РЕПУБЛИКА МАКЕДОНИЈА

ЈАВНО ПРЕТПРИЈАТИЕ ЗА ДРЖАВНИ ПАТИШТА

Проектна Задача
За

iRAP и Програма за безбедност на патиштата

IRAP AND ROAD SAFETY ASSESSMENT PROGRAM

National and Regional Roads Rehabilitations Project (P148023)

REPUBLIC OF MACEDONIA

TERMS OF REFERENCE

1. Program Background

Under the World Bank supported National and Regional Roads Rehabilitations Project (P148023), the Public Enterprise of State Roads (PESR) of Macedonia intends to undertake an iRAP and road safety assessment program (Program) for national and regional roads in Macedonia. The objective of the Program is to assess the safety of 4000 km of main roads in Macedonia and build capacity within the Road Safety Unit (RSU) of PESR in the areas of road safety inspection and network safety management. In 2014, 800 km of national roads were already surveyed following the iRAP methodology by AF Cityplan, under the Sensor Project financed by South East Europe Transnational Cooperation programme; thus for a complete picture of the safety aspects of the main roads in Macedonia, the remaining roads need to be surveyed.

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 Republic of Macedonia 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: http://irap.org/about-irap/about-us.

2. Objectives

The objectives of the Program are to:

- Survey of 3047 km of national and regional roads managed by PESR and code the video survey data according to the International Road Assessment Program (iRAP) Survey and Coding specification.
- Collect crash data, traffic flow and speed data for the 3047 km according to the iRAP Data Analysis and Reporting specification.
- Produce an iRAP input file which includes all road attributes and collected data.
- Produce Star Rating results and Safer Roads Investment Plan to identify areas of high risk and to shape future road safety investment.

- Combine the iRAP results of the 800 km already surveyed with the iRAP results for the 3047 km to be surveyed under this consultancy service to assemble and overall network iRAP input file, Star Ratings and Safer Roads Investment Plan.
- Produce a detailed technical report in accordance with iRAP Data Analysis and Reporting specification.
- Provide training to the RSU staff on understanding the iRAP surveys and how to use the iRAP survey results for managing the road network safety.

3. Scope of Work

3.1 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 *Star Ratings and Investment Plans: Road Survey and Coding Specification* (available at: http://irap.org/about-irap-3/specifications).
- Road attribute coding: record road attribute data (commonly referred to as coding) for the roads defined in the Schedule of Roads as specified in the *Star Ratings and Investment Plans: Road Survey and Coding Specification* (available at: http://irap.org/about-irap-3/specifications).
- Supporting data collection: collect, collate and utilise supporting data for the roads defined in the Schedule of Roads as specified in the *Star Ratings and Investment Plans: Data Analysis and Reporting Specification* and the *Supporting Data Template* (available at: http://irap.org/about-irap-3/specifications).
- Upload file: compile 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: http://irap.org/about-irap-3/specifications).
- Star Rating and Safer Roads Investment Plans (SRIP): conduct analyses and prepare reports for the roads defined in the Schedule of Roads as specified in the *Star Ratings and Investment Plans: Data Analysis and Reporting Specification* (available at: http://irap.org/about-irap-3/specifications).
- Risk Mapping: conduct analyses and prepare crash rate Risk Maps for the roads defined in the Schedule of Roads as specified in the *RAP Road Risk Mapping Manual: Technical Specification, RAP Road Risk Mapping Manual: Design Specification*, and *RAP Road Risk Mapping Template* (available at: http://irap.org/about-irap-3/specifications).
- 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 Risk Mapping data as described in the *Star Rating and Safer Roads Investment Plan Quality Assurance Guide* (available at: http://irap.org/about-irap-3/specifications).
- Overall Network iRAP: combine the iRAP results of the 800 km already surveyed with the iRAP results of the 3047 km to be surveyed to form an overall network iRAP input file and perform an overall network iRAP evaluation.

- Stakeholder engagement: undertake activities such as:
    - 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 ad-hoc queries about the project activities from stakeholders.
- Training: provision of training for key stakeholders (PESR and specifically RSU), consistent with iRAP specifications, manuals and guides (available at: http://irap.org/about-irap-3/specifications and http://capacity.irap.org/training/rap-courses). The training will include road surveys, coding, understanding and using iRAP results at project and network level.
- Sustainability: prepare an action plan for a sustainable implementation of iRAP in Macedonia, outlining a proposed scope, schedule, human resources needs and cost of iRAP activities to be implemented by PESR in the future.

3.2 iRAP Accreditation and Training

To be qualified to undertake the road survey and road coding components of the iRAP Star Rating and Investment Plan protocol, the supplier must have successfully completed the following RAP capacity training courses that are available for on-line education and accreditation at http://capacity.irap.org and subsequent refresher training as required.

3.3 License

The successful supplier will be licensed to use the appropriate iRAP protocols, technology and methods for the duration of the project.

3.4 General Requirements

The supplier shall acknowledge that iRAP has a zero tolerance policy towards bribery and corruption and hereby agrees to adopt the same approach as described in the iRAP *Anti-bribery and Corruption Policy*[1] with all parties with whom it deals in relation to this work.

iRAP assessments are typically focused on the highest risk roads in a country and the supplier shall ensure they are informed and manage all risks associated with the completion of the project. The supplier will ensure that operational working hours, road travel, inspections and data collection, country specific requirements including immunizations and security arrangements, training and all other required operational activities are conducted in a safe manner. The supplier shall be responsible for the safe undertaking of the project deliverables. A written project health and safety plan shall be provided by the supplier to the client.

Incidental costs (such as customs duties, fuel, insurance, and vehicle operating costs, accommodation, survey staff per diem allowances and permits) shall be covered by the supplier. The supplier will be required to submit all relevant insurance documents to the client prior to the commencement of the road

[1] Anti-bribery and Corruption Policy http://www.irap.net/about-irap-3/annual-reports-and-governance?download=65:anti-bribery-and-corruption-policy

survey.

Mobilization and demobilization costs associated with the project shall be covered by the supplier. It is the responsibility of the supplier to adhere to all customs duties, rules and regulations as applicable. Note that failure to properly comply with customs rules can result in seizure of goods and civil and criminal penalties against involved parties.

All data, reports, plans, manuals, processes specific to the project and all documents or reports prepared or developed as part of the project shall be the property of PESR. The intellectual property of such documents belongs to PESR. The supplier can make use of or refer to such documents for marketing and/or other project purposes after obtaining written consent from PESR which shall issue the consent to all reasonable requests.

Other documents including data, maps and reports supplied to the supplier by the World Bank, PESR or other organizations to assist with the study shall be returned to the respective organization at the end of the project.

No public communication of results shall be undertaken without the express written approval of PESR

The supplier shall ensure they are well informed and aware of the complexity, time and cost implications of all aspects of the temporary importation of survey equipment to the country concerned. Project timelines should reflect the shipping and customs related requirements for the country concerned. Key issues for the supplier to be aware of include and are not limited to:

a. Shipping and/or transportation costs and time implications for the project
b. Legal, time and cost obligations related to the temporary or permanent importation of the survey equipment
c. Legal requirements or restrictions for the type of equipment used (e.g. lasers, GPS, accelerometers)

A written project health and safety plan shall be provided by the supplier to the client. The plan must receive 'no objection' from iRAP prior to the commencement of the road survey.

4. Schedule of Roads

The table below details the roads to be assessed. The exact distances and length will be confirmed prior to commencement of activities**.**

Table 1 Roads to be assessed

Road Name	Link ID	Start Point	End Point	Length (km)
A1		Katlanovo	Veles	27.30
		Veles	Katlanovo	22.80
A2		Gradsko	Prilep	50.56
A3		Intersection Trebeniste	Border with Bulgaria	247.45

		(connection with A2)-Intersection Podmolje-Ohrid-Kosel-Resen-Bitola-Prilep-Veles - Stip-Kocani-Delcevo	(Ramna Niva)	
		Section Bitola (intersection Kukurecani)	Border with Greece (Medzitlija)	
		Section Kosel (connection with A3)-Ohrid	Border with R.Albania (Ljubaniste)	
A4		Border with Kosovo (GP Blace)- intersection Stenkovec-bypass Skopje-Petrovec-Miladinovci-Sv.Nikole-Stip-Radovis-)	Strumica- Border with R Bulgaria (Novo Selo)	127.33
R1101		Prilep (connection with A1, A3)-Bitola-Makazi -	Carev dvor (connection with R1307)	56.57 (total = 67.17; 10.6 pavement from granite cubes + 56.57 asphalt)
R1102		Skopje (connection with A2- Skopje bypass)-Katlanovo-Veles-Negotino	Gevgelija-(connection with A1)	133.03 (total =160.53 km)
R1103		Lakavica (connection with A4)-Negotino (connection with A1)-Kavadarci	Drenovo (connection with A1)	52.87
R1104		Skopje (connection with A2- Skopje bypass)-Aracinovo-Kumanovo (connection with A1)	Border with Serbia (Sopot)	34.90 (total = 35.45 km)
R1105		connection with A1-Miravci-Davidovo-Udovo connection with R1102)-Valandovo-Dojran-	Border with R Greece (Sretenovo)	39.50
R1105		Section Star Dojran	Border with Greece (Nikolic)	5.93
R1106		connection with R1102-Dracevo-Varvara-Nova Breznica-Kula-Kolomot-bridge at Blizansko-Kalu|erec-	Suvodol connection with R1303)	53.04 (total = 84.64 km)
R1107		Gradsko (connection with A1)-Rosoman-Kavadarci-Musov Grob-Vitoliste-	Lagovo (connection with A3)	101.59 (total = 125.05 km)

R1108		Gevgelija (connection with R-1102)-Moin-Konsko-Smrdliva Voda	SC Kozuv	26.90 (total = 43.94 km)
R1109		Gevgelija (connection with A1)Bogdanci-	Furka (connection with R-1105)	19.02
R1201		Struga (connection with A2)	Debar (connection with R1202)	51.04
R1202		Connection with A2-Mavrovi Anovi – Debar -	Border with Albania (Blato) + section for Monastery Sv.Jovan Bigorski (0,8 km)	61.51
R1203		Tetovo (connection with A2)-Vratnica	Border with Kosovo (Jazince)	28.50
R1204		Kumanovo (connection with A-2)-Sv.Nikole-Ovce Pole (connection with A3)-Kadriakovo-Stip-	Sofilari (connection with A4)	73.40
R1205		connection with A2-Kratovo-Probistip-	Krupiste (connection with A3)	54.30
R1206		Junction Matka (connection with A2)-Grupcin-Tetovo-Bogovinje-Vrapciste-	Gostivar (connection with A2)	58.50
R1207		Mlado Nagoricane (connection with A2)	Border with R Serbia (Pelince)	19.37
R1208		Ohrid (connection with R1301)-Podmolje (connection with A3)	Struga-Radozda	23.96
R1209		Tetovo (connection with R1206)-	Popova Sapka	18.35
R1210		connection with A2-Toranica	Makedonska Kamenica (connection with A3)	19.60 (total = 38.84km)
R1301		Ohrid (connection with A3)	Sveti Naum- Border with R Albania	32.60
R1302		Delcevo (connection with A3)-Pehcevo-Berovo-	Dabile (connection with A4)	84.60
R1303		Prilep (connection with R1101)-Makedonski Brod	Kicevo (connection with A2)	63.91
R1304		Prevalec (connection with A3)-Vinica-Mitrasinci-	Smojmirovo (connection with R1102)	43.80
R1305		Kukurecani (connection	Drugovo (connection	68.20

		with A3)-Demir Hisar	with A2)	
R1306		Prilep (connection with R1303)-Krivogastani-Krusevo	Sladuevo (connection with R1305)	51.29
R1307		Resen (connection with A3)-Carev Dvor-Otesevo-	Stenje (border with Albania))	24.70
R1308		Makazi (connection with A3)-Pretor-	Border with Greece (Markova noga)	25.88
R1309		Zrnovci (connection with R2334)-Kocani (connection with A3)-Ponikva-Zletovo - Lesnovo-	Probistip (connection with R1205)	39.70 (Total=56.99)
R1310		Radovis (connection with A4)-Podares-Vladimirovo-Berovo (connection with R1302)	border with R Bulgaria (GP Klepalo)	26.44 (Total=69.25)
R1311		Bitola (connection with R1101)-Novaci-Makovo-Caniste	Rasimbegov Most (connection with R1107),	36.30 (only asphalt)
R1312		Connection with A3 (Karatmanovo)-Veles-Izvor	Prilep (connection with R1303)	47.45 (Total=73.80)
R1401		Strumica (connection with A4)-Rabrovo-Valandovo-Balinci-	Marvinci (connection with R1102)	29.78
R1402		Kuklis (connection with R1401)-Bansko-Novo Konjarevo (connection with A4)	Oslomej-connection with A2	27.00 (Total=33.53)
R1403		Connection with A4-Radovis-Vladievci-Vasilevo-	Strumica (connection with A4)	20.52 (Total=36.00)
R2131		Dracevo (connection with R1106)-Oresani-Taor	-Katlanovo (connection with R1102)	9.90 (Total=15.00)
R2132		Bridge s.Blizansko (connection with R1106)-Rastes-	Kalugerec (connection with R1106)	21.40 (Total=33.40)
R2133		Kumanovo (connection with A1)-Lipkovo-Matejce-	Nikustak-connection with R1104	20.90
R2134		Dracevo (connection with R1106)-K.Voda (Usje)-Sopiste-	Govrlevo (connection with R1106)	17.30
R2135		Gorno Konjare (connection with R2136)-Malino-s. Preod-	Sv.Nikole-(Connection with R1204)	27.30

		Gorobinci-		
R2136		R'zanicino (connection with R1102)-Sredno Konjare-Gorno Konjare - Vince-Pcinja-	Orasac (connection with R1204)	12.04 (Total=31.29)
R2137		Connection with R1102-Vojsanci-Koresnica-	Demir Kapija (connection with R1102)	13.75
R2138		Vrska R2134-Soncev Grad-Vodno	Gorno Nerezi	13.00
R2231		Gostivar (connection with R2233)- Srbinovo-Tuin	Oslomej-connection with A2	17.70 (Total=44.94)
R2232		Buciste (connection with R1205)	Zletovo-hidroakumulacija Zletovica	26.08
R2233		Gostivar (connection with A2)-Cegrane-	junction Tetovo west (connection with A2, Brvenica)	27.19
R2234		Junction Saraj (connection with A2)-Radusta-Jegunovce-	Tearce (connection with R1203)	33.20
R2235		Mavrovi Anovi (connection with R1202)-Mavrovo-Leunovo	-Bunec (connection with R1202)	24.90
R2236		Sveti Nikole (connection with A4)-Meckuevci-Puzderci-	Neokazi (connection with 1205)	28.10
R2237		Kumanovo (connection with R1204)-	Mlado Nagoricane (connection with A2)	8.00
R2238		Mavrovo (connection with R2235)-Galicnik-Selce-Tresonce-	Lazaropole-connection with R2246	16.00 (Total=36.22)
R2239		Stenkovec (connection with A2/A4)-Brodec-	Tanusevci (border with Kosovo)	35.68 (Total=38.18)
R2240		connection with R1201-Vevcani-	Oktisi-connection with A2	15.88
R2242		Zelino (connection with A2)-	Jegunovce (connection with R2234)	13.80
R2243		Struga (connection with R1201)-Drslajca-Dolno Tatesi-Mislodezda-Lokov-	Burinec-connection with R1201	22.70 (Total=44.23)
R2244		Connection with R1207-Zegljane-Ramno-	border with R.Serbia	16.70 (Total=25.50)
R2245		Kriva Palanka (connection with A2)-	Osice-Ogut-border with R.Serbia	25.80 (Total=28.94)
R2246		Boskov Most (connection with R1202)	-Izvor (connection with A2)	8.27 (Total=33.56)
R2246		Section s.Gari		1.77

R2247		Pavlesenci (connection with R1204)-Tatomir-Sekulica-	connection with R1205	15.20 (Total=24.04)
R2248		Rankovce (connection with A2)-German	Nerav	20.70 (Total=23.50)
R2249		Melnicki most (connection with R1102)-Papradnik-Brestani-	Selce (connection with so R2243)	17.20 (Total=27.13)
R2250		Kriva Palanka (connection with A2)-Dubrovnica-Golema Crcorija-Luke-	Border with R.Serbia	13.13 (Total=16.10)
R2331		Bitola (connection with R1101)-Nice Pole-Pelister-Brajcino-	Ljubojno (connection with R1308)	12.60 (Total=15.51)
R2332		Connection with R1307 (Carina)-	Trpejca (connection with A3 i R1301)	27.70
R2333		Bitola (connection with A3)-Bistrica-	Dragos	15.37
R2334		Stip (connection with R1204)-Karbinci--Argulica-Teranci-Zrnovci -Vinica (connection with R1304)-Jakimovo-	Kalimanci-connection with so R2345	65.64
R2335		Vasareica (connection with R1101)-Bucin-Obrsani-Krivogastani-	Ropotovo (connection with R1303)	46.70
R2336		Stari Grad (connection with R1312)-Bogomila-	Ropotovo (connection with R1303)	22.33 (Total=52.47)
R2337		Krusevo (connection with R1306)-Pusta Reka-	Prostranje (connection with R1305)	35.15
R2338		Medzitlija (connection with A2k)-Germijan-Staravina-Gradesnica-	Besiste-connection with R1107	22.00 (Total=65.01)
R2339		Novo Lagovo (connection with R1101)-Galicani-Obrsani-Bucin-	Graiste- connection with R1305	31.00
R2340		Connection with R1101-Dobrusevo-Novaci-	Bac-connection with R2238	15.00 (Total=39.40)
R2341		Delcevo (connection with A3)	Gabrovo-border with R Bulgaria	3.50 (Total=10.89)
R2342		Trkanje (connection with A3)-Sokolarci-	Pisica (connection with R1205)	12.87
R2343		Delcevo (connection with A3)-	Golak	11.20
R2344		Connection with R1312-Zacka-Lisice	Drenovo	20.45

R2345		connection with A3-Bigla-Trsino-	connection with R1304	18.48
R2346		Trabotiviste (connection with R1302)-Razlovci-	Mitrasinci (connection with R1304)	9.70 (Total=19.29)
R2347		Kazani (connection with A3)-Lera-Strezevo-Crnovec-	Lopatica (connection with R1305)	18.20
R2431		Radovis (connection with 1310)-Plackovica-	Argulica (connection with R2334)	52.56
R2432		Strumica (connection with A4)-Veljusa--	Vasilevo (connection with 1403)	15.59
R2433		Radovis (connection with A4)-Konce - Zagorci-Leskovica (connection with R1103)-Selce-	Sofilari (connection with A4)	31.40 (Total=63.37)
R2434		Connection with R1401-Ric-	connection with R2433	6.40 (Total=29.15)
			Total	3046.92 km

Total refers to the total length of the road

5. Deliverables

In addition to the standard deliverables required in the specifications cited in the Scope of Work, the following deliverables are required:

- An inception report that sets out: a work plan; key milestones; and a health and safety plan.
- A brief weekly email summarizing activities undertaken during the previous week.

6. Timing

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

Table 2 Schedule

Task	Completion date
Road survey	*One month to complete task. Completed three months after contract signature.*
Road attribute coding	*Five months to complete task. Completed six months after contract signature.*
Quality assurance	

	One week after completion of each task.
Supporting data collection	*Undertaken at the same time as the road survey and road attribute coding.*
Upload file	*1-2 days.*
Combine 800km data with 3047 km data	*2 weeks; completed 7 and a half months after contract signature.*
Star Rating and Safer Roads Investment Plans (SRIP)	*1 Month; completed nine months after contract signature.*
Risk Mapping	*Completed ten months after contract signature.*
Preliminary results training and review	*1 Month. Completed eleven months after contract signature.*
Reporting and Launch of results	*1 Month. Completed twelve months after contract signature.*

7. Professional skills and experience required

An internationally recognized, iRAP-accredited provider of iRAP survey services with experience in European countries. Professional skills and experience in service provider and support services teams for data analysis and reporting will include:

- Road Safety Engineering Specialist(s)

One or more internationally recognized specialists with more than 10 years practical experience in the design of innovative infrastructure and safety facilities, including extensive experience with iRAP tools, safety audit and safety inspection. Experience with improving infrastructure safety in mixed-traffic/mixed speed road environments in rapidly motorizing countries is essential.

- Road Safety Analysis Specialist

An internationally recognized specialist with at least 10 years' experience conducting scientific analyses of road environment, vehicle and human factors contributing to road crashes and injuries. Hands-on experience of quantitative evaluations of safety interventions and outcomes is essential. Experience of road safety analyses in developing and transitional countries is desirable.

- Monitoring and Evaluation Specialist

An internationally recognized specialist with more than 10 years' experience in the design and implementation of traffic, vehicle and road user monitoring and evaluation systems. Knowledge of sample design methods and related measurement equipment is required. Experience of road safety monitoring and evaluation in developing and transitional countries is desirable.

- Four coders

For all team members, a demonstrated ability to work with and gain the trust of senior government officials and professional peers is essential.

- Additional criteria

All candidates must have practical experience in delivering RAP Star Rating projects including road inspections, data coding, processing and analysis, reporting and technical engagement in at least three countries, including minimum one EU country

8. Required Output and Reporting

It is expected that the assignment will be completed within 12 months. During the assignment the Consultant shall provide the following reports to the PESR:

Deliverables	Timing of Deliverables (months after contract signature)	Payment (% of the total contract amount)
Inception Report	1 month	10 %
Road Survey Report	3 months	20 %
Road Attribute Coding Report	6 months	20 %
Star Rating and Safer Roads Investment Plans	9 months	10 %
Risk Mapping Report	10 months	20 %
Preliminary Results Training and Review Report	11 months	10 %
Launch of Results and Final Report	12 months	10 %

The reports shall be submitted in Macedonian and English in hardcopy (2 copies each) and electronic formats (pdf or similar).