP Paraguay Steering Committee

2.2.2 Collection of background data

iRAP will provide to the Cayman Islands Government all the necessary information for them to collect background data that is necessary for the accomplishment of the project. This data will include road location data and existing inventories of road infrastructure, traffic flow data, speed data, GIS data and maps, countermeasure cost and treatment life data, crash data (if available).

2.2.3 Mobilisation of survey equipment

iRAP will mobilise accredited survey equipment from SEMIC for the iRAP Cayman Islands project. The survey equipment will be fitted to a locally sourced vehicle. The SEMIC equipment (pictured in Figure 2 below) has most recently been used for to survey 19,000 kilometres of the Mexican road network and over 4,000 kilometres of the Sao Paulo network in Brazil. Assistance from the Cayman Islands Government to ensure timely customs clearance is requested. Provision of desired logos from local stakeholders is also requested for display on the survey vehicle.



Figure 2 - iRAP accredited survey vehicle used in Mexico

2.2.4 Media launch of survey inspection

iRAP members will participate in the official commencement of the project to be announced at the time the road inspections begin. This event will be coordinated by the steering committee, utilising the Information Unit of the lead Ministry, the NRA, with iRAP participation. A media event will be planned to launch the iRAP initiative at the commencement of the survey activities, when the survey vehicle is fully equipped. The launch will include key Government officials and provides a great opportunity for high profile and positive coverage of this important road safety initiative of the Government and the NRA. iRAP will provide the draft press release and associated project information / generic brochures and information booklets. Figure 3 shows an example of a survey inspection launch.



Figure 3 - iRAP Inspection Launch in Belize, 2011

2.2.5 Survey inspection

Some 382 kilometres of the existing Cayman Islands road network will be surveyed using the equipment mentioned in 2.2.3, according to iRAP current survey inspection protocols. Staff members from the Cayman Islands Government will be invited to participate in parts of the survey if desired to share knowledge on how the survey activity is undertaken.

2.2.6 Coding of data

The iRAP Cayman Islands project will involve the assessment of more than 50 attributes of the road environment that influence road safety outcomes using criteria presented in the iRAP inspection manual. SEMIC will carry out the task of coding the 382km of survey images remotely with its highly experienced data coding team in Mexico. In addition to the existing road network to be surveyed and coded by SEMIC, iRAP will be responsible for coding road attributes for a 4km planned stretch of road using available design plans. An overview of the coding process will be provided for local stakeholders in the Cayman Islands to ensure an understanding of how the data is collected.

2.2.7 Analysis of data and preparation of star ratings and investment plan

The iRAP Team will undertake Star Ratings analyses for car occupants, motorcyclists, pedestrians and bicyclists for the network according to iRAP protocols and using its online software, ViDA. As part of this analysis iRAP will thoroughly review the rating data, perform post-processing to prepare the data for analysis, load the data into the iRAP analysis software (ViDA), develop calibration factors for Cayman Islands conditions,

and conduct the required analyses². Two (2) representatives from the Cayman Islands will be invited to the University of Birmingham in the United Kingdom, to participate in a five day iRAP course in Road Safety in order to better understand how the analysis is undertaken (refer to section 2.2.11) and other local capacity building opportunities will be explored with the team during the delivery of the project.

As part of the project, iRAP will prepare a concept prioritised investment plan. This prioritised investment plan will consist of the standard iRAP Safer Roads Investment Plan that includes estimates of lives saved, economic benefits and BCR that can be used to prioritise the investment. The iRAP team will train the local stakeholders how to use and interpret the results and discuss the potential breakdown of countermeasures into various budget categories / implementation type (e.g. maintenance, minor works, major works) for incorporation into the existing planning cycle of the authority.

It is noted that detailed planning and final specification and design of works does not form part of the current engagement and other iRAP, local or external experts can be sourced at that time as per the needs of the Cayman Islands authorities.

2.2.8 Detailed review of results with local stakeholders

The detailed review of results will include a 3-day visit to the Cayman Islands to meet with the steering committee members and analyse the results, prior to the delivery of the draft report. The steering committee will be asked to review the star ratings, fatality estimations, investment plans and reports in detail, to ensure all results are appropriate for the Cayman Islands.

2.2.9 Preparation of draft report and stakeholder workshop

A workshop to present the draft report (including a concept investment plan) will be conducted in the Cayman Islands. The steering committee members will be asked to provide comments on the draft report.

2.2.10 Preparation of final report

iRAP will revise the draft report in response to the comments received and deliver a final report to the NRA.

2.2.11 Training of local experts

Once the final report is delivered, iRAP will arrange for two local experts from the NRA to be enrolled in the iRAP course in Road Safety, held at the University of Birmingham, England³.

² The iRAP Star Rating Methodology and the Safer Roads Investment Plan methodology are both available for download from the following links:

<http://www.irap.org/about-irap-3/methodology?download=32:irap504-04-star-rating-roads-for-safety>

<http://www.irap.org/about-irap-3/methodology?download=35:safer-roads-investment-plans-the-irap-methodology>

³ <http://www.birmingham.ac.uk/students/courses/cpd/civil-engineering/irap.aspx>

The course provides an introduction to the iRAP technology for evaluating the safety impact of road infrastructure, with topics covered including:

- Risk Mapping existing roads using crash data,
- Star Rating existing roads using inspection images and data,
- Star Rating the design of new and rehabilitated roads from plans,
- Prioritising Safer Road investment plans, and
- Safety Performance Tracking roads,

iRAP will arrange for two local experts from the NRA to be enrolled in the iRAP course in Road Safety, held at the University of Birmingham, England. iRAP will meet the course enrolment fees from the project funds with travel costs to be funded by the Cayman Islands authorities.

2.2.12 Preparation of Terms of Reference for Phase 3

The proposed Phase 3 is focused on Implementation Support linked to the implementation of the road upgrades recommended in the iRAP assessment. Potential for a CDB led regional Caribbean workshop to review the outcomes of the project will also be explored at this stage.

Based on the knowledge gained through the delivery of Phase 1 and 2 and ongoing discussions with the road safety committee, iRAP will prepare a detailed Terms of Reference that can support the future implementation of the programme. This will include consideration of the following items:

- Site review and planning investigation activities to prioritise and finalise the iRAP Safer Roads Investment Plan and provide sufficient specification of works to allow procurement of the first year of improvements,
- Recommendations on the collection of before and after data to assist in evaluating the success of the investment,
- Guidelines on good design and assistance in use of the iRAP Road Safety Toolkit by the project team (<http://toolkit.irap.org>),
- Advice on potential use of iRAP at a strategic level by the Cayman Islands Government and where iRAP outputs can be included within the Cayman Islands Road Safety Strategy,
- Potential extension of iRAP to additional roads in the Cayman Islands,
- Potential review of design standards to include minimum star ratings for new roads and/or the inclusion of critical road safety features into standard cross-sections (e.g. roadside hazard condition, footpaths),
- Potential to include star rating in crash reporting, use star ratings and fatality estimations to help target enforcement, education or improved maintenance standards, and
- Star rating of new road upgrades that will enable the celebration or Ministerial launching of the improvement undertaken by the Government (e.g. a section of road that moves from one star to three star as a result of an investment).

3 Local Support

The Cayman Islands Government will coordinate and fund any major launch activities and endeavour to make available to iRAP any relevant reports and statistics for the Cayman Islands. It will also assist iRAP in identifying the key stakeholders, scheduling meetings, and obtaining data from Government departments and other sources, that will be relevant for the execution of the tasks listed under numbers 2.2.1 to 2.2.11. iRAP will provide the equipment and software required to carry out the assignment and be responsible for obtaining all additional information, the execution of the study and other services necessary for the Project.

4 iRAP Deliverables

iRAP will submit the following reports:

- Inception Report: to be presented 7 days after the completion of the Inception Mission, and will include: initial findings, including any comments on these TOR; and Consultants' work schedule and methodology.
- Draft Final Report including an investment plan: to be submitted 120 days after agreement between CDB and NRA on the Inception Report.
- Final Report including an investment plan: within 7 days of receipt of comments from NRA / CDB on the Draft Final Report, the Consultants shall present the Final Report.

The NRA / CDB will endeavour to provide comments within 10 working days of receipt of each report. The final submission should include a "pdf" format copy.

5 iRAP staff

5.1 iRAP staff members

Julio Urzúa: Regional Director for Latin America and the Caribbean

Julio Urzúa will act as Project Director and will be responsible for the delivery of the Project. He will coordinate and manage all aspects of the project and stakeholder relations. He will lead on procurement of subcontractors, contract management and delivery of interim and final reports.

Morgan Fletcher: Senior Engineer

Morgan Fletcher will act as the Project Manager, leading the technical aspects of the project. He will be responsible for collection of background data, quality assurance, analysis of results and preparation of interim and final reports. With the exception of the training course at the University of Birmingham, he will also be responsible for the training of local staff.

Rob McInerney: CEO of iRAP

Rob McInerney will provide a vital role in ensuring the delivery of the project meets the high quality standards that an iRAP project demands. Through his wide experience of global RAP projects, he will have a key role in ensuring overall quality assurance of the project and will provide key guidance on the preparation of the inception and final reports.

5.2 iRAP subcontractors

Servicios Mexicanos de Ingeniería Civil (SEMIC)

SEMIC is an iRAP-accredited survey company based in Mexico. The company will be responsible for the mobilization of the survey equipment from Mexico to the Cayman Islands, performing the survey in the Cayman Islands and completing the coding of data. SEMIC has extensive experience undertaking survey works and coding data in Mexico, Brazil and Belize and will provide the vehicle, personnel and coding software.

6 Preferred Payment Structure

iRAP requests that staged payments be made upon completion of the following milestones:

- Acceptance of Contract – 10%,
- Submission of Inception Report – 15%,
- Completion of Survey – 30%,
- Submission of Draft Report – 30%,
- Acceptance of Final Report – 15%.