iRAP is a registered charity with the vision for a world free of high risk roads. Governments, development agencies and concession road owners are now actively using or considering the use of star rating targets. This discussion paper has been prepared to help inform those policy positions.

For further details contact
iRAP Chief Executive Officer
Rob McInerney
rob.mcinerney@irap.org
# CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Global Road Safety Pandemic</td>
<td>3</td>
</tr>
<tr>
<td>The role of road infrastructure and iRAP</td>
<td>3</td>
</tr>
<tr>
<td>Safer Roads are Cost Effective</td>
<td>4</td>
</tr>
<tr>
<td>The Star Rating Model</td>
<td>5</td>
</tr>
<tr>
<td>Pedestrian Star Rating Examples</td>
<td>6</td>
</tr>
<tr>
<td>Vehicle Occupant Star Rating Examples</td>
<td>7</td>
</tr>
<tr>
<td>Bicycle and Motorcycle Star Ratings</td>
<td>8</td>
</tr>
<tr>
<td>Star Rating Model</td>
<td>8</td>
</tr>
<tr>
<td>Star rating and investment policy targets</td>
<td>9</td>
</tr>
<tr>
<td>The potential to save lives and economic benefits of safer roads</td>
<td>10</td>
</tr>
<tr>
<td>Policy Examples</td>
<td>11</td>
</tr>
<tr>
<td>Setting a Star Rating Performance Management Goal</td>
<td>13</td>
</tr>
<tr>
<td>Case Study – India</td>
<td>15</td>
</tr>
<tr>
<td>Case Study – Shaanxi, China</td>
<td>16</td>
</tr>
<tr>
<td>Case Study – Slovak Motorway Company, Slovakia</td>
<td>17</td>
</tr>
<tr>
<td>Case Study – Victoria, Australia</td>
<td>18</td>
</tr>
<tr>
<td>iRAP Protocols and Partners</td>
<td>19</td>
</tr>
<tr>
<td>Undertaking Star Rating Assessments</td>
<td>19</td>
</tr>
<tr>
<td>Celebrating star rating success</td>
<td>21</td>
</tr>
<tr>
<td>Attachment A: ViDA Background Terms and Conditions as at June 2015.</td>
<td>22</td>
</tr>
<tr>
<td>Further Information and Submissions</td>
<td>23</td>
</tr>
<tr>
<td>About iRAP</td>
<td>23</td>
</tr>
</tbody>
</table>
The Global Road Safety Pandemic

- Road crashes are the biggest killer of young people aged 5-24 in the world (WHO, 2013). Road crashes kill and injure an estimated 30-50 million people every year, or more than 100,000 people each day. 31% of all deaths are car occupants, 23% are motorcyclists and 22% are pedestrians.

- 265,000,000 people will be killed and seriously injured worldwide over the next 15 years (iRAP, 2015). That is more than: the combined populations of Australia, Mexico, South Africa and the UK; the population of Indonesia; or 85% of the US population.

- Road death and serious injury cost 2-5% of GDP every year (iRAP, 2014).

- The proposed UN Sustainable Development Goals will shape action for the next 15 years. Halving road deaths is one of the draft targets (goal 3.6). Investing in infrastructure to create growth and jobs (goal 9.1) and safe and sustainable transport (goal 11.2) each reinforce the humanitarian, economic and sustainable development opportunity from improved road safety outcomes.

- The UN Decade of Action Plan outlines necessary action across 5 key pillars of road safety including Road Safety Management; Safer Roads; Safer Vehicles; Safer Road Users and Post-Crash Care.

The role of road infrastructure and iRAP

- The crashes that kill and injure are typically head-on, run-off road or intersection crashes for vehicle occupants and motorcyclists and moving along or across the road as pedestrians and cyclists. Engineering solutions exist for all of these major crash types.

- An iRAP sample of 164,876km of roads from 33 countries highlights that 80% of all roads where pedestrians are present and traffic speeds are 30mph or greater have no footpath; 59% of roads where traffic speed is greater than 50 mph are undivided; 50% of high speed curves have hazardous roadsides.

- More than 50% of the roads assessed by iRAP worldwide are only one or two star standard – where 5 star is the safest. The star rating model is based on global best practice research and is governed by an independent Global Technical Committee made up of leading research agencies worldwide.

- iRAP is a registered charity and partners with development banks, government and civil society worldwide with activities in more than 70 countries. All iRAP assessments can be commercially tendered or delivered by appropriately trained in-house teams.

Figure 1: iRAP Road Condition Report from 33 countries worldwide
Safer Roads are Cost Effective

- Research has consistently shown that crash costs per kilometre travelled are approximately halved for each incremental improvement in star rating. Refer Figure 2.
- An assessment of iRAP Safer Road Investment Plans from 60,000km of road across 7 countries highlighted that most crash types can be reduced by 45% or more with simple cost-effective improvements to road infrastructure (e.g. footpaths; safety barriers; delineation). Refer Figure 3.

Figure 2: Relationship between star ratings and crash costs per kilometre travelled

Figure 3: Fatality prevention potential of road upgrades
The Star Rating Model

- The iRAP Star Rating Model was developed by the world’s leading road infrastructure research organisations and is fully documented on the iRAP website.

- Star ratings are available for vehicle occupants, motorcyclists, cyclists and pedestrians that reflect the relative safety of the road infrastructure features at that location, for an individual user of that type. The star ratings taking into account the speed and volume of traffic where relevant.

- The infrastructure star ratings are applicable in both urban and rural areas; on high or low volume roads and on paved or unpaved roads.

- The model development and the technical integrity of iRAP protocols worldwide is overseen by the Global Technical Committee (GTC). The GTC is made up of experts from leading road safety organisations and research agencies from around the world including ARRB (Australia), MRI Global (US), TRL (UK), IMT (Mexico), RIOH (China), MIROS (Malaysia) and SWOV (Netherlands).

- The GTC ensures that the latest road safety research is included and that the model is applied globally in a high quality and consistent manner.

- An “Innovation Framework” is in place to ensure local expertise, improvements and evidence base can be applied and shared worldwide.

Pedestrian Star Rating Examples

A range of pedestrian star rating examples from around the world are provided below.

Fig 6: Pedestrian Star Rating Examples
Vehicle Occupant Star Rating Examples

A range of pedestrian star rating examples from around the world are provided below.

Fig 7: Vehicle Occupant Star Rating Examples
Bicycle and Motorcycle Star Ratings

Examples of 5-star bicycle and motorcycle facilities are provided below.

![Bicycle Star Ratings](image1)

Bicycle Star Ratings

![Motorcycle Star Ratings](image2)

Motorcycle Star Ratings

Fig 8: Bicycle and Motorcycle Star Rating Examples

Star Rating Model

A series of design charts have also been developed to help explain the star rating model and the relationship with speed, intersection density and traffic volume. An example is provided below. The star rating software, ViDA, also includes a detailed demonstrator to explore the star rating at a particular point.

![Star Rating Model Chart](image3)

Star Rating Model Chart

![Star Rating Demonstrator](image4)

Star Rating Demonstrator

Fig 9: Star Rating Model Chart and Demonstrator
Star rating and investment policy targets

- iRAP recommend that road investment should be targeted to maximise the deaths and serious injuries saved per unit of investment.
- The level of investment available should reflect the scale of the problem (estimated to be 2-5% of GDP per year per country). iRAP recommend that at least 0.1% of GDP is invested in road infrastructure safety upgrades every year.
- The initial investment focus should concentrate on the highest volume 10% of roads in a country where typically more than 50% of all road deaths occur.
- Setting targets linked to volume and/or roads with high crash rates per kilometre or kilometre travelled (refer Risk Mapping) may be appropriate. Star rating targets can be applied on all roads (urban, rural, high and low-volume) if desired.
- Star ratings may be set relative to a class, hierarchy or volume of road. Examples include 4 or 5-star expressways; 4-star dual carriageway or arterial roads and 75% of travel on 3-star or better for all remaining roads.
- Policies to maximise the percentage of travel (or vehicle miles or kilometre travelled) on 4-star or better are encouraged. The setting of minimum targets related to kilometres or miles travelled on 3-star or better are also effective (e.g. UK Highways England with target for 90% of travel on 3-star or better by 2020) provided mechanisms to ensure cost effective upgrades of high volume roads from 3-star to 4- or 5-star are implemented where appropriate.
- With the significant increase in deaths and serious injuries and associated crash costs on 1 and 2-star roads (refer Figure 2), iRAP recommends that all new or upgraded roads are built to a minimum 3-star standard for all road users. Building brand new 1- and 2-star roads should be avoided as it is likely to impose a significant burden of death and injury on the community being served by the new road.
- Where road engineering standards are poor and cannot be economically raised, the implementation of speed management initiatives can bring operating conditions within the 3-star minimum. Examples include reducing speed limits and operating speeds on mountainous windy roads from 100 km/h (60 mph) to 80 km/h (50mph) or less as required; or reducing speed limits and operating speeds through villages with high numbers of unprotected pedestrians and cyclists to 30 mph or less.

The example demonstrated below highlights that an economically viable network level investment to upgrade safety (in Victoria, Australia) would result in more than 50% of road length and kilometres travelled on 4-star or better and the complete elimination of all 1 and 2-star roads.

![Before Star Ratings](image1)

**Fig 10:** Example Before and After Star Ratings at a network level

![After Star Ratings](image2)
The potential to save lives and economic benefits of safer roads

- An analysis of the business case for safer roads identified that over 40 million deaths and serious injuries could be avoided over 20 years if high return engineering treatments were applied to the highest volume 10% of roads in every country worldwide.

- Targeted investment of $218 billion in LMICs would deliver an estimated $3,500 billion in crash-cost savings at an overall benefit-cost ratio of 16 to 1. Global investment of $681 billion in targeted road safety improvements would deliver $8 of benefits for every $1 invested.

<table>
<thead>
<tr>
<th>Country income category:</th>
<th>Low</th>
<th>Lower middle</th>
<th>Upper middle</th>
<th>High</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of countries:</td>
<td>33</td>
<td>49</td>
<td>47</td>
<td>49</td>
<td>178</td>
</tr>
<tr>
<td>Current situation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual fatalities (per 100,000 pop)</td>
<td>128,000</td>
<td>(20.2)</td>
<td>494,000</td>
<td>(18.0)</td>
<td>509,000</td>
</tr>
<tr>
<td>Annual fatalities and serious injuries (FSI)</td>
<td>1,408,000</td>
<td>5,434,000</td>
<td>5,599,000</td>
<td>1,034,000</td>
<td>13,640,000</td>
</tr>
<tr>
<td>Annual cost of FSI</td>
<td>$20 billion</td>
<td>(5% of GDP)</td>
<td>$200 billion</td>
<td>(5% of GDP)</td>
<td>$780 billion</td>
</tr>
</tbody>
</table>

What could be achieved

- Improve 10% of roads: 110,000 km
- Build viable countermeasures: $8 billion
- Reduction in fatalities: 384,000
- Reduction in fatalities and serious injuries: 4,224,000
- Economic benefit: $83 billion
- Benefit cost ratio: 11

Figure 11: The Business Case for Safer Roads (iRAP, 2014)

Viet Nam

Current situation

- Annual fatalities: 21,651 (24.6 per 100,000 pop)
- Annual fatalities and serious injuries (FSI): 238,161
- Annual cost of FSI: $6,494m (6% of GDP)

What could be achieved

- Improve 10% of roads: 18,055km
- Build viable countermeasures: $1,805m
- Reduction in deaths: 64,953
- Reduction in deaths and serious injuries: 714,480
- Economic benefit: $24,827m
- Benefit cost ratio: 14

Figure 12: Country-level business case for safer roads
Policy Examples

Star rating targets and risk mapping are being actively used by road agency, development banks, concession road owners and auto-clubs around the world:

High-income examples

- The Dutch Government was the first to adopt a no one or two star road by 2020 policy.
- The Swedish Government measure the percentage of vehicle mileage on roads that meet EuroRAP four-star standard.
- Highways England has adopted a target for 90% of travel to be on 3-star or better roads by 2020. This is linked to broader goals for 4 and 5-star motorways.
- The New Zealand Government has a target for 4-star Roads of National Significance (RONS) and recently adopted a review of design standards that ensure Roads of National Significance will be implemented with a minimum 4-star rating.
- The Bureau of Infrastructure, Transport and Regional Economics in Australia has proposed that all new roads should be 4+ stars and no road user group less than 3-star. The Tasmanian Government has set a target for the Midlands Highway to be 3-star standard.
- Performance tracking using risk mapping is active across Europe (EuroRAP) and the US (usRAP) and New Zealand (kiwiRAP). Example reports include the 2014 UK results and the 2012 New Zealand results.
- Benchmarking of the European road system was undertaken as part of the 2011 European Road Safety Atlas project supported by the EU.

Low and middle-income countries

- The MDB Road Safety Guidelines have identified road safety rating as one of the issues to be considered in all stages of a road project.
- The Ministry of Transport in China is rolling out ChinaRAP assessments to an expected 350,000km of roads as part of their Highway Safety Enhancement Project titled “highway safety to cherish life”.
- The road authority in Mexico (SCT) has assessed over 60,000km of roads and has implemented targeted maintenance spending to reduce 1 and 2-star road sections by 20%.
- The SLoCaT Results Framework (p23) developed to support achieving the proposed SDG target to halve road deaths includes an implementation measure to eliminate one or two star roads by 2030.
- The World Bank SSATP programme has developed the Managing Road Safety in Africa publication that provides a framework for national lead agencies that “can develop a prioritised program of works towards achieving at least 3 star safety ratings for all road users” (p46).
The ADB Sustainable Transport Appraisal Rating integrates the star rating performance targets into their Sustainable Transport Appraisal Rating (see below).

### SOC-4 Safety

**To what extent will the project improve transport safety and security?**

This question seeks to measure the contribution of the project to the following agendas:

- **Transport**, particularly road safety. Road crashes cause around 1.3 million deaths and injure or disable as many as 50 million people each year.
- **Security**. The intervention may affect personal safety ranging from crime to harassment.

Road safety considerations will need to be taken for most road-based projects. The attached safety scoring tool can be used on a pilot basis to derive the rating for safety issues. Alternatively, when an International Road Assessment Programme (iRAP) rating is available, the difference between before and after cases is a prime indicator. Preferably, (i) all new or rehabilitation road designs should always have a higher safety rating than the existing road and have at least a three-star rating standard for all road users, (ii) roads with more than 50,000 vehicles per day should have a minimum of four stars for all users, and (iii) roads or sections of roads passing through linear settlements should have a minimum four-star standards for pedestrians and cyclists.

Recommended quantitative indicators are:

- predicted number of road death fatalities, serious road injuries, and non-motorized transport users deaths; and
- length of roads with an iRAP rating of two stars or less/three stars or more.

The World Bank and relevant state governments have applied minimum star rating standards as part of road projects in Karnataka, Assam, Gujarat and Kerala in India. The [Gujarat Results Report](#) includes the monitoring of the length of the corridor meeting the star rating target.

The ADB has also applied a similar star rating approach in Shaanxi and Anhui in China.

Example LMIC Policy Documents recommending safety ratings and iRAP metrics
Setting a Star Rating Performance Management Goal

The use of star rating targets provide an objective measure of infrastructure safety and simplify road safety policy management, communication and accountability. Experience shows star rating metrics can act as a catalyst to deliver infrastructure safety outcomes across a road authority business. The star rating can be used for network level targets, corridor and road hierarchy specific performance targets, or linked to maintenance and operational management of the road asset as detailed in the previous section.

For newly constructed roads the star rating target can be specified at the planning and design stage (e.g. the new road shall be 4-star standard for pedestrians and vehicle occupants at the desired operating speed of 60km/h). Design teams are provided with an objective minimum road safety target that can be applied in a similar way to other project metrics such as pavement condition (e.g. road roughness) and traffic performance (e.g. travel time). Payment can be linked to achieving defined targets.

The appropriate star rating target for an individual road network or project will reflect the existing standard of the road, the strategic purpose of the route, the volume of particular road users, available funding and political or agency strategies. ‘SMART’ targets are recommended that are Specific, Measurable, Achievable, Realistic and Time-Bound.

In principle targets should seek to maximise deaths and serious injuries saved per unit of investment and therefore in general higher volume roads will have higher star rating targets. iRAP encourage the setting of a minimum 3-star or better performance management goal for new projects and recommend targets linked to vehicle travel for existing networks. The key steps typically involve:

- Measure the existing performance of the network at 1-, 2-, 3-, 4- and 5-star levels by percentage of travel and length.
- Determine the existing performance in relation to a planned policy measure such as the percentage of travel that is 4-star or better or 3-star or better. Categorisation by road hierarchy may also be useful.
- Review standard cross sections for new schemes to maximise the star rating performance of any existing major investment programme (e.g. inclusion of footpaths; median barriers; rumble strips; roadside hazard management; roundabouts).
- Update the analysis to consider all major project plans for various periods of time (e.g. by 2020; 2025; 2030).
- Model the expected performance of the network at 2020; 2025; 2030 as appropriate.
- Develop a Safer Roads Investment Plan based on economically viable treatments to identify where high-return treatments can be implemented to further improve the percentage of travel on 3-, 4- and 5-star roads.
- Revise asset management programmes accordingly (routine and capital management) and identify free standing safety programmes (e.g. safety fencing; intersection upgrades)
- Review speed management initiatives to target any remaining high-risk roads.
- Estimate the expected performance of the network at 1-, 2-, 3-, 4- and 5-star levels by percentage of travel and length and set targets as appropriate.

This approach can help ensure any final targets are achievable, realistic and time-bound. With road safety improvements generally providing a high-return on investment it is also important to ensure the analysis is used to help guide appropriate budget allocations targeted to delivering improved safety outcomes.
The alternative approach is to set visionary or hypothetical targets and then explore what is required in terms of treatments and investments to reach those targets and over what timeline. This approach may be well suited to a government that is embracing the “safe system” approach and large percentages of travel at 5-star may be targeted.

As with the analytical approach detailed previously, the targets should take into account existing road hierarchies and road system management objectives where relevant. The targets should also seek to maximise deaths and serious injuries saved per unit of investment and reflect the potential benefits of mass-action investment in improving safety (e.g. efficiency savings from installing footpaths along a long length of road network). An example framework to explore targets is provided in the tables below.

### VEHICLE STAR RATING OPERATIONAL TARGETS – HYPOTHETICAL*

<table>
<thead>
<tr>
<th>ROAD HEIRARCHY</th>
<th>Expressway/Motorway</th>
<th>Arterial</th>
<th>Major Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of travel</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Length of road</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Vehicle Star Rating Target</td>
<td>5/4-star</td>
<td>4-star</td>
<td>4/3-star</td>
</tr>
</tbody>
</table>

OR

<table>
<thead>
<tr>
<th>ROAD VOLUME</th>
<th>&gt; 50,000 AADT</th>
<th>&gt;25,000 AADT</th>
<th>&gt; 5,000 AADT</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of travel</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Length of road</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Vehicle Star Rating Target</td>
<td>5/4-star</td>
<td>4-star</td>
<td>4/3-star</td>
</tr>
</tbody>
</table>

### PEDESTRIAN STAR RATING OPERATIONAL TARGETS - HYPOTHETICAL

<table>
<thead>
<tr>
<th>PEDESTRIAN DEMAND (or equivalent pedestrian hierarchy)</th>
<th>&gt; 100 pedestrians in peak hour</th>
<th>26 to 100 pedestrians in peak hour</th>
<th>6 to 25 pedestrians in peak hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of pedestrian travel</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>% of vehicle travel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length of facilities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pedestrian Star Rating Target</td>
<td>5/4-star</td>
<td>5/4-star</td>
<td>4/3-star</td>
</tr>
</tbody>
</table>

* Targets may also be set in relation to vehicle exposure data if specific pedestrian hierarchies are not available

Similar frameworks can also be considered for bicyclists and motorcyclists where appropriate.
Case Study – India

- An analysis of iRAP assessments in India undertaken by the World Bank Global Road Safety Facility highlighted that the proposed Safer Road Investment Plans will reduce the 1 and 2 star length for vehicle occupants from 4,970km (74%) to 675km (10%). The sections remaining 1 and 2-star for vehicle occupants were typically undivided and high speed (60mph).

- The application of pedestrian focussed high-return engineering improvements will reduce the length rated 1 and 2 star for pedestrians from 5,631km (84%) down to 1,277km (19%). Where pedestrian star ratings remained 1 and 2-star standard the speeds were mostly 50mph or higher.

- Speed management interventions (speed limits and related behaviour change) will significantly reduce or eliminate the remaining 1 and 2-star road sections for all road users.

Fig:14: Before and After Star Rating Maps from India
Case Study – Shaanxi, China

The Shaanxi Road Safety Demonstration Project was completed on an Asian Development Bank financed corridor project as part of the Global Road Safety Facility / Bloomberg Philanthropies funded ChinaRAP programme.

The US$373 million project included the target to reach a minimum 3-star standard across a range of trunk roads and rural roads and involved the star rating of preliminary and detailed designs. A sample of the design star ratings is provided in the figure below.

As part of the iterative design process to achieve the minimum 3-star target, the estimated deaths and serious injuries avoided were quantified and the associated economic benefits calculated. Incorporating the safety benefits into the overall project analysis framework used by the Asian Development Bank has ensured the project reached the key investment hurdle rates used by the Bank. The minimum 3-star road road is now under construction.

Fig 15: Existing and Design Stage Star Ratings in Shaanxi, China
Case Study – Slovak Motorway Company, Slovakia

The Slovak Motorway Company (NDS) is the owner and administrator of the superior road network (Motorways & Expressway) in the Slovak Republic, whereby the Slovak Government is 100% shareholder.

The whole NDS network of 630 kilometres (1260 carriageway km) was star rated as part of the European Union co-funded SENSOR programme. A map of the existing road network is provided below.

![Slovakian NDS network star rating results](image)

**Fig 16: Slovakian NDS network star rating results**

The key outcomes of the assessment were:

- 59% of the existing NDS network were assessed as 1 or 2-star standard with 35% at 3-star level and the remaining 6% at 4-star or better.
- The top 4 recommended high return on investment improvements were road safety barriers; shoulder rumble strips; clearing of roadside hazards and shoulder sealing.
- The NDS operational teams are planning to install 174km of safety barriers in 2015 at a cost of €80 million and equip all motorways with shoulder rumble strips and remove dangerous roadside objects.
- The network of roads will be reassessed in 2016/2017 to measure the success of the investment program and the improvement of the star rating of the network.
Case Study – Victoria, Australia

An analysis from a high income country (Australia) has identified that the application of cost effective countermeasures at a network level would eliminate all 1 and 2-star road sections and raise the length of 4-star or better roads to 53%. The BCR of the overall investment was approximately 2 to 1.

Before Star Rating – Victorian National Highways

After Star Rating – Victorian National Highways

Fig 17: Before and Predicted After Star Ratings in Victoria, Australia
iRAP Protocols and Partners

iRAP is a registered charity with the vision for a world free of high-risk roads. The focus of the charity is to enable others to undertake star rating and related assessments worldwide. This includes government agency staff, development bank staff, research experts, automobile club and civil society partners, consultants and suppliers.

The key technical elements of Road Assessment Programmes are fully documented on the iRAP website and include:

- Risk Mapping
- Performance Tracking
- Star Rating; Star Rating of Designs and the Star Rating Demonstrator (access via ViDA)
- Fatality Estimations
- Investment planning and optimisation tools
- Implementation support tools

iRAP assessments can be supported through regional and national associations (e.g. EuroRAP; usRAP; AusRAP; ChinaRAP; kiwiRAP) or through iRAP direct where an official regional or national programme does not yet exist.

Undertaking Star Rating Assessments

iRAP has developed, with the support of generous donations, the star rating protocols and software system ViDA that facilitates the analysis and presentation of star rating results. Access to ViDA is free of charge, in accordance with the standard ViDA terms and conditions (refer Attachment A).

Star Rating Assessments can be undertaken by appropriately trained individuals in accordance with the following support materials:

- Star Rating specifications
- Star Rating training materials
- Star Rating model documentation
- Star Rating presentations
- Star Rating software including ViDA and the Road Safety Toolkit

As a global benchmark that is used in the setting of policy targets and the assessment of road designs, the star rating analysis must also meet global quality standards and requirements. Adherence to these requirements is the responsibility of all users to ensure the integrity of the star rating metric and to protect the mutual interest of ensuring assessments are completed to a consistently high standard.

Figure 18: ViDA – Typical Star Rating Outputs
For advanced users, ViDA can also be used to undertake detailed economic analysis of countermeasures, prepare detailed safer road investment plans and provide estimates of fatalities and economic costs before and after selected treatment options.

The Star Rating and Investment Planning tools are also supported with the free Road Safety Toolkit that provides best-practice advice and detailed research and fact sheets for all of the treatments and road attributes used in the star rating model. On-line training is also available through RAPCapacity. Road authority and road safety experts can undertake assessments directly themselves, or alternatively utilise one of the iRAP accredited suppliers. Where undertaken as part of a national or regional programme the activity should be coordinated with the relevant lead agency. iRAP assessments can also be competitively tendered using the template terms of reference and specification documents provided.
Celebrating star rating success

With star rating policies and targets in place it is also important to track performance over time and celebrate success when new roads are upgraded. With appropriate quality reviews undertaken, the public dissemination of improved star ratings can provide a positive message to the public on the investment in safer roads.

Design teams can immediately measure and celebrate the expected new star rating. Project teams, road funders and local elected officials can ribbon cut the new 4- and 5-star roads as they replace the old 1- and 2-star roads. Improvements to a network of roads over time can be shared with funding agencies and the public.

An example of a recently upgraded road in Queensland, Australia is provided below that was also accompanied by associated positive media and community engagement.

![Before and After Star Ratings celebrated](image)

The Australian and Queensland governments have improved a 12km section of the Bruce Highway from just 3-stars to 4- and 5-stars. As a result, risk of death and serious injury has more than halved.

**Fig 21:** Before and After Star Ratings celebrated
Attachment A: ViDA Background Terms and Conditions as at June 2015.

Your continued use of ViDA requires agreement of our Terms and Conditions:

Background

A. ViDA is software that has been created by iRAP with donations from charitable foundations, governments, development institutions, companies, research centres and individuals worldwide. These donations have been in the form of money, skilled time, background intellectual property and special discounts and gifts of many kinds. All these donations have enabled iRAP to make ViDA a software tool for use worldwide and to help reduce the crashes that cause death and injury on the world’s roads.

B. iRAP is a charity registered in England and Wales (number 1140357). iRAP was established to support the UN Decade of Action for Road Safety 2011-2020. iRAP’s objectives relate to the promotion of safer road use and infrastructure in the public interest and iRAP is regulated by the Charity Commission.

C. iRAP holds and administers the rights to use the ViDA software for general benefit. We want you to use ViDA and help make the world’s roads safer to use.

D. ViDA allows you to access content including mapping and tables of results which have been built from road inspections and assembled from surveys of many kinds. iRAP is indebted to the data holders who have allowed use of their data in ViDA which make this possible whether in governments, authorities, charities, automobile clubs, companies, research institutions, international treaty organisations, trade associations, or regional road assessment programmes including EuroRAP AISBL.

E. In order for you to use ViDA, you must agree to the terms and conditions of this licence. This protects the interests of those that have given the content or background copyright material which is contained in ViDA and to keep safe the ongoing development of ViDA and iRAP’s programme of charitable work.

F. iRAP tries continuously to raise the funds to improve ViDA and pay for the costs of servers and other consumables that are required so that everyone can have access to ViDA either freely or for a donation that does not deter its use. You will not be asked to pay anything for using ViDA if you are a not-for-profit organisation or an authority working on improving roads in a low or middle income country as defined by the World Bank. You may, however, be asked on a “feels fair” basis to make either a donation or a grant if you are i) charging fees for services provided or ii) if you are an authority making significant use of ViDA in a medium or high income country.
Further Information and Submissions

iRAP welcomes feedback and experience in the use of star ratings as a policy target worldwide. To share your experience or provide feedback on the discussion paper please contact:

iRAP Chief Executive Officer

Rob McInerney
rob.mcinerney@irap.org

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.