



BETA EDITION

iRAP Project Planning Manual

www.irap.org

Because every life counts.



ABOUT IRAP

The International Road Assessment Programme (iRAP) is a registered charity dedicated to saving lives by eliminating high-risk roads throughout the world. Like many life-saving charities working in the public health arena, we use a robust, evidence-based approach to prevent unnecessary deaths and suffering.

iRAP works in partnership with governments, road authorities, mobility clubs, development banks, NGOs and research organisations to:

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

The programme is the umbrella organisation for EuroRAP, AusRAP, ChinaRAP, KiwiRAP, usRAP, IndiaRAP, BrazilRAP, SARAP and ThaiRAP. Road Assessment Programmes (RAP) are now active in more than 100 countries throughout Europe, Asia Pacific, the Americas and Africa.



iRAP is financially supported by the FIA Foundation for the Automobile and Society. Projects receive support from the Global Road Safety Facility, mobility clubs, regional development banks and donors. Our partners, including charities, the automobile 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 general enquiries, contact us at:
International Road Assessment Programme (iRAP)
Worting House, Basingstoke
Hampshire, UK, RG23 8PX
Telephone: +44 (0) 1256 345598
Email: icanhelp@irap.org

For questions or feedback related to this BETA edition, please contact:
monica.olyslagers@irap.org

To find out more about iRAP, visit www.irap.org.

You can also subscribe to 'WrapUp', the iRAP e-newsletter, by [signing up](#) on the website homepage.

iRAP Project Planning Manual Version 1.0 BETA EDITION (July 2019)

© International Road Assessment Programme (iRAP) 2019

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.



Print warning

Printed copies of this document or parts thereof should not be relied upon as a current reference document. Always refer to the electronic copy for the latest version at www.irap.org/specifications.

CONTENTS

1	INTRODUCTION.....	4
1.1	What is an iRAP project?	5
1.2	Who can do an iRAP project?	5
1.3	What is a project plan?	5
1.4	What are Terms of Reference?	6
1.5	Training and accreditation	7
1.6	Health and safety.....	7
2	GETTING STARTED	8
2.1	Preliminary assessments	8
2.2	Engaging stakeholders.....	8
2.3	Road network	8
2.4	Governance and financing	8
3	DEVELOPING A PROJECT PLAN	10
3.1	Defining a project.....	10
	Identifying a road network to assess.....	10
	Type of assessment	11
	Project objectives and purpose	12
	Budget and timing	16
	Project outputs	16
	What an iRAP project will not produce.....	16
3.2	Organising a project	17
	Defining activities	17
	Roles and responsibilities	18
	Staging a project	19
3.3	Resourcing a project	21
	Teams and expertise.....	21
	Equipment and software	22
3.4	Procuring services and equipment.....	23
	Accredited suppliers	23
3.5	Scheduling a project.....	23
	Timing of project activities	24
	Project activity dependencies.....	24
4	iRAP STANDARD TERMS OF REFERENCE	25
4.1	Project Background	25

4.2	Project Objectives.....	25
4.3	Scope of Work	26
4.4	Schedule of Roads	27
4.5	Deliverables.....	27
	Road survey	28
	Road attribute coding	28
	Analysis and Reporting (Star Ratings and Investment Plans).....	29
	Crash Risk Mapping.....	30
	Quality assurance.....	30
	Stakeholder engagement	31
	Training	31
4.6	Timing.....	32
4.7	Delivery team.....	32
4.8	Inputs to be Provided by the Client	33
5	APPENDIX A: HEALTH AND SAFETY PLAN AND RISK ASSESSMENT	34

1 INTRODUCTION

iRAP was established to help tackle the devastating social and economic cost of road crashes. Without intervention, the annual number of road deaths worldwide is projected to increase to some 2.4 million by 2030. The majority of these will occur in low and middle-income countries, which already suffer nine out of ten of the world's road deaths. Almost half of those killed will be vulnerable road users – motorcyclists, bicyclists and pedestrians.

Large as the problem is, making roads safe is by no means an insurmountable challenge. The requisite research, technology and expertise to save lives already exists. Road safety engineering makes a direct contribution to the reduction of road death and injury. Well-designed intersections, safe roadsides and appropriate road cross-sections can significantly decrease the risk of motorised vehicle crashes occurring and the severity of crashes that do occur. Footpaths, pedestrian crossings and bicycle paths can substantially cut the risk that pedestrians and bicyclists will be killed or injured by avoiding the need for them to mix with motorised vehicles. Motorcycle lanes can minimise the risk of death and injury for motorcyclists.

iRAP has developed five globally-consistent protocols to assess and improve the safety of roads by building on the work of Road Assessment Programmes (RAP) in high-income countries (EuroRAP, AusRAP, usRAP and KiwiRAP) and with the expertise of leading road safety research organisations worldwide, including ARRB (Australia), TRL (United Kingdom), MRI Global (United States), MIROS (Malaysia), IMT (Mexico), RIOH (China), SWOV (The Netherlands), Labtrans (Brazil), KOTI (Korea) and Chula (Thailand).

The iRAP Protocols

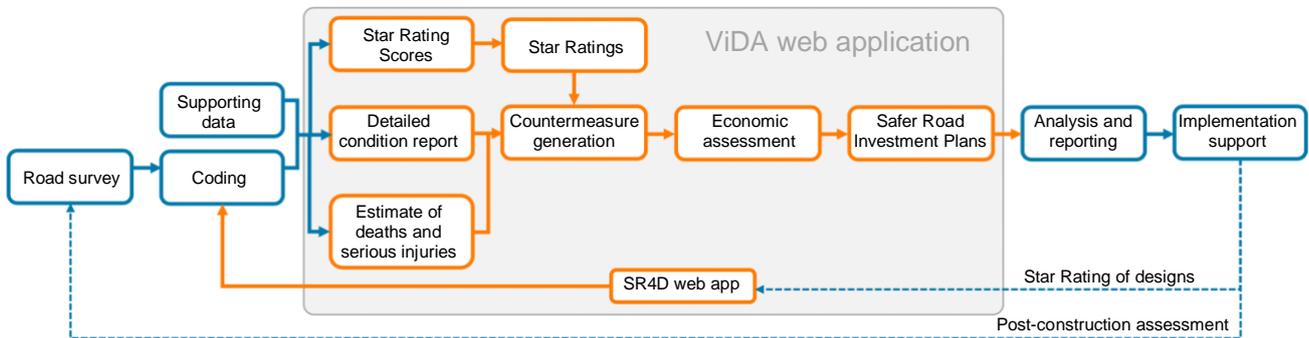
1. **Crash Risk Mapping** uses detailed crash data to illustrate the distribution of recorded fatalities and serious injuries on a road network.
2. **Star Ratings** provide a simple and objective measure of the level of safety provided by a road's design.
3. **Fatality Estimation Mapping** illustrates the distribution of the expected number of fatalities and serious injuries across a road network.
4. **Safer Road Investment Plans (SRIP)** draw on approximately 90 proven road improvement options to generate affordable and economically sound infrastructure options for saving lives.
5. **Performance Tracking** enables the use of Star Ratings and Crash Risk Mapping to track road safety performance and establish policy positions.

This manual assists with the planning, preparation and management of a project for iRAP road assessment or related activities. It is one of a number of specifications and guides provided for completing projects, accreditation and results analysis shown below.

- **Project Planning Manual (includes the Standard Terms of Reference)**
- Inspection System Accreditation Specification
- iRAP Survey Manual
- iRAP Coding Manual
- iRAP Star Rating and Investment Plan Manual
- ViDA User Guide
- Star Rating for Designs User Guide (for users of the SR4D web app)

The figure below illustrates the process used to undertake Star Ratings and Investment Plans, which can be used as part of a systematic, proactive approach to road infrastructure risk assessment and renewal based on research about where severe crashes are likely to occur and how they can be prevented.

The iRAP Star Rating and Safer Roads Investment Plan process



1.1 What is an iRAP project?

An iRAP project can be one or more activities related to the five iRAP Protocols: Crash Risk Mapping, Star Ratings, Fatality Estimation Mapping, Safer Road Investment Plans and Performance Tracking. The activities delivered as part of a project will largely depend on the context of the project and the needs of the client.

The most common types of projects are Crash Risk Mapping and Star Rating assessments. For more examples, see [Type of assessment](#).

1.2 Who can do an iRAP project?

iRAP tools are free to use, so technically anyone can do an iRAP project (but of course it requires specialist skills and knowledge).

It is beneficial to use accredited suppliers and an accredited inspection system when commissioning iRAP Star Rating and Investment Plan projects, though it is not mandatory. In Europe, Crash Risk Mapping suppliers should be licensed by EuroRAP.

1.3 What is a project plan?

iRAP projects should begin with a clear understanding of:

- The relevant specifications and manuals, and
- The specific requirements of the project.

These should be clearly set out in the project plan and Terms of Reference.

A substantial investment of time and resources can be consumed in a project, so it is desirable that all requirements are well understood by everyone involved in each stage of the project before activities commence.

The requirements and guidance provided in each of the activity-specific specifications, manuals and user guides are a critical part of project planning. Following these can prevent potential delays and cost overruns due to unforeseen issues. Information on project activities and the corresponding specification, manual and user guide is provided in [Defining activities](#).

A project plan should detail:

- What will be done as part of the project, in particular:
 - The network of roads/designs to be assessed (km length, road names, description etc.)
 - The type of assessment required

- The project outputs (what the project will produce, such as the analysis and reports required), and
- What related activities will be completed, such as stakeholder engagement, training and/or implementation support.
- How the project will be organised, in particular:
 - The project stages and a description of each stage
 - Supporting data required and who will provide this (or how it will be collected), and
 - Roles and responsibilities for each stage.
- What resources, expertise and equipment will be required, including:
 - The number of personnel required for project activities
 - What skills, expertise and experience will be required
 - Training required
 - Health and safety measures
 - Equipment required, and
 - Procurement plans for external suppliers and/or equipment.
- The project schedule, in particular
 - Duration and staging of project activities
 - Critical dates and timing which could influence the project schedule, and
 - Expected completion date.

This manual provides further detail on each of these steps. The project plan will contain important details required for the [Terms of Reference](#).

1.4 What are Terms of Reference?

Terms of Reference are the specification for activities to be undertaken in a contract.

A contract is normally specific to one supplier. As such, the terms of reference will only contain the specifications that relate to the activities to be done by that supplier.

If project activities are to be completed 'in-house' (that is, if no external suppliers are being engaged under a contract), it is still recommended that Terms of Reference be used as they contain important specifications required for each stage of the project. Note that the *iRAP Coding Manual* recommends quality assurance is always undertaken by an independent quality assurer.

iRAP provides a [Standard Terms of Reference](#) to assist with engaging suppliers for iRAP activities or as an action plan for organisations doing in-house assessments. Please note the Standard Terms of Reference must be tailored for each project that reflects the project plan, and ultimately the project and client's needs.

1.5 Training and accreditation

iRAP activities require specialist skills and knowledge. iRAP recommends that people preparing to undertake an iRAP project take training. Information about the training courses available can be found on the iRAP website, at <https://www.irap.org/training>.

iRAP also manages an accredited supplier scheme. There are two categories of iRAP accreditation:

1. Activity accreditation. Suppliers that hold activity accreditation have completed training and successfully completed a test and have demonstrated experience. They have also signed the *iRAP Accredited Supplier Code of Conduct*. Activity accreditation is renewed annually based on demonstrated experience and may include refresher training and consideration of client feedback.
2. Inspection system accreditation, which relates to equipment and software used to perform surveys and coding. Inspection systems that are accredited have met the requirements described in the *iRAP Inspection System Accreditation Manual*, and their manufacturers have signed the *iRAP Accredited Supplier Code of Conduct*. Inspection system accreditation is renewed every three years and may include retesting of the system and consideration of client feedback.

It is beneficial that accredited suppliers and an accredited inspection system are used in iRAP assessments though it is not considered mandatory. Information about accreditation can be found on the iRAP website, at <https://www.irap.org/accreditation>.

1.6 Health and safety

iRAP assessments are typically focussed on high-risk roads. Therefore, it is very important that everyone involved in the project is informed of—and manage—all risks associated with the activities.

Each iRAP manual contains further information on how to manage health and safety risks associated with the respective activity. Health and safety plan and risk assessment templates are also provided. See [Appendix A: Health and Safety Plan and Risk Assessment](#).

2 GETTING STARTED

The establishment of a successful iRAP project depends on two key elements:

1. **Strong partnerships:** At the outset of a project, it is crucial that partnerships are forged between the project team and a range of stakeholders who will cooperate to reduce road deaths and serious injuries in a country or region. Stakeholders often include governments, funding agencies, automobile associations, research institutes and other non-government organisations.
2. **Solid planning:** During the project establishment phase, a project plan will be developed by the project team and updated on a regular basis in consultation with the key stakeholders.

2.1 Preliminary assessments

As part of the initial development of an iRAP project, stakeholders often complete a feasibility assessment. The assessment addresses issues such as the country or region's road network, the road safety situation, the availability of data (such as crash data and traffic volume data) and road safety countermeasure costs. The assessment helps the project team customise the project to the circumstances and needs specific to the local context.

2.2 Engaging stakeholders

A stakeholder workshop should be held early in the planning process to help build a common understanding and consensus around the project, and identify factors that will be critical for success. Workshops typically include the project team and high-level representation from stakeholder organisations.

The aim of the workshop is to:

- Develop a common understanding of the purpose of the project
- Clearly define the relationship of the project to other aspects of the road safety strategy in the country or region, and
- Create strong support for the project at a political level and across all key government and non-government stakeholders.

2.3 Road network

One of the early tasks is to identify a road network, which becomes the focus of the iRAP assessment. Normally, the road network includes roads where large numbers of people are killed and seriously injured. The road network can also include corridors identified for future upgrade and investment.

For more guidance on network selection, see [Identifying a road network to assess](#).

2.4 Governance and financing

A project may have a range of different governance and financial arrangements. Examples of the governance and financial arrangements for a project are:

- Part of a national or regional RAP programme. For more information, refer to [Developing a Locally Owned and Led National or State iRAP Programme](#).

- Supported by an international development organisation (often as part of a broader capacity building initiative)
- Commissioned and financed by a road authority or private road operator.

iRAP can provide support and assistance to road authorities, operators and other organisations interested in undertaking a project. For more information, contact icanhelp@irap.org.

3 DEVELOPING A PROJECT PLAN

3.1 Defining a project

Defining a project requires detailing its key parameters, such as:

- The road network and/or designs to assess
- The type of assessment required
- The project's objectives
- Budget and timing, and
- Project outputs (i.e. what the project will produce, such as the analysis and reports required).

Identifying a road network to assess

In some cases, a road authority will have identified a road corridor, network, designs or general area of focus for assessment. If not, these can be identified as part of the planning process.

It is important that network selection is consistent with project objectives to ensure the outcome of the project is useful and worthwhile. See [Project objectives and purpose](#) for more information.

An assessment can range from very short road lengths or sections to very large assessments of thousands of kilometres of roads. The size of the assessment will have significant implications for the project planning, staging and procurement, the equipment and resources required, and the level of analysis.



Which roads do I choose?

Typically, about half of all road deaths and serious injuries will occur on about ten percent of roads in a country. These tend to be the busiest roads. Therefore, if no network has been identified, it is recommended that assessments prioritise these high volume roads.

It is also common that assessments focus on roads which are going to be upgraded, in which case, Star Rating the designs is also desirable.

Road network assessments may also be strategic and provide long term benefits, such as providing a database of information which can be drawn on for many years to come.

How many kilometres should be assessed?

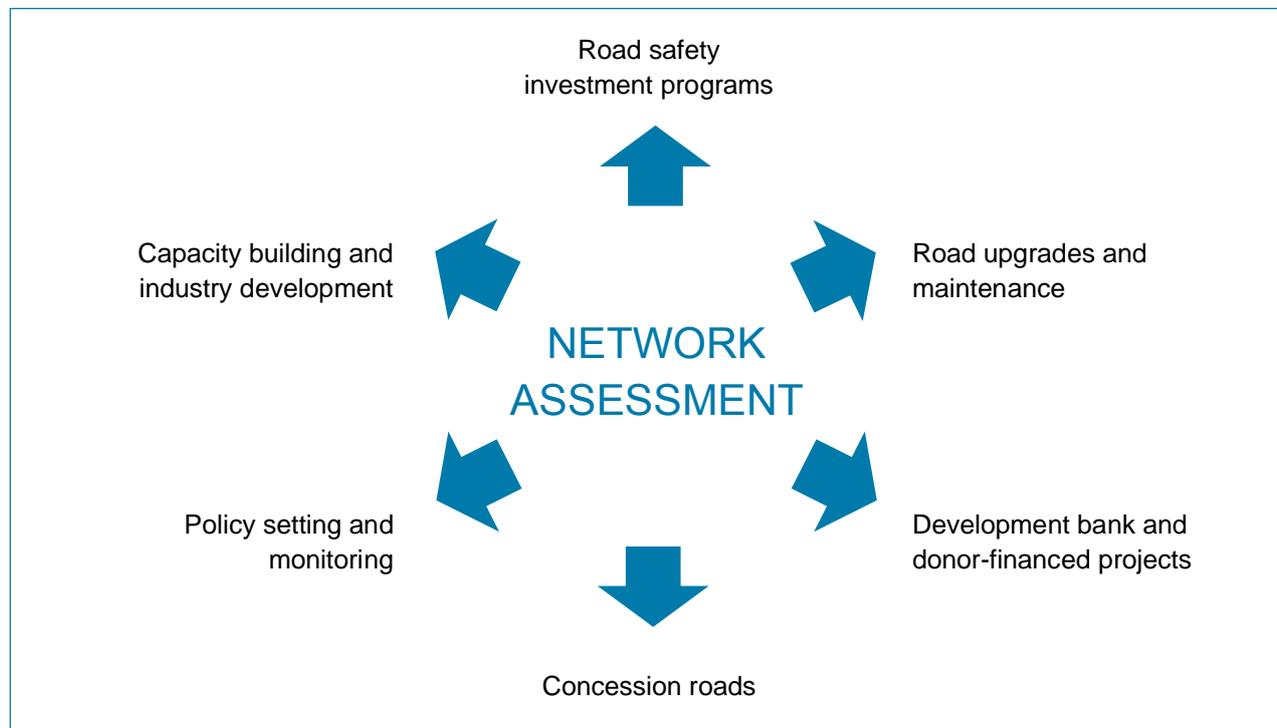
The size of the assessment will be determined by the objectives of the assessment and the available time and budget (if known).

Generally, the complexity of the road being assessed will determine how time and labour intensive an assessment is. For example, more time is required per kilometre for survey and coding highly complex road networks, such as those in urban areas, than that which is required for simpler road environments, such as high-speed motorways, highways and rural roads.

In all cases, larger assessments tend to be cheaper on a per km basis than smaller assessments due to economies of scale.

When selecting the scope of the project, it is useful to consider the flow-on benefits that may be generated, beyond the specific objectives of the project.

How network assessments can link with many other things



Road descriptors

It is important to include clear road descriptors for the roads and designs to be assessed. This will assist survey teams to find and assess the correct roads. These should include:

1. Road name and section. It is good practice to match names used by the road authority. The section name should distinguish the section of road from other sections of the same road, or the road authority's own road section identification system used. GPS locations and chainages may also be used. In some cases, landmarks or other descriptions can be provided.
2. Length of road (km) and start and end points for each road and section.

The identified road network and road descriptors will form the [Schedule of Roads](#) in the Terms of Reference.

Type of assessment

There are a number of assessment types that can be used in an iRAP project. Types of assessments can be one or a combination of the following:

- Crash Risk Mapping: Mapping of detailed crash data to illustrate the distribution of the recorded fatal and serious injuries on a road network.
- Baseline Star Rating and Investment Plan: This is where an existing road is surveyed, the road attributes of the road are coded, and Star Ratings and Investment Plans are produced.
- Star Ratings only: This is where just Star Ratings are produced. Small Star Rating-only projects may be done using the [Star Rating Demonstrator](#).

- Design Star Ratings: This is where designs for a new road or upgraded road are assessed. It can be done in conjunction with baseline assessments or independently. Design Star Rating projects may be done using the [SR4D web app](#).
- Scenario testing: This is where different design or Investment Plan scenarios are tested, and Star Rating results produced.
- Post-construction assessments and performance tracking: This is where a road is reassessed to measure the improvement made or monitor changes over time.

More information on types of assessments is available in the [iRAP Star Rating and Investment Plan Manual](#).

Project objectives and purpose

Project objectives and purpose are what the project aims to achieve or address. The objective will directly inform what network is selected, the type of assessment conducted, the project outputs and other activities.

Project objectives should be discussed early in the project planning phase, even if some decisions about the scope of the project, such as the road network, have already been made. This will inform expectations about the assessment process and outcomes, and reduce the chance of changes mid-way through a project.

The matrix below provides some examples of project objectives, corresponding guidance for network selection, and recommended assessment type and analysis. More information on Investment Plan analyses can be found in the [iRAP Star Rating and Investment Plan Manual](#).

Using project objectives in project planning

Project objective	Guidance for network selection	Recommended assessment type and analysis
To address road fatalities and serious injuries on an identified corridor/road network	In this case, a road corridor or network will already have been identified. In some cases, priority corridor/network sections will need to be identified to limit the project (e.g. to meet a given timeframe or budget) or, for very large networks, to break it into smaller units so the project can be undertaken in two or more phases. Section prioritization may be done on the basis of: <ul style="list-style-type: none"> • Addressing sections with the highest rates of crashes or highest flows, or • Sections with forecast upgrades or maintenance work. 	Star Rating assessment of the existing road with Investment Plan analysis: <ul style="list-style-type: none"> • This assessment will form the baseline scenario which future designs or upgrades can be compared against. • The Investment Plan can provide a list of cost-effective countermeasures for further investigation.
To identify high-risk roads where fatalities and serious injuries are occurring	Use crash data to identify roads experiencing high crash rates. If crash data is not available, ask local authorities. For example, local police will be able to readily identify roads and locations with high rates of serious crashes. If crash rates are spread across the network, focus on high volume roads	Crash Risk Mapping and/or Star Rating assessment of the existing road with Investment Plan analysis: <ul style="list-style-type: none"> • There may be opportunity to consider network issues that could be common across the network (e.g. heavy vehicle crashes or pedestrian fatalities) in which

Project objective	Guidance for network selection	Recommended assessment type and analysis
	<p>which have the highest rates of exposure (such as arterial roads).</p>	<p>case, mass action treatments could be proposed for all current and future roads (roadside barriers, pedestrian crossings etc.).</p>
<p>To understand the baseline safety situation on a road corridor or network</p>	<p>In this case, a road corridor or network may be known. If not, corridor/network selection may be done on the basis of:</p> <ul style="list-style-type: none"> • Addressing roads with the highest rates of crashes or highest flows, or • Roads with forecast upgrades or maintenance work. 	<p>Star Rating assessment of the existing road with Investment Plan analysis:</p> <ul style="list-style-type: none"> • This assessment will provide baseline Star Ratings. This can then be used to set achievable Star Rating targets for each road user type. • Investment plans may be tailored to address road sections which are lower than the Star Rating target for any road user group.
<p>To inform safe design of road upgrades</p>	<p>In this case, a road corridor or network and the upgrades will be known. Designs may be available.</p>	<p>Star Rating assessment of the existing road and road designs with Investment Plan analysis:</p> <ul style="list-style-type: none"> • This assessment will form the baseline scenario which future designs or upgrades can be compared against. • Investment plans may be tailored to meet specified design priorities and/or budget. • Depending on the stage of the process, a design may already have been done. If so, a Star Rating of the design should be done to inform further iterations of the design.
<p>To inform safe design for new road construction</p>	<p>In this case, the length and location of the new road will be known. Designs are required.</p>	<p>Star Rating assessment of the existing road (where present) and road designs with Investment Plan analysis:</p> <ul style="list-style-type: none"> • Where there is an existing road, this assessment will form the baseline scenario which new road designs can be compared against. The existing road's locational information, expected flows, road user mix and other details can be used for the new road's design assessment. • Where there is no existing road, the assessment will only be able to be done for the road designs.

Project objective	Guidance for network selection	Recommended assessment type and analysis
		<ul style="list-style-type: none"> • The new road’s locational information, expected flows, road user mix and other details will need to be approximated. • Design and scenario testing may draw from designs and related documents, such as feasibility studies and traffic volume forecasts.
<p>To inform safe design in mass transit projects</p>	<p>New mass transit projects may or may not involve reconfiguration of the roadway. However, mass transit systems will have a significant impact on flows, particularly pedestrians accessing the system. Either way, both the mass transit corridor and feeder streets should be assessed. If there is no impact on the road itself (such as for a subway system), assessments can be focused around station locations. Designs are required.</p>	<p>Star Rating assessment of the existing road (where present) and designs with Investment Plan analysis:</p> <ul style="list-style-type: none"> • Investment plans may be tailored to meet specified design priorities and/or budget. • Include feeder streets (i.e. streets that people will use to access the system) in the baseline assessment. • Design and scenario testing may draw from designs and related documents, such as feasibility studies and patronage forecasts.
<p>To deliver road safety policy objectives (e.g. improving walking and cycling safety)</p>	<p>To identify a suitable network, first identify areas of priority related to the policy objective. For example, to improve walking and cycling safety, areas around educational facilities (such as schools), shopping areas and transit hubs may be prioritized. Drawing on local knowledge and other policy or planning documents, such as strategic and land-use plans, is recommended.</p>	<p>Star Rating assessment of the existing road with Investment Plan analysis:</p> <ul style="list-style-type: none"> • Investment plans may be tailored to the policy objective outcomes, such as raising pedestrian and bicyclist Star Ratings.
<p>To prioritize investment</p>	<p>Investment prioritization is usually selected for a known network. If there is no known network, it is recommended sections are selected with highest rates of crashes or highest flows. This can be for a select road user group or all road users.</p>	<p>Crash Risk Mapping and/or Star Rating assessment of the existing road with Investment Plan analysis:</p> <ul style="list-style-type: none"> • Investment plans may be tailored to priorities, for example: <ul style="list-style-type: none"> – Sections with the lowest Star Rating (i.e. highest risk) – Ease of implementation to assist road authorities to stage road upgrades in a way that accounts for

Project objective	Guidance for network selection	Recommended assessment type and analysis
		<p>construction lead times or budget appropriation</p> <ul style="list-style-type: none"> - Address safety of a particular road user group.
To plan for maintenance	Maintenance planning is usually selected for a known network. If there is no known network, it is recommended sections are selected with highest rates of crashes or highest flows. This can be for a select road user group or all road users.	<p>Star Rating assessment of the existing road with Investment Plan analysis:</p> <ul style="list-style-type: none"> • Investment plans may be tailored to contain only those safety treatments which typically fit with road maintenance. For example, delineation, road surface rehabilitation etc.
To meet a Star Rating target	To identify networks to meet a Star Rating target, areas of priority related to the target need to be identified. Sections can be selected on the basis of highest rates of crashes or highest flows. This can be for a select road user group or all road users.	<p>Star Rating assessment of the existing road with Investment Plan analysis:</p> <ul style="list-style-type: none"> • Investment plans may be tailored to address road sections which are lower than the Star Rating target for any road user group.
To undertake a demonstration project	<p>Demonstration projects are where an example Star Rating assessment is completed for a selected corridor with view to larger assessments in the future. The selected corridor should be one of strategic importance and which is representative of the broader road network.</p> <p>Drawing on local knowledge and other policy or planning documents is recommended to select an appropriate demonstration corridor.</p> <p>Demonstration projects typically involve a training component.</p>	<p>Star Rating assessment of the existing road with Investment Plan analysis:</p> <ul style="list-style-type: none"> • Where training activities required, training should cover Star Rating assessment of the existing road with Investment Plan analysis and scenario testing.
For training and capacity building	<p>Selecting a network for the purposes of training a team largely depends on the objectives of the training. For example, if a team requires the necessary skills to undertake a large-scale survey, it will be important to select a representative section of the network.</p> <p>The size of this section needs to be in keeping with the size of the team and the amount of time allowed for training.</p>	<p>Training, including a demonstration Star Rating assessment of the existing road with Investment Plan analysis:</p> <ul style="list-style-type: none"> • Training should also include an example design assessment and scenario testing.

Budget and timing

The budget and timeframe available will determine the scope of a project. It is important to consider the available budget and timeframe early in the planning process.

Occasionally, there may not be an existing budget. In this case, a project plan can be used to determine a suitable budget for a project and to secure the necessary funding.

Similarly, timing for a project is rarely open-ended. Timing may be defined by budget cycles, design and construction phases, or other strategically important events. Timing will impact the size of the network that can be assessed, as well as the size of the assessment teams and equipment required.

Project outputs

A project's outputs refer to what the project teams will produce. This will include analysis and reporting of the assessment results, including investment plans, as well as the results of other activities, such as training.

It is important that project outputs are planned in accordance with project objectives and client and stakeholder needs. Project outputs may include:

- Assessment reports to meet stakeholder needs, for example, summary and technical reports
- The need for—and type of—Star Rating and Investment Plan analysis and scenario testing. These may be planned for in advance, however they are typically refined during the analysis stage of the project
- Supplementary reports for identified issues or to support implementation (e.g. Strip plans)
- Progress reports
- Quality assurance reports
- Training which will be delivered, including who will be trained and the purpose and content of the training, and
- Presentations, stakeholder meetings and/or media events planned for each stage of the project.

What an iRAP project will not produce

An iRAP project will not produce International Roughness Index (IRI) data or detailed asset data (such as exact numbers of signs, inventory of cracks in pavement), road designs and nor is it a road safety audit. However, projects can be structured in a way that connects these things together. For example:

- The collection of IRI data may also collect the survey data for iRAP assessments
- An Investment Plan can provide a list of cost-effective countermeasures for further investigation or suggest improvements to road designs, and
- An iRAP assessment can be used to identify high-risk sections to undertake a road safety audit and can complement the results of an audit.

3.2 Organising a project

Once the project's parameters have been defined, the project activities, roles and responsibilities and staging can be organised.

Defining activities

A project may include a range of activities. Some activities will be central to producing the project outputs (a road survey, for example) whereas others may be related activities necessary to ensure the quality of the assessment and that the results can be applied successfully.

The table below provides a list of possible project activities, descriptions and relevant iRAP specifications, manuals and user guides.

Project activities, descriptions and relevant iRAP specifications, manuals and user guides

Activity	Description
Project preparation and planning	This involves identifying the needs the project should address, specify the project scope and activities (including the road network/designs to be assessed), plan activities and engage the necessary suppliers. Refer to this manual and the Standard Terms of Reference for more information.
Crash Risk Mapping	This involves mapping detailed crash data to illustrate the distribution of recorded fatalities and serious injuries on a road network. Refer to Crash Risk Mapping design, technical specification and template for more information.
Road surveys	Road surveys involve collecting footage of a road for the purposes of road attribute coding and are usually required for an iRAP Star Rating assessment. Exceptions may include assessments of small networks using Google Streetview footage or similar, or design assessments. Refer to the iRAP Survey Manual for more information about road surveys.
Reviewing designs	Reviewing designs may be required as part of a design assessment or as part of implementation support, that is, assisting road designers in implementation of the countermeasures proposed in the Investment Plan. Refer to the Star Rating for Designs User Guide for more information about reviewing designs.
Road attribute coding	Coding is required to produce Star Ratings. Refer to the iRAP Coding Manual for more information about road attribute coding.
Supporting data collection	Every iRAP project requires supporting data. It is important to know what supporting data will be required early in the project planning process to avoid unforeseen delays during the project. Supporting data includes speed and flow data, crash data, local economic data and countermeasure costs. It is required for producing Star Ratings and Investment Plans. More information on the collection and coding of supporting data is provided in the iRAP Survey Manual and the iRAP Star Rating and Investment Plan Manual respectively.
Producing Star Ratings and Investment Plans	To produce Star Ratings and Investment Plans, road attribute coding and supporting data is processed using iRAP's web application, ViDA. Exceptions may include very small or design Star Rating-only assessments using the iRAP Demonstrator or the Star Rating for Designs tool. Refer to the iRAP Star Rating

Activity	Description
	and Investment Plan Manual for more information about producing Star Ratings and Investment Plans.
Analysis and reporting	Analysis and reporting involve reading, analyzing and reporting on Star Rating and Investment Plan results and providing recommendations. Refer to the iRAP Star Rating and Investment Plan Manual and ViDA User Guide for more information.
Stakeholder engagement	All activities will involve engagement with the relevant stakeholders, but may include a specific range of training activities, presentation and meetings with relevant authorities.
Implementation support	Implementation support involves providing further assistance to help local road authorities or policymakers understand and use the Star Rating and Investment Plan results in subsequent stages of a road upgrade, investment decisions or road safety policies. Refer to the iRAP Star Rating and Investment Plan Manual for more information.
Quality assurance (QA)	<p>Quality and compliance reviews should be planned for and performed regularly throughout a project. If problems are found and corrected early, then subsequent complications can be minimised and/or the need for re-surveys can be avoided. Quality and compliance review activities should be clearly set out in the project plan and subsequent activity TORs, and include</p> <ul style="list-style-type: none"> • Regular internal quality checks during survey, coding and analysis and reporting. Details on how these checks should be organised and carried out are provided in the respective activity manuals. • Peer-to-peer checks of deliverables upon receipt. For example, the coding team should check survey data, the analysis and reporting team should perform checks of the coding data and the project management team should perform checks of the analysis and reporting. • Independent quality assurance is recommended to assist in quality checks, particularly for road attribute coding. • Where suppliers have been engaged, final payment should be contingent on meeting quality standards. <p>Refer to the 'Managing quality' section in each of the activity manuals for more information.</p>

Roles and responsibilities

Once the activities are defined, roles responsibilities for each can then be identified and assigned. This needs to be done for:

- Core delivery teams. Project activities may not necessarily be done by the same team. In fact, it is normal for activities, such as surveys and coding, to be completed by different teams. The reason is that often activities can require different sets of expertise, resourcing and equipment.
- Stakeholders relevant to each stage, for example:
 - Local road authorities
 - Road design teams
 - Police

- Political leaders
- Relevant community representatives and organisations, etc.
- Supporting data providers.

This process will identify those tasks for which additional resources need to be procured. Procurement of suppliers is discussed in the following section.

Staging a project

Because a project involves multiple activities and teams, projects are usually organised into clear stages. Each stage is made up of the activities to be completed by a team of one or more suppliers. Even if a project is to be completed without external suppliers, it is still important to plan projects thoroughly to ensure a common understanding of:

- The objectives of the project
- Roles and responsibilities for each stage of the project
- The necessary resources, skills/expertise and equipment required
- When project activities are due to be completed.

The table below provides examples of typical project stages and activities. In planning project stages, activities and deliverables, it is important to be familiar with the corresponding iRAP manual and their standard deliverables for each stage.

Example of typical project stages activities

Stage	Example of typical activities
Project management	<ul style="list-style-type: none"> • Project planning, for example: <ul style="list-style-type: none"> – Confirming the definition and scope of the project – Project proposal (if required) – Procurement of equipment and suppliers (if required) • Contract management • Client and stakeholder engagement
Survey and data collection	<ul style="list-style-type: none"> • Survey planning • Road survey and data collection • Speed and flow information • Quality assurance • Transfer of data to coding team and addressing issues as required • Client and local stakeholder engagement <p>More information on standard deliverables for iRAP road survey data collection are available in the iRAP Survey Manual.</p>
Road attribute coding	<ul style="list-style-type: none"> • Coding planning • Survey data checks • Speed and flow data checks • Road attribute coding • Quality reviewing and checks <p>More information on standard deliverables for iRAP road attribute coding are available in the iRAP Coding Manual.</p>

Stage	Example of typical activities
Analysis and reporting	<ul style="list-style-type: none"> • Processing of road attribute coding data (the upload file) • Producing Star Ratings and Investment Plans • Analyzing results • Producing reports • Implementation support • Client and local stakeholder engagement • Crash Risk Mapping <p>More information on standard deliverables for an iRAP analysis and reporting are available in the iRAP Star Rating and Investment Plan Manual.</p>
Other activities	<ul style="list-style-type: none"> • Training • Supporting data collection • Presentation of results • Stakeholder engagement and events • Implementation support <p>More information on undertaking other activities, including supporting data collection and implementation support for an iRAP project is available in the iRAP Star Rating and Investment Plan Manual.</p>

The staging of a project and the need for suppliers should be determined based on the type and size of the project and the necessary expertise, resources and equipment required.

When planning project stages and suppliers, it is crucial that the systems used by survey suppliers and coding suppliers are compatible. See [Equipment and software](#) for more information.



How do I stage a project?

There are multiple ways to organise a project. For example, for a common baseline assessment, the project could be divided into the following stages, carried out by three different teams:

Team	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Management team (client)	Project planning	Contract management			Analysis and reporting
Supplier 1		Survey & supporting data collection			
Supplier 2			Coding		
Supplier 3		QA and reviewing			

In this case, the management team would oversee the project planning, engaging and managing suppliers and the analysis and reporting. Supplier 1 would be engaged to complete the road surveys and any the collection of traffic speed and flow data required; Supplier 2 would be engaged to complete the road attribute coding and Supplier 3 would complete independent quality checks of the data.

Alternatively, the client may engage one supplier to undertake all of the key project activities, and a second supplier to provide quality assurance and review of project outputs.

Team	Stage 1	Stage 2	Stage 3	Stage 4
Management team (client)	Project planning	Contract management		
Supplier 1		Survey and supporting data collection	Coding	Analysis and reporting
Supplier 2		QA and reviewing		

Another possibility is that an organisation has the necessary skills and resources in-house. In this case, one team could do the entire project with only an independent supplier to do quality assurance checks.

Team	Stage 1	Stage 2	Stage 3	Stage 4
Project team	Project planning	Survey and supporting data collection	Coding	Analysis and reporting
Supplier 1		QA and reviewing		

Note that quality assurance of road attribute coding is the single biggest QA task. The *iRAP Coding Manual* recommends quality assurance is independent.

When planning project stages and suppliers, it is crucial that the systems used by survey suppliers and coding suppliers are compatible. See [Equipment and software](#) for more information.

Star Rating for Designs

Design Star Rating may require different staging. For example, in some cases, surveys of existing roads may not be required. If the *iRAP Star Rating for Designs* tool is being used with Google Streetview images or similar (rather than road survey data), this will require staging the project to correspond with the Star Rating for Design process. For more information, see the [iRAP Star Rating and Investment Plan Manual](#).

3.3 Resourcing a project

Project resourcing is determined based on the type and size of the project and the necessary expertise, resources and equipment required. By this point in the planning process, the project stages and activities within each stage should be known, as well as the roles and responsibilities. Resourcing the project can now be done to:

- Organise and/or procure the necessary teams and expertise, and
- Identify what specialised equipment and software will be required.

Teams and expertise

Projects typically require specialised teams to focus on project stages, for example, a survey team for road data collection and a coding team for road attribute coding. The size of these teams needs to correspond with the project and may include multiple suppliers. Guidance on team size, roles and organisational structure are detailed in the respective activity manuals.

It is important to use accredited suppliers when commissioning iRAP Star Rating and Investment Plan projects. In Europe, those doing Crash Risk Mapping need to be licensed by EuroRAP.

When planning project stages and suppliers, it is crucial that the system or systems used by survey suppliers and coding suppliers are compatible. See [Equipment and software](#) for more information.

Equipment and software

Depending on a project's scope, size and type of assessment being done, specialised equipment may be required. Examples of specialised equipment may include:

- An accredited inspection system
- Specialised inspection vehicles
- Survey systems
- Survey cameras
- Speed measurement tools
- Traffic flow counters, and
- Coding software.

Guidance on road survey equipment, coding systems and supporting data collection equipment are detailed in the [iRAP Survey Manual](#) and the [iRAP Coding Manual](#).

Use of [iRAP-accredited inspection and coding systems](#) is recommended. Note that use of some equipment and software may incur licencing fees.



How do I ensure supplier survey and coding systems are compatible?

If a project requires separate teams to undertake survey and coding activities, it is critical that the survey data collection is compatible with the coding system. There are a number of coding systems in use and many of them have significantly different survey data specifications requirements.

When planning the procurement of survey and coding suppliers, it is worth taking the following considerations into account:

- Some third-party coding systems require survey data to be collected by the same system. The coding system may incur license fees.
- A sample of the survey data is made available for the procurement of coding supplier. Provision and timing of this data will need to be agreed with the survey supplier.

There are two approaches which may assist:

1. Use of a third-party software may be specified as a project requirement. This will ensure that both suppliers use the same software and thus ensure survey data is compatible with the coding system.
2. Engage the coding supplier before the survey supplier. That way, the survey data requirements will be known, and the coding supplier will be available to perform quality checks on the survey data during its collection.

3.4 Procuring services and equipment

Where additional expertise, resources and/or equipment is required, a supplier can be procured. Where possible, competitive bids should be sought from accredited suppliers.

Suppliers usually have their own equipment and systems. If specific equipment or systems are required, this will need to be specified in the Terms of Reference.

The [Standard Terms of Reference](#) can be used as a basis for procuring suppliers and the subsequent contract.

Accredited suppliers

It is beneficial that accredited suppliers and an accredited inspection system are used in iRAP assessments, though it is not mandatory. Information about accreditation can be found on the iRAP website, at www.irap.org/accreditation.

If it is decided that accredited suppliers and/or an accredited inspection system will be used in a survey project, the following information on the team members and inspection system should be included in the Terms of Reference (TOR) and contracts.

Survey team members

Name	Email address	Role(s) in project	iRAP accreditation number	iRAP accredited since date	iRAP accreditation renewal due date

Inspection system

Inspection system name	Manufacturer	iRAP accreditation number	iRAP accredited since date	iRAP accreditation renewal due date

3.5 Scheduling a project

A project schedule will depend on the project scope, activities required, staging of the project and estimated time required.

Timing of project activities

A project schedule can be developed on the basis of estimated duration for each project stage and its corresponding activities.

Project activity	Timing guidance
Road survey	Survey times can vary significantly depending road length and location. As a guide, a survey covering rural and urban roads might average 100km to 200km per day. Guidance on team size is provided in the iRAP Survey Manual .
Road attribute coding	As a guide, an experienced coder can code around 20km of rural roads per day and less than 10km of urban roads per day. Normally, coding is conducted by a team of coders. Guidance on team size is provided in the iRAP Coding Manual .
Quality assurance	The time required for quality assurance depends on the number of activities being checked (e.g. road survey, road attribute coding etc.) As a guide, quality assurance checks are normally undertaken during and immediately after the corresponding activity. The time required for each QA task can range from 1-2 days to several weeks, depending on the size of the project.
Supporting data collection	As a guide, supporting data collection is often undertaken at the same time as the road survey.
Upload file	As a guide, this activity often requires 1-2 days.
Analysis and reporting (including producing Star Ratings and Investment Plans)	As a guide, between 1 and 4 weeks is often required for this activity.
Crash Risk Mapping	This activity is highly dependent on the length of road to be assessed and the availability of data. As a guide, 3 months is often required for this task.

Project activity dependencies

Project stages and activities should be scheduled to account for dependencies between activities.

Task	Dependencies
Road survey	Requires project planning (including schedule of roads) and survey planning to be completed prior to commencing.
Road attribute coding	Requires road survey data. For very large surveys, data can be provided to the coding team in batches, which enables the coding team to commence checking and coding the data while survey activities may still be underway.
Quality assurance	Requires the majority of the data for checking to be available. Can be done during or immediately after the activities being checked.
Supporting data collection	Requires project planning to identify what supporting data is available and what may need to be collected during road survey activities. If this data needs to be collected during survey, requires survey planning to be complete.
Upload file	Requires the road attribute coding, quality assurance and supporting data to be complete.
Analysis and reporting (including producing Star Ratings and Investment Plans)	Requires the upload file and supporting data collection to be complete.
Crash Risk Mapping	Requires collection of supporting data (specifically fatality and serious injury crash data) to be complete.

4 IRAP STANDARD TERMS OF REFERENCE

How to use this document

The iRAP Standard Terms of Reference (TOR) is designed to assist those who want to undertake or procure iRAP-specification activities. It can be used as the basis of a project plan and/or in the process of engaging consultants to deliver services. The TOR can form the basis of a future contract with the supplier/s.

The TOR will contain essential details described in the project plan. This template can be customised to a project's needs. Unless otherwise indicated, example text can be edited as required. Where specific information should be inserted, it is indicated by [...].

The [Scope of Work](#) lists all iRAP assessment-related activities. A TOR is normally specific to one stage of a project. Therefore, activities not to be undertaken by the supplier can be deleted.

Advice to complete this TOR is provided in the green boxes. These may be deleted once drafting of the TOR is complete.

An editable version of this document can be downloaded from www.irap.org/specifications.

[Name of TOR]

[Project reference]

[Date]

4.1 Project Background

Insert background information about the project. Do not delete the following paragraph.

Suppliers undertaking iRAP-specification tasks play an important role in ensuring transparency and understanding of the analysis, assumptions and use of the results. Any project activities in **[Country name]** should be undertaken in consultation with existing iRAP programme partners. Details of the existing programme, including contact details of the programme leader, are available at www.irap.org/about-us.

For the purpose of this project, key stakeholders are: (list applicable)

- [Name of relevant government road agency/authority].
- [Name of relevant transport ministry].
- [Name of relevant FIA-affiliated automobile associations].
- [Name of relevant non-government organisations].
- [Name of relevant institutes with a road safety focus].
- [Name of relevant universities].

4.2 Project Objectives

Insert

4.3 Scope of Work

Insert, delete and adjust text as necessary. For example:

- To engage a consultant to undertake a road survey and road attribute coding, delete the dot points that relate to supporting data collection, upload file, Star Ratings and Safer Roads Investment Plans (SRIP), Crash Risk Mapping and quality assurance.
- To engage a consultant to undertake quality assurance checks of road survey and road attribute coding data, delete all the dot points except the one about quality assurance. In the quality assurance dot point, also delete reference to checks of supporting data collection, upload file, Star Rating and Safer Roads Investment Plan (SRIP) and Crash Risk Mapping.
- To engage a consultant to undertake Star Ratings of road designs, use the dot points that relate to road coding, Star Rating and Safer Roads Investment Plans (SRIP), supporting data collection and Star Rating and Safer Roads Investment Plans (SRIP). Road surveys (of existing roads) may also be required.

The Scope of Work for this project is as follows:

- **Road survey:** Complete a survey of the roads defined in the Schedule of Roads as specified in the *iRAP Survey Manual* available at www.irap.org/specifications.
- **Road attribute coding:** Code road attribute data for the roads defined in the Schedule of Roads as specified in the *iRAP Coding Manual* available at www.irap.org/specifications.

Note if coding is required for existing roads and/or road designs.

- **Supporting data collection:** Collect, collate and utilise supporting data for the roads defined in the Schedule of Roads as specified in the *iRAP Star Ratings and Investment Plan Manual* available at www.irap.org/specifications.

Note what supporting data is required for collection for existing roads and/or road designs.

- **Star Rating and Investment Plans:** Conduct analyses and prepare reports for the roads defined in the Schedule of Roads as specified in the *iRAP Star Ratings and Investment Plan Manual* available at www.irap.org/specifications.

This includes compilation of the road attribute coding and supporting data into an upload file as specified in the *Star Ratings and Investment plans: Upload File Specification* (available at www.irap.org/specifications)

Note that upload files may be required for existing roads and road designs. Include any specific requirements for these assessments, such as scenario tests of the effects of changes to speed limits etc.

- **Crash Risk Mapping:** Conduct analyses and prepare Crash Risk Mapping for the roads defined in the Schedule of Roads as specified in the [Crash Risk Mapping design specification, technical specification and template](#).

Note that Crash Risk Mapping requires the availability of detailed crash data. Data must include detailed location references.

- **Quality assurance:** Undertake quality reviews of the [road survey, road attribute coding, supporting data collection, upload file, Star Rating and Safer Roads Investment Plan (SRIP) and Crash Risk Mapping data] as described in the *iRAP Star Ratings and Investment Plan Manual* available at www.irap.org/specifications.

- **Stakeholder engagement:** Undertake activities such as: (list applicable)
 - Participation in meetings with political leaders and senior stakeholder staff to discuss the project objectives, background and results
 - Attendance at public events, such as a ‘launch’ of results
 - Participation in steering committee and technical working group meetings
 - Responding to adhoc queries about the project activities from stakeholders.
- **Training:** Provision of training for key stakeholders, consistent with iRAP specifications, manuals and guides (available at www.irap.org/specifications).

Specify what type of training is required (e.g. road surveys, coding, using iRAP results etc.)

4.4 Schedule of Roads

Insert and adjust text as necessary.

The table below details the existing roads to be assessed. The exact distances (or chainages) and length will be confirmed prior to commencement of activities.

Roads to be assessed

State/Province	District	Road Name	Link ID	Start Point	End Point	Length (km)

The table below details the road designs to be assessed. The exact distances (or chainages) and length will be confirmed prior to commencement of activities.

Designs to be assessed

State/Province	District	Road Name	Link ID	Start Point	End Point	Length (km)

4.5 Deliverables

The following are standard deliverables. Insert and adjust text as necessary. For example, separate inception reports for each activity if more than one activity is undertaken in one project/contract.

The following deliverables are required.

Road survey

Standard deliverables for an iRAP road survey project are:

1. An **inception report** including details on the following:
 - a. Survey plan
 - b. Health and safety plan
 - c. Survey team
 - d. Survey vehicle
 - e. Survey images
 - f. Daily survey records
 - g. Flow and speed sampling required, and
 - h. Quality and compliance reviews.
2. **Licensed copies of any specialised software** used for viewing georeferenced images and data.
3. **Short weekly reports** summarising:
 - a. Progress (measured in terms of km completed)
 - b. A summary of key activities completed
 - c. Health, quality and compliance review processes completed
 - d. Health, quality and compliance issues that have been identified and rectifications made
 - e. Photos of activities
 - f. Planned activities for the next 2 weeks, and
 - g. Any issues that may affect performance of the survey, and
 - h. Samples of survey data for the road sections where surveys are complete.
4. An **electronic copy of all geo-referenced images** upon completion of the survey.
5. An **electronic copy of traffic flow, pedestrian flow, bicyclist flow and traffic speed data** and corresponding descriptive information for each sample location in Microsoft Excel format (where collection of this data is required in the project).
6. A **final report** describing activities undertaken, key data and results and any issues that those who will use the data need to take into consideration.

It is suggested that final acceptance of road survey data is withheld until a review by the road coding team is completed. This review may reveal previously unidentified issues with the survey that may require correction or update.

Road attribute coding

Standard deliverables for an iRAP coding project are:

7. An **inception report** including details on the following:
 - a. Team members and roles
 - b. Schedule
 - c. Coding system to be used, and

- d. Plan for quality reviews including confirmation of the independent coding quality reviewer.
- 8. **Licensed copies of any specialised software** used for viewing and coding georeferenced images or designs and coding.
- 9. **Short weekly reports** summarising:
 - a. Progress (measured in terms of km completed)
 - b. Quality review processes completed
 - c. Quality issues identified and rectifications made
 - d. Photos of activities
 - e. Planned activities for the next two weeks, and
 - f. Any issues that may affect performance of the project.

The weekly reports should also include coding for the sections of roads or designs where coding has been completed, in a .csv format that complies with the [Upload File Specification](#) and does not produce any validation errors in the [Coding Validation Tool](#) and when uploaded in ViDA. Data that has not been subject to quality review processes should not be accepted.

- 10. **Final coding for all the roads/designs** in .csv format that complies with the [Upload File Specification](#) and does not produce any validation errors in the [Coding Validation Tool](#) and when uploaded in ViDA.
- 11. An independent **coding quality review report** prepared by the independent quality reviewer and explaining the review processes completed, issues identified and recommended corrections.

It is suggested that final acceptance of road attribute coding is withheld until subsequent Star Rating and Investment Plan analyses that use the data are completed. These analyses may reveal previously unidentified issues with coding that may require correction or update.

Analysis and Reporting (Star Ratings and Investment Plans)

Standard deliverables for an iRAP Star Rating and Investment Plan project are:

- 1. An **inception report** including details on the following:
 - a. Work plan
 - b. Supporting data obtainment plan
 - c. Health and safety plan
 - d. Team members, and
 - e. Quality and compliance reviews.
- 2. **Licensed copies of any specialised software** used during the assessment.
- 3. **Short weekly reports** summarising:
 - a. Progress
 - b. Health, quality and compliance review processes completed
 - c. Health, quality and compliance issues that have been identified and rectifications made
 - d. Photos of activities
 - e. Planned activities for the next 2 weeks, and
 - f. Any issues that may affect performance of the project.

4. An **electronic copy of data** compiled during that assessment and corresponding descriptive information for each sample location in Microsoft Excel format (where collection of this data is required in the project).
5. **Datasets in ViDA.**
6. A **final report** that describes the assessments, supporting data, analysis results and recommendations.

Analysis and reporting should be peer reviewed for quality. It is good practice for the analysis and reporting team to provide a briefing and/or or training on the results and how to access the results in ViDA.

Crash Risk Mapping

Standard deliverables for a Crash Risk Mapping project are:

1. An **inception report** including details on the following:
 - a. Work plan
 - b. Health and safety plan
 - c. Team members, and
 - d. Quality and compliance reviews.
2. **Licensed copies of any specialised software** used during the assessment.
3. **Short weekly reports** summarising:
 - a. Progress
 - b. Health, quality and compliance review processes completed
 - c. Health, quality and compliance issues that have been identified and rectifications made
 - d. Photos of activities
 - e. Planned activities for the next 2 weeks, and
 - f. Any issues that may affect performance of the project.
4. An **electronic copy of data** compiled during the assessment in Microsoft Excel format.
5. **Crash Risk Mapping** produced in accordance with the specifications.
6. A **final report** that describes the assessments, analysis results and recommendations.

It is good practice to provide a briefing and/or or training on the results and accessing the results in ViDA.

Quality assurance

Standard deliverables for quality assurance reviews are:

1. An **inception report** including details on the following:
 - a. Work plan
 - b. Health and safety plan
 - c. Team members, and
 - d. Quality and compliance reviews.
2. **Licensed copies of any specialised software** used during the assessment.

3. **Short weekly reports** summarising:
 - a. Progress
 - b. Health, quality and compliance review processes completed
 - c. Health, quality and compliance issues that have been identified and rectifications made
 - d. Photos of activities
 - e. Planned activities for the next 2 weeks, and
 - f. Any issues that may affect performance of the project.
4. An **electronic copy of data** compiled during the assessment in Microsoft Excel format.
5. A **final report** that describes the activities and recommendations.

Stakeholder engagement

Standard deliverables for stakeholder engagement are:

1. An **inception report** including details on the following:
 - a. Work plan
 - b. Health and safety plan
 - c. Team members, and
 - d. Quality and compliance reviews.
2. **Short weekly reports** summarising:
 - a. Progress
 - b. Health, quality and compliance review processes completed
 - c. Health, quality and compliance issues that have been identified and rectifications made
 - d. Photos of activities
 - e. Planned activities for the next 2 weeks, and
 - f. Any issues that may affect performance of the project.
3. An **electronic copy of any presentation materials** developed and used during the assignment.
4. A **final report** that describes the activities and recommendations.

Training

Standard deliverables for training are:

1. An **inception report** including details on the following:
 - a. Work plan
 - b. Health and safety plan
 - c. Team members, and
 - d. Quality and compliance reviews.
2. **Short weekly reports** summarising:
 - a. Progress

- b. Health, quality and compliance review processes completed
 - c. Health, quality and compliance issues that have been identified and rectifications made
 - d. Photos of activities
 - e. Planned activities for the next 2 weeks, and
 - f. Any issues that may affect performance of the project.
3. An **electronic copy of any presentation materials** developed and used during the assignment.
 4. A **final report** that describes the activities and recommendations.

4.6 Timing

Insert and adjust text as necessary.

The table below details the key milestones for the project. The exact timing will be confirmed prior to commencement of the project.

Schedule of activities

Task	Completion date
Road survey	
Road attribute coding	
Quality assurance	
Supporting data collection	
Upload file	
Analysis and reporting (Star Ratings and Investment Plans)	
Risk Mapping	

4.7 Delivery team

If it is decided that accredited suppliers and/or an accredited inspection system will be used in a project, the requirement to supply the following information on the team members and inspection system should be included here.

Team members

Name	Email address	Role(s) in project	iRAP accreditation number	iRAP accredited since date	iRAP accreditation renewal due date

Inspection system

Inspection system name	Manufacturer	iRAP accreditation number	iRAP accredited since date	iRAP accreditation renewal due date

4.8 Inputs to be Provided by the Client

The Client will provide:

- iRAP specifications, manuals and user guides (available at www.irap.org/specifications)
- Insert as required.

5 APPENDIX A: HEALTH AND SAFETY PLAN AND RISK ASSESSMENT

Health and safety plan template

Project Name:		Date:		
Project Description:				
Personnel Details:				
Name	Position	Email	Phone	Emergency contact (name and number)
Health insurance:				
Provider	Member number	Phone	Notes	
Equipment and vehicle description:				
Item	Description			
Key project contacts:				
Name	Position	Email	Phone	Notes
Notes:				
Author name and signature:		Date:		
Supervisor name and signature:		Date:		

Risk assessment template

Risk Assessment Matrix		Consequence				
		Insignificant (1) No injury	Minor (2) First aid treatment required	Moderate (3) Medical treatment required	Major (4) Hospitalization – lost time to injury or illness	Catastrophic (5) Fatality or permanent injury
Likelihood	Almost certain (5) Occurs often	Moderate (5)	High (10)	High (15)	Catastrophic (20)	Catastrophic (25)
	Likely (4) Could easily happen	Moderate (4)	Moderate (8)	High (12)	Catastrophic (16)	Catastrophic (20)
	Possible (3) Could happen or known to happen	Low (3)	Moderate (6)	Moderate (9)	High (12)	High (15)
	Unlikely (2) Hasn't happened yet but could	Low (2)	Moderate (4)	Moderate (6)	Moderate (8)	High (10)
	Rare (1) Conceivable but only in extreme circumstances	Low (1)	Low (2)	Low (3)	Moderate (4)	Moderate (5)

Example Risk Assessment

No.	Job Sequence	Potential Hazard	Likelihood	Consequence	Risk Rank	Required Hazard Control
1	Road survey	Crash due to fatigue	Possible	Catastrophic	High	The driver shall stop in a safe location and take a break every 2 hours.
2	Manual pedestrian flow counts	Struck by vehicle	Possible	Catastrophic	High	Personnel taking flow counts will wear high visibility vests and shall stand in a location as far a practical from moving traffic.
3	Road survey	Crash due to speeding	Possible	Catastrophic	High	The driver shall always comply with official speed limits and drive at speeds that respect safety of themselves and others.
4	Manual traffic flow counts	Personal safety (risk of violent attack)	Unlikely	Catastrophic	High	Personnel will undertake safety checks for the local area (e.g. police) and undertake the activity with one or more person.

Document version

Version	Update
September 2019 – BETA edition release	<i>iRAP Project Planning Manual Version 1.0</i> released as part of a full update to iRAP specifications, user guides and manuals. The new manual contains an updated version the iRAP Standard Terms of Reference and contains information previously provided in the information booklet, <i>Establishing iRAP In Your Country</i> (2009).