Quick Appraisal:

Development of a national road No DK8 to parameters of expressway on the section Piotrków Trybunalski – Rawa Mazowiecka

Regional and Urban Policy

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Quick Appraisal

Title: "Development of a national road No DK8 to parameters of expressway on the section Piotrków Trybunalski – Rawa Mazowiecka" "

Client: DG Regio

Rotterdam, 24 April 2013

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Executive Summary

Short description of the Project and its objectives

This Quick Appraisal (QA) refers to the project named: "Development of a national road No. DK8 to parameters of expressway on the section Piotrków Trybunalski – Rawa". Mazowiecka, (hereinafter the Project).

The scope of the Project comprises development of a national road No. DK8 to parameters of expressway on the section Piotrków Trybunalski – Rawa Mazowiecka from 324+772 km to 386+000 km (total length of developed section equals to 61.23km). This section will constitute a part of the future, planned S8 expressway which is an element of TEN – T transeuropean transport network (VI Corridor).

The Project is related to an improvement in transport conditions for goods and passengers and accessibility to the national and Trans-European Transport Network.

The Project is located in Łódzkie Voivodeship in Counties (Polish: Powiat) of piotrkowski, tomaszowski and rawski.

The Project is in line with the *"Operational Programme Infrastructure and Environment"* (OPI&E), projected for the years 2007-2013 and the TEN-T - VI Priority Axis “Road and Air Network and other strategic documents.

The planned for development the national road No. DK8, follows the existing national road No. DK 8 route. Actually, the only alterations of the existing rout are planned as a by-pass of developed area in the surroundings of Jadwigowo and in the area of Nowy Olszowiec and Emilianów where new rout is planned of about 4 km long section in the new rout location. The scope of the Project comprises 14 road nodes, 27 viaducts, 16 bridges, 11 animal passages, 1 footbridges and 5 service passages.

The total cost of the Project equals to EUR 502,219,163.

The Project implementation has been planned for the years 2010-2012.

The Implementation of the Project will positively influence the achievements of the *"Operational Programme of Infrastructure and Environment's"* (OPI&E), projected for 2007-2013, the *"National Development Strategy"* and the "*National Strategic Reference Framework’s* (NSFR)".

The Project's overall objectives are:

- shorter travelling time;
- improvement of traffic safety;
- improvement of driving comfort;
- improvement of traffic on the interregional connections;
- improvement of the availability and competitiveness of regions.

These objectives will be achieved by:

- limiting access to the road outside the road nodes;
- improving the existing road geometric parameters;

- providing connections of roads which are cut by expressway;
- providing support services of adjacent area.

The Project reflects the assumptions of the strategic documents both at EU, national and regional levels.

The basis for the Quick Appraisal (QA) are the Application Form, Excel Model, updated forecasts and Cost Benefit Analysis as well as other disclosed by the Applicant/Beneficiary documents.

Assessment of the Project dossier

The available for appraisal documents present good descriptions of relevant technical, environmental and economical issues. The economical, environmental and technical aspects of the project were analyzed in a thorough way. In some areas technical information and graphical presentation of the Project could be improved to provide more detailed understanding of the Project. However, the conducted analyses are clearly described, and the results are presented in an easy-to-read and understandable way.
The Cost-Benefit Analysis and financial aspects of the Project were up-dated in April 2012. The Cost-Benefit Analysis reflects current status of works and adjusted operational revenues and costs due to changes of fees in an electronic toll collection system, and its operational costs. The documentation form April 2012 is based on investment costs of the Project, consistent with contracts, already signed with contractor.

	Information satisfactory or not satisfactory	**Explanation (main problems in the information)**	**Additional information/ clarification required, or other improvements of the project application**
Project organisation & references	*Satisfactory*	None	None
Project type & location (incl. maps)	*Satisfactory*	*None*	*None*
Project objectives	*Satisfactory*	None	None
Project description	*Satisfactory*	*None*	*None*
Timetable	*Satisfactory*		*However, time table could be more detailed and include extra time span for the case of severe winter time delaying construction works*
Project costs (incl. financing plan)	*Satisfactory*		*However, the break down of the Project costs could be more detailed giving chance for more thorough analyses*
Environmental Impact Assessment	*Satisfactory*		*However, the Non-technical summary of the EIA could be provided to make possible more thorough analyses and verification of all positive administrative decisions and opinions.*
Financial analysis (incl.	*Not fully*		*Calculations presented within*

demand analysis	*satisfactory*		*the financial analysis are clear and consistent with the financial model. However, documentation should be verified with regard to level of EU's contribution.*
Economic analysis (incl. CBA and risk & sensitivity analysis)	*Satisfactory*	*Calculation updated as of April 2012*	*Calculations presented within the economic analysis are clear and consistent with the financial model and CBA rules. Risk identification is consistent with the EC recommendations.*
Financial assistance (incl. financing gap analysis)	*Not fully satisfactory*	*There is inconsistency in documentation with regard to level of co-financing, i.e. different level of co-financing in the updated CBA versus Application Form and Excel model*	*Documentation should be verified with regard to level of EU's contribution.*
Wider economic benefits & impact on employment	*Satisfactory*	*Calculation updated as of April 2012*	*None*
Compatibility with Community Policies (incl. Environment, procurement, competition/state aid)	*Satisfactory*	*None*	*None*

Are the Project objectives well defined and the Project is technically sound?

The Project has clearly defined objectives in a local scale, which are expressed by technical and socio-economic parameters, such as:

- Development of the road to the parameters of the expressway at length 61.23 km;
- Construction of engineering objects/structures;
- Cost savings in passenger and freight traffic;
- Reducing the number of accidents and fatalities.

The documentation for the Project has the necessary administrative decisions and permits. There are no technical obstacles for the implementation of the Project.

Taking into account:

- parameters of the existing national road No. DK8 (no limitations in the accessibility of DK8, level crossings, representing high risk of a traffic collision;
- general increase of traffic;
- poor technical condition of existing engineering structures on the route of the Project(no further use);

the justification of the Project from a technical point of view is satisfactory.

Is the Project is worth co-financing?

The Project is worth co-financing from technical point of view as upgrading of an existing national road DK8 to the parameters of the expressway in the considered section will contribute in improvement of traffic safety and comfort. This will be achieved mainly through the construction of

road nodes to ensure collision-free traffic. This Project will not have insignificant impact on environment, thanks to introduction of environmental mitigation measures e.g. installation of noise barriers, construction of 2 level crossings for animals, wastewater pre-treatment facilities, etc.. The Project will have no negative impact on Nature 2000 areas. On a regional scale the Project will contribute to the development of the areas, located in the vicinity of the future S8 expressway, increasing attractiveness of these areas for investment. Actually, the national road No. DK8 is a part of the international road E67, what also calls for a need for upgrading of the national road to the European standards.

The Project is worth co-financing from economical point of view. The present financial net value is negative and the present economic net value is positive justifying need for the Community co-financing. The economic rate of return ERR equals to 11.12%. The correctly, calculated ENPV indicates an economic value of the Project and equals to PLN 1,829,406,033 PLN (EUR 460,668,320).

Is the public contribution justified?

The QA consultant finds the financial analysis to be consistent with EC Guidelines and to be based on reliable and coherent assumptions. The results of a demand analysis are reasonable, operational revenues and costs are updated in connection to changes of fees in electronic toll collection system for use of the transportation infrastructure.

The result of the submitted financial analysis justifies public contribution. It is noted however that the level of EU's contribution should be verified as there is inconsistency in documentation with regard to level of co-financing, i.e. different level of co-financing in the updated CBA versus Application Form and Excel model.

Is the Project consistent with other Community policies?

The Project is consistent with the EU documents concerning transport and environment.

Recommendations

Technical issues:

Taking into account that the Project is a part of the future, planned S8 expressway, it is important to emphasize the overall benefits of the Project in the macro scale what could be better reflected in the Application Form.

The Application Form doesn't contain the technical details of the applied technical solutions. For instance there are no technical details of the designed road nodes, type of road surface and the parameters of the engineering objects. This information could be supplemented providing better understanding of the technical issues and solutions.

However, the Project has received all the necessary administrative decisions, and permits for the implementation. Hence, it is assumed that technical solutions are in accordance with the requirements of the European technical regulations and standards.

The time schedule for the construction works assumed duration of construction works for 21 month starting from September 2010 to May 2012. No time reserve was made due to winter time what may interrupt the continuity of the construction works in winter period from the technological / technical point of view and consequently delay the implementation of the Project. Therefore, the time schedule should assume time reserve for the risk of putting on hold of construction works due to severe winter conditions.

Despite the above deficiencies of the detailed technical information, the Project is found worth implementation from the technical point of view.

Economic analysis

No recommendations.

Financial analysis:

The documentation should be verified with regard to the level of axis priority co-financing. In the updated version of CBA from April 2012 an amount of the EU's contribution has been established applying co-financing of priority axis at the maximum level, i.e. 85%, while in the Application Form and in the model a lower level of 83.46% has been applied. The more detailed information on this issue can be found in the section 5.7 of this QA report.

Introduction

1.1 Description of methods and activities

This Quick Appraisal (QA) is based on information on the Project provided in the ***the Application Form and other documents.*** The following documents were received in electronic format:

- Application Form;
- Excel Model;
- Updated forecasts and Cost Benefit Analysis
- Project Timetable;
- A number of Administrative Decisions and opinions.

The QA was prepared in accordance with COWI *"Guidance for Quick Appraisers" - Quick appraisals of major project applications.*

The objective of the QA is to propose a constructive dialogue and provide clear recommendations and suggestions, by analysing in-depth the documentation in hand.

The economic and financial evaluation of the project is carried out mainly based on the CBA report updated in April 2012 and the financial model consistently updated in April 2012.

1.2 Applicant and beneficiary of the Project

The Managing Authority for the Operational Program which is responsible for Application Form to the EC is the Ministry of Regional Development of the Republic of Poland.

The Beneficiary of the project is the General Directorate of National Roads and Motorways (Polish: GDDKiA), as the Central Government Administration which has overall management in matters of national highways and roads.
GDDKiA is overall responsible for managing of roads and implements the state budget for national roads and highways. The outcome of the project will be owned by the State Treasury and will be managed and maintained by GDDKiA Branch in Łódź.

1.3 Appraisal agent

The appraisal was carried out by ECORYS assisted by COWI Polska following experts: Jacek Jędrys (Team Leader, Environment), Monika Leśniowska (Economics),

1.4 Interviews and meetings

The underlying document is a desk study of disclosed by EC documents; therefore no meetings with the Applicant have been conducted.

Projects identification and objectives

2.1 Project's Identification

The Project comprises development of the existing national road No. DK8 to parameters of expressway on the section Piotrków Trybunalski – Rawa Mazowiecka, i.e. from 324+772 km to 386+000 km, development of 324+772 kilometer to the North of Piotrków Trybunalski and 386+000 kilometer on „Rawa I"road node. The Project doesn't include either a road node connecting the national road with a A1 motorway or the road node "Rawa I". A total length of the national road No. DK 8 to be developed to the parameters of the expressway amounts to 61.23 km.

The planned for development national road No. DK 8, as a part of future, planned S8 expressway follows the existing national road No. DK 8. Actually, the only alterations of the existing rout are planned as a by-pass of developed area in the surroundings of Jadwigowo and in the area of Nowy Olszowiec and Emilianów where new rout is planned of about 4 km long section running in a new route.

The scope of the Project works comprises construction of 14 road nodes, 27 viaducts, 16 bridges, 11 animal passages, 1 footbridges and 5 service passages.

Apart from the works related to the development of the national road No. DK 8 to the parameters of the expressway, the Project also includes reconstruction of associated infrastructure, construction of access roads serving adjacent areas, environment mitigation measures, reconstruction of melioration facilities, construction of a road illumination and parking lots for vehicles transporting hazardous material, as well as construction of devices related to traffic safety.

The Project foresees improvement of the existing road's geometrical parameters, limitation of the access from the road outside the road nodes, connections of communication routes cut by the expressway and support of an adjacent area service.

The Project is located in Łódzkie Voivodeship, within Counties (Polish Powiat) of piotrkowski, tomaszowski and rawski.

Total cost of the Project equals to EUR 502,219,163.

The Project can by assessed as coherent, as it does not require additional investments to be operational.

2.2 Project's contribution to the overall strategies

The overall objectives of the Project, i.e. to improve traffic flows, to reduce travel time within transit traffic and connections between regions and country cities, to improve traffic safety what will be

achieved as a result of project implementation, are consistent with the following strategic documents:

- *"The Community Strategic Guidelines";*
- *"The Operational Programme Infrastructure and Environment",* projected for 2007-2013*;*
- *"The National Strategic Reference Frameworks for the years 2007 - 2013";*
- *"The National Development Strategy 2007-2015";*
- *"The Transport Infrastructure Development Strategy for the years 2004-2006 and further";*
- *"The National Transport Policy for the years 2006 - 2025";*
- *"The National Road Construction Programme for the years 2011 - 2015";*
- *"The National Traffic Safety Programme 2005-2007-2013 GAMBIT 2005"*.

The project's contribution to overall strategies is described in the Application Form*.*
The Project is an important part of the planned S8 expressway between Wroclaw and Białystok for joining agglomeration of Wrocław, Łódź, Warszawa and Białystok,. The Project as part of S8 expressway, was placed on the primary list of individual projects for the *"Operational Programme Infrastructure and Environment"* projected for 2007-2013 under number 6.1-24 as Piotrków Trybunalski - Warsaw.
When the future, planned S8 expressway will be completed it will connect Wrocław and Bialystok and further the state border with Lithuania in Budzisko. The entire route of S8 expressway will influence the course of trans-regional and national scale. Therefore, the implementation of the project is in line with the main objective of the Priority VI - to improve transport accessibility Polish and interregional connections by road and air transport development of the TEN-T, and the specific objective: to improve the flow and safety of traffic, capacity and quality of road TEN-T in transit and connections between the major cities of the country.

2.3 Project's objectives and targets

The logical framework of the project is presented in the Application Form.

The Project has clearly defined objectives in a local scale, which are expressed by technical and socio-economic parameters, such as:

- Development of the road to the parameters of the expressway at length 61.23 km;
- Construction of engineering structures;
- Cost savings in passenger and freight traffic;
- Reducing the number of accidents and fatalities.

A group of non-measurable objectives, to which the development of national road No DK8 will contribute, contains:

- an increase of travel comfort;
- improvement of passages on the existing network and within interregional relation Wrocław - Warszawa - Białystok;
- improvement of areas' availability conditions, by increasing the road's class and quality;
- improvement of the economic situation of business and inhabitants using the road DK 8;
- assurance of appropriate parameters of target surface of S8 expressway that meet accessibility criteria for heavy vehicles with an axle load higher than 115 kN / axle.

2.4 Project's location

The location of the Project is presented on a number of maps. However, the maps could include more details to give better understanding of the Project.

2.5 Conclusions

The Project is well defined. The rationale for the implementation of the Project is clear and is well supported by presented data. The Project contributes to the overall strategies on local as well as national level and is complementary with the *"Operational Programme Infrastructure and Environment"* (OPI&E), projected for the years 2007-2013.

Feasibility and Options

In the Project documentation a non-investment scenario (BAU) and investment with various technical solutions were analysed. After the technical analysis the best investment scenario was defined.

The non-investment scenario will not contribute to the achievement of the Project objectives. Hence, there would be important negative consequences resulting from not implementing of the Project.

The investment scenarios for the Project comprising development of the existing national road No.. DK8 to the parameters of the expressway along the existing route are limited. Therefore, no other alternative options with regards to the other possible routes were analyzed. However, in certain sections of the national road DK8 various options were analyzed for particular types of road nodes, taking into account the existing road system, the topography of the area, the conditions for compliance with technical and development plans of the Municipalities. This resulted in a change of the original concept of road node of "Emilianów" and "Rawa II".
There were also considered various options for the safety elements in order to minimize need for land and related to this land acquisition expenses.
There were also considered scenarios for locations of animal 2 level crossings. In case of crossing in km 357+250 due to the adjustment of the position of the animal migration route crossing was moved at km 357+500.
In addition, due to the occupancy of land and technical conditions, it was necessary to design by-pass around Olszowiec and Emilianów in area of city Lubochnia. There were provided 2 options of by-pass on the North-West and South-East. Due to the better geometric parameters, less collision and favourable terrain, the selected option was South - East, which has been a subject to an environmental impact assessment.
The analyses of options made from the technical point of view are comprehensive and justify the selected options.

Technical evaluation

4.1 Technical features

The scope of works comprising development of the national road No. 8 to the parameters of the expressway on the section Piotrków Trybunalski - Rawa Mazowiecka also includes:
• Construction of 14 road nodes to ensure collision-free crossings with the planned expressway;
• Construction of access roads to allow access to areas cut off from access to the public road;
• Construction of 60 engineering structures (viaducts, bridges, business trips, subways and footbridges, construction of culverts), including 13 building structures for small and large animals;
• Construction of noise barriers and environmental mitigation measures;
• Construction of a drainage system and storm water pre-treatment;
• Demolition of buildings which interfere with the project;
• Construction of road safety items (markings, signage vertical, protective barriers, etc.) and elements of telematics systems (sewage system, weather detection system, induction loop system)
• Construction of street illumination in the vicinity of road nods and parking for vehicles carrying hazardous materials
• Liquidation, reconstruction and construction of technical infrastructure.

The planned section was designed based on the following parameters:
• class roads – S (expressway)
• Number of roads / lanes - 2/4
• Design speed - 80 km / h
• lane width - 3.5 m
• emergency lane width - 2.5 m
• natural shoulder width - 1.25 m
• median strip - 4,0 m
• axle - 115 kN / axle

The above parameters have been adopted on the basis of the existing technical conditions and standards. All the necessary administrative decisions and permits have been obtained enabling implementation of the Project.
There is no information in the Application Form regarding the possibilities of further development of the national road No. DK8, and construction of a third lane. There is no information on the adopted road surface construction. In the Application documentation, there is no information about the technical condition of the existing road surface and how to improve it to the parameters of road of class S.

A qualitative risk assessment was done in a satisfactory manner and the level of possible risks and estimated frequency of their occurrence are acceptable.

The updated traffic capacity demand projection was done in April 2012 for the period 2013-2038, according to the scope of feasibility study recommended in the 'Blue Book JASPERS 2008".

The forecasted change in traffic in the coming years may be affected due to a wide economic slowdown in Europe.

4.2 Timing

The implementation of the Project is planned for the years 2010-2012. The Project has obtained all the necessary administrative decisions and permits.
The Project time schedule for the construction works assumed duration of construction works for 21 month starting from September 2010 to May 2012. No time reserve was made due to winter time what may interrupt the continuity of the construction works in winter from the technological / technical point of view and consequently delay the implementation of the Project. Therefore, the time schedule should assume time reserve for the risk of putting on hold of construction works due to severe winter conditions.

4.3 Project Costs

Information on the Project costs comes from the Application Form (see B.4.1). The Project costs are as follows:
Total Project cost - EUR 502 219 163, including:
Eligible costs - EUR 494 938 318
Ineligible costs - EUR 7 280 845
at exchange rate PLN / EUR = 3.9712
Eligible costs include only costs incurred after 1 January 2007

The costs of works are as follows:
Eligible costs of construction: EUR 373 213 933, which roughly corresponds to the amount of the contract signed with the contractors.
Due to the planned on May 2012 completion of the works, the cost of the works should be updated. There is no breakdown of the cost of the individual works on the basic ingredients, so the detailed analysis is not possible.

The calculated cost indicator equals to Euro 6.095 million / 1 km. This value is quite high. The partial explanation may be the following conditions:
• need to construct of 60 engineering objects;
• need to build 14 road nodes;
• need for large scale of earthworks due to adverse geological/geotechnical conditions ,
• execution of the works while maintaining traffic continuity, which requires restrictions on the scale of the works at the same time and many stages of temporary traffic regulation

The operational costs are calculated as costs of maintaining the road infrastructure, according to updated values and respecting the Blue Book methodology. The operational costs in the whole analysed period of time equal to EUR 141,772,479 (discounted value). Those costs include the costs of maintaining the infrastructure as well as operational costs of the toll collection system.

All costs are recalculated in the updated version of the CBA of April 2012.

4.4 Conclusions

The chosen technical solution is assessed to be the optimal, taking into account the aspects of location, environment and risks. The technical solutions are justified in terms of identification and definition of its objectives and the findings of the traffic capacity forecast.

The calculation of costs is assessed to be correct. Recognition of the particular costs as eligible or non-eligible costs is explained clearly and consequently applied to further calculations of the net cash flows and to funding gap calculation. The cost analysis doesn't need either corrections or improvements as the costs have been updated by in April 2012.

Taking into account:
• An increase in traffic volume in the relevant section of national road No. DK8;
• Presence of level crossings, contributing to the growth of traffic restrictions and traffic congestion;
• Poor condition of existing engineering structures (lack of sufficient capacity);
• The presence of numerous pedestrian crossings at the level of the roadway, located mostly in the area of intersections and bus stops;
• The occurrence of impact on surrounding buildings in terms of noise and pollution;
the implementation of the Project from a technical point of view is essential.
The problem during the Project construction works may be in immediate proximity to the existing operated national road No. 8 in terms of security and traffic restrictions. In addition, the construction of each road nodes should be organized so that the first stage to perform the scope of work does not conflict with existing national road.

Financial analysis

5.1 Overall assessment

The Quick Appraisal (QA) of the financial analysis is based on the CBA updated in April 2012 and the Excel model. Both materials present clear and consistent information about financial aspects of the investment project. The financial analysis is correctly based on an incremental method. All assumptions for the financial analysis have been presented in a clear way and do not raise any objections. The QA consultant finds the financial analysis to be consistent with the EC guidelines and to be based on reliable and coherent assumptions.

The financial analysis includes the following categories of the Project's financial flows:

- investment costs;
- operational costs;
- operational revenus;
- residual value.

Financial performance indicators included in documentation from April 2012 were established taking into account changes of fees charged for the passage through the rebuilt road and changes in costs of maintaining the electronic toll collection system.

The reference period of the analysis is consistent with Blue Book recommendations for road transportation infrastructure and equals 25 years. Therefore, time series of financial results end in 2035, according to the Excel Model and updated CBA.

The QA consultant finds that the demand analysis is carried out at a satisfactory level and with presentation of relevant results, respecting regulations on tool rates for national roads, collected within the electronic toll collection system. Summing up, the financial analysis fulfils all EC requirements.

The documentation is not consistent within a calculation of the EU's contribution. In the updated version of CBA from April 2012 an amount of the EU's contribution has been established applying co-financing of priority axis at the maximum level of 85%, while in the Application and the model a lower level of 83.46% has been applied.

5.2 Project costs

Please, refer to Chapter 4 point 4.3 with regard to level of project costs.

Investment costs are updated due to the signed agreements with the contractors. Total investment cost of the project amounts to EUR 502,219,163 (non-discounted value). Discounted value of total investment cost amounts to EUR 487,178,264.

Operational cost will amount to EUR 141,772,479 (discounted value). The costs include operational costs of infrastructure repair and maintenance costs of the infrastructure as well as operational costs of the toll collection system.

5.3 Economic life of project and residual value

25-year reference period is used for calculations. Lifetime of the infrastructure elements are longer, the residual value is correctly calculated on the basis of remaining lifespan.

The residual value in non-discounted values amounts to EUR 60,330,753 while in discounted values: EUR 18,706,631. The residual value has been included in the last year's flows of the reference period, which is considered correct.

5.4 Demand analysis

Calculations of financial performance indicators from April 2012 has been made with taking into account revenues from tolls established on the basis of a new traffic forecast and updated toll rates for the passage through the rebuilt road.

The assumptions and the way of caring out the demand analysis do not raise any objections of the QA consultant.

The Beneficiary presents a comparison between two different market situations, according to Blue Book recommendations. The first one is non-investment scenario and the second one is a scenario including the investment project implementation. Summing up, the demand analysis is covering all the important aspects included in Blue Book recommendations.

5.5 Discount rate

A financial discount rate of 5% is used. The analysis is conducted in real prices and a real interest rate is applied in the discounted cash flows which is in line with EC recommendations.

5.6 Financial profitability and sustainability

Financial profitability is negative (FNPV/C<0), typically for public infrastructure projects, creating future public goods with priority of public grants assistance. FNPV/C equals - 440 118 678 EUR, but including EC assistance, it is FNPV/K = - 52 818 707 EUR.

Financial sustainability is presented clearly and respects EC recommendations. It is focused on positive net cash flows, generated year by year during the lifetime of the investment. Financial sustainability of the project has been confirmed, as cumulated net cash flows are not negative in any of the analyzed years.

The Beneficiary meets the highest standards of the investment project, where financial sustainability is being given a careful consideration. It's being done by monitoring present agreements and prices for road tolls as well as updating financial inflows and outflows. A reasonable conclusion in terms of the project financial sustainability is presented by the Beneficiary. Contingencies are calculated and justified in accordance with the Blue Book recommendations.

5.7 Funding Gap Analysis

The total eligible costs presented in the financial Excel model are consistent with the updated in April 2012 Cost Benefit Analysis (494 938 318 EUR / 1 965 499 046.54 PLN).

However, the documentation is not consistent within a calculation of the EU's contribution. In the updated version of CBA from April 2012 an amount of the EU's contribution has been established applying co-financing of priority axis at the maximum level of 85%, while in the Application and the model a lower level of 83.46% has been applied. Apart from the discrepancy, the method of calculating co-financing is satisfactory.

The method of calculating the EU's contribution in the Application, in the model and in the updated version of CBA has been presented in the table below:

		The Application and the model	**Updated version of CBA from April 2012**
1	eligible cost (discounted)	EUR 494,938, 318	PLN 1,965,499,046.54 p. 25 – is the amount equal to the amount of EUR 494,938,318 found in the Application and the model (3.9712 rate).
2	Financing gap (%)	90.34%	90.34% (p.32) equally in the Application and the model
3	An amount determining a decision, i. e. "an amount to which a co-financing level of a priority axis or priority axes is applied.	(1)*(2) = EUR 447, 127,276	(1)*(2) ≈ PLN 1,775,631,838.64 - The amount doesn't appear directly in the document
3	A co-financing level of a priority axis or priority axes	In the Application and the model	In the updated version of CBA from April 2012: 85%
4	The EU's contriution	(3)*(4) = EUR 373,172,424	(3)*(4) ≈ PLN 1,509,287,062.85 In the updated version of CBA from April 2012 appears an approximate amount of PLN 1,509,293,356.06, which is probably due to rounding

.

Economic analysis

6.1 Overall assessment CBA methodology

The economic analysis of the investment project is elaborated for the complex road transport system improved as the result of the road section development. The scope of analysed economic problems is specific for such type of infrastructure investment and it is focused on the quantitative costs and benefits, like e.g.: cost of saved time thanks to the transport quality improvement, improved safety, saved lives, environmental external effects.

The economic analysis is focused on the appraisal of the project's costs and benefits.

The financial analysis has included the following categories of the project's financial flows:

- Net investment expenditures after a fiscal correction;
- Operational cash flows (excluding collection costs) without VAT after the fiscal correction;
- Operational costs of maintenance of the net toll collection system after the fiscal correction
- Economic benefits and costs:
  – exploitation of vehicles,
  – time savings by users of road infrastructure,
  – accidents and deaths,
  – environmental pollution;
- Residual value of the project.

The economic analysis has been carried out using a differential method, which is consistent with recommendations of the European Commission.

Within the economic analysis, the BAU (business as usual) scenario is compared with the investment scenario, accordingly to the EC recommendations. The economic benefits are transparently calculated – positive costs reduction of vehicles exploitation, saved time in transport, reduced accidents, and reduced pollutions. Economic analysis is consequently presented within the net economic values calculated for the 25 years life span of the investment. Consistently with the EC recommendations the ENPV and ERR are calculated.

The economic benefits are correctly calculated – positive costs reduction of vehicles exploitation, saved time in transport, reduced amount of accidents, reduced pollutions. Economic analysis is consequently presented within the net economic values calculated for the 25 years life span of the investment. Consistently with the EC recommendations the ENPV and ERR are calculated, they are positive and in terms of the ENPV = EUR 460,668,320, EIRR = 11.12%. EIRR is expanding the social discount rate applied as 5.0% according to the Blue Book recommendations. B/C 2.14 confirming that the economic benefits are exceeding the economic costs.

6.2 Specific CBA issues

The following types of benefits were taken into consideration:

- saving on maintenance of vehicles;
- savings on travel times of road users (passengers and drivers);
- reduction of costs of accidents,
- reduction of the emission of the toxic exhaust flue gases.

The CBA is consistent with the Blue Book recommendations. The positive ENPV is very important as it confirms the need for such investment in overall social terms. The structure of social benefits is very attractive and shows the demanded structure of economic net benefits in comparison to the non-investment scenario. Fiscal correction is calculated properly and clearly presented.

The calculation of economic benefits and costs is based on the expert's assumptions from the HEATCO study, authorised by the EC and recommended in the Blue Book. The calculations of the economic benefits and costs are consistent with the EC rules, and apply to the *reasonable* values of the result units.

6.3 Wider economic benefits and impact on employment

The benefits of the project are as follows:

- Additional job posts created;
- Improvement of attractiveness of Kielce City for investors;
- Savings on social transfers (unemployment benefits);
- Improvement of touristic attractiveness of the region.

The Beneficiary clearly presents the economic analysis, however it should be highlighted that the developed section presents only the part of the road transportation system in Poland. It is significant to understand that many of the results in the complex system of Trans-European transport may underestimate the social benefits.

The project will increase the employment during the implementation and exploitation period, due to increased obligations of the investor exploiting the rebuilt road

Sensitivity and risks

7.1 Sensitivity analysis

The sensitivity analysis is presented clearly and sensitivity indicators are calculated for the investment scenario accordingly to the Blue Book recommendations.

The investment project shows low sensitivity to a change of key variables. Received economic indicators of the sensitivity analysis confirm justification of the planned investment. High rates of the investment economic efficiency prove that the risk of loosing the economic profitability for investment project is not significant.

7.2 Risk analysis

The risk analysis was carried out using a qualitative method.

There are following types of risks included in the analysis:

- Delay in getting administrative decisions;
- Timeliness of works;
- Increase in costs of works during the implementation period,
- Increase in the scope of work;
- Increased infrastructure costs.

The documentation presents ways to avoid consequences of the above-mentioned risks.

The executed risk analysis, confirmed by the results of the sensitivity analysis, revealed that the risk associated with the implementation of the proposed project remains at a low level, what fully justifies its implementation.

Compatibility with community policies

8.1 Environmental Impact Assessment

The Project comprising development of a national road No. DK8 to parameters of expressway is the type of project for which elaboration of EIA report is mandatory under § 2 clause 1 item 29 Regulation of the Council of Ministers of 9 November 2004.

With reference to above the EIA proceedings were conducted by the Voivode of Łódzkie Voivodeship.
The application for issuing of a development consent, including the EIA report and all necessary attachments for section Piotrków Trybunalski - border of voivodeship Łódzkie from 324+772 to km 408+805 was submitted on January 13, 2006. The Voivode presented to the Investor (the Beneficiary) deficiencies of the EIA Report calling for necessary improvements and amendments. Finally, on March 10, 2006 the supplemented and amended EIA Report was resubmitted to the Voivode.

In connection to the draft development consent on April 12, 2006 the Regional Sanitary Inspectorate in Łódź and the Ministry of the Environment were requested to present their opinions regarding the Project.
The Regional Sanitary Inspectorate in Łódź issued their opinion on July 24, 2006, and supported the Project and agreed upon the environmental conditions set in the draft development consent. On July 7, 2006 the Ministry of Environment has also agreed upon the conditions in the draft development consent.

Under the environmental proceedings the public was informed about the Project and initiation of the environmental proceedings and possibilities for raising of questions and objections. The open administrative debate with public participation was carried out on September 05, 2006.

As the result of conducted proceeding including public participation the objections of the citizens were taken under consideration what was reflected in the development consent.

However, the obligation of carrying out of the post-implementation environmental assessment in the scope of effectiveness for implemented environmental mitigation measures regarding noise protection, atmospheric air protection, environment protection, soil and groundwater protection and efficient use of animal crossings was imposed on the Investor (the Beneficiary).

On October 4, 2006 the Voivode of Łódzkie Region issued the development consent No. ŚR.VII.6617-2/950/d/2006.
However, in the received documents for appraisal there is no document proving that development consent and its content was published in the official list accessible for the public.

Actually, there was raised an appeal to the development consent (appeal document was not supplied in the received for appraisal documents from EC).

However, the Minister of the Environment, as an appeal body, with the adm. decision, dated on February 12, 2007, rejected the appeal and revised the development consent in the scope presented below.

The Minister of the Environment by adm. decision, dated Feb.16.2007, deleted section. 4.1 of the development consent (with regards to air monitoring) and kept the remaining conditions of the development consent in power.
The QA consults agrees to the decision of the Minister of the Environment . The post-implementation environmental assessment has been carried out at the stage of issuing of the Building Permit for the section 3d from km 357+150 to km 357+710.
This was due to the fact that the Voivode of Łódź found a discrepancy in the location of the passage for large animals to the location indicated in the development consent , dated on October 4, 2006.In connection to this discrepancy the Regional Directorate of Environmental Protection in Łódź on September 01, 2011 agreed upon final environmental conditions set for implementation within the Project. These conditions were reflected in the Detailed Design.

In the opinion of the QA consultant the above described administrative procedures regarding environmental impact assessment were carried out in accordance with applicable Polish and EU law. The public participation was assured on each phase of proceeding and all comments and proposals of public were considered.

8.2 Assessment of the effects on Natura 2000

The planned Project does not runs through the Nature 2000 areas. The closest Nature 2000 area is the area of PLH 100015 Dolina Rawki location at a distance of about 0.9 km away from the Project.
The other areas: PLH100003 Lasy Spalskie is situated at a distance of about 2,6 km in a straight line;
PLH100035 Łąki Ciebłowickle is situated at a distance of about 3,5 km in a straight line;
PLH100005 Niebieskie Źródła issituated at a distance of about 4,7 km in a straight line; PLH100026 Lubiaszów w Puszczy Pilickiej, issituated at a distance of about 8,1 km in a straight line.
Due to the possibility of potential impacts on the Natura 2000 "Dolina Rawki" through the Ryłke River, which crossesthe Project area at km 385 +000, in 2009, an assessment of the potential for impacts of the Project on Natura 2000 "Dolina Rawki" was requested.
The assessment was made at the stage of obtaining a Building Permit for the next section of the S8: Rawa Mazowiecka - Radziejowice, for which a separate Application Documents for co/ofinancing was made.
In the assessment it has been shown that the implementation and operation of the expressway S8 after applying environmental mitigation measures will not result in a significant negative impact on the habitats and species which are the subject of protection and the integrity of the Area "Dolina Rawki".
At the same time for the road subsection 3.d (3.4) there was prepared an EIA Report within the post-implementation environmental assessment. The post-implementation environmental assessment, there was assessed large modification with regards to the location of the passage for the large animals versus the location stated in the development consent..
In the scope of the post-implementation environmental assessment for the indicated subsection 3.4 there were taken into account the results of "An expert opinion on potential impact of the Project on Natura 2000 "Dolina Rawki.
In connection with the collision of the Project with habitats of protected plants there were obtained exemption from the prohibitions in relation to wild plants protected species and plant species under partial protection.

In connection to the above the Regional Director of Environmental Protection in Łódź stated in the note of on October 22, 2010 that the Project is unlikely to have a significant impact on protected areas.
This is due to the scope of work to be implemented within the framework of the Project, the nature and distance from the nearest protected areas, as well as the conditions for the implementation of the Project as defined in the relevant decisions, and therefore excludes the possibility of a significant impact on these areas.
It should be noted that the QA consultant had not access to both the EIA Report prepared for the development consent issued on October 04, 2006, neither the full EIA Report for the subsection 3.d (3.4) made at the stage of obtaining a Building Permit neither "An expert opinion on the impact of the Project on the Natura 2000 "Dolina Rawki".

Therefore, the appraisal was based only on the documentation received from EC (i.e. decisions, provisions and opinion/statements of administrative institutions) which do not allow for comprehensive assessment of accuracy of the Environment Impact Assessment on Nature 2000areas.

8.3 Coherence with other EU Directives and policies

The subject investment is covered by Community Strategic Guidelines - Priority 1 - Increasing of the attractiveness of Member States, regions and cities by improving of accessibility, assuring of adequate quality and level of services with the improving of the environment performance. This priority is implemented by guideline 1.1.1: *"Development and improvement of transport infrastructure".*
Development of the national road DK8 to the parameters on the section of the expressway Piotrków Trybunalski - Rawa Mazowiecka is consistent with the directions of the development of the EU transport with the ability to improve the quality of transport and improve traffic safety.

The Project seeks to achieve the objectives determined by the Rio De Janeiro Convention of 1992 on Environment and Development included in the Agenda 21 in the manner that it is coherent with the principle of sustainable development. The principle of sustainable development was raised in Poland to the rank of constitutional principle. The constitution of the Republic of Poland in article 5 ensures the protection of the environment based on the principle of sustainable development.

The Project fulfils the requirements regarding the sustainable transport i.e. meets the economic, social and environmental needs of the society, minimizing in the same time their influence of economy, society and natural environment what is coherent with Review of the EU Sustainable Development Strategy (EU SDS): Renewed Strategy, by the Council of the European Union, No. 10917/06.
Activities planned for ensuring of required quality of protection, taken under investment development are coherent with Sixth Community Environment Action Programme in the scope of natural environment (Decision No 1600/2002/EC of the European Parliament and of the Council of 22 July 2002).
In the implementation and operation phase of the Project, the high level of protective measures will be assured in relation to natural environment and human health what will have the positive impact on quality and standard of living.

The Project also complies with resolution of the European Parliament of 22 May 2007 which highlights the need of improving the role of the implementation of the Birds and Habitats Directives and Natura 2000 network and integrating biodiversity and nature protection issues and raising

public understanding of the importance of biodiversity and ecosystems for prosperity and well-being; and strengthening long-term monitoring, indicators and information dissemination.

White papers

On March 28, 2011, the EC published its White Paper "*Roadmap to a Single European Transport Area*". The White papers highlights the importance of having integrated multimodal travel services across the EU. Inland navigation plays a key role in the EC' policy goal towards a sustainable and competitive single transport area, to be achieved in 2050. One of the purposes is reducing of deaths in car accidents to almost zero in 2050 while in 2020 this number is going to be reduced by half. The EU is aiming to become a worldwide leader in the scope of safety and providing the protection for all transport modes.

The Project fulfils the above as it provides the significant reduction of road accidents by moving the transit traffic out of city of Kielce area.

- Final implementation of "*User Pays Principle and the Polluter Pays*".

Under User Pays Principle" for the subject investment the costs of preventive and remedial measures in case of damages to the environment in the phase of investment implementation will be beard by the investor. It will involve all financial expenditures referring to activities and protective facilities under provisions of law and development consent.

This principle is one of the main objectives of a framework of Community environmental policy indicated in Sixth Community Environment Action Programme in the scope of natural environment (Decision No 1600/2002/EC of the European Parliament and of the Council of 22 July 2002).

The contractor will bear all required fees connected with waste management and air pollution.

Fees associated with the costs of prevention in the phase of operation will be also paid by the road users in the form of excise duty included in the costs of fuel.

The Project falls under within Priority Axis VI Operational Programme Infrastructure and Environment 1.1.1 and implements the guidelines of the Community Strategic Guidelines, repeated in the National Strategic Reference Framework for 2007-2013 - expansion and improvement of the transport infrastructure. After reconstruction section DK8 will be part of the S8 expressway as part of TEN - T (VI hall), connecting the cities: Wroclaw, Lodz, Warsaw and Bialystok, leading to the border with Lithuania in Budzisko.

The Project has the impact of regional and national scale. Its implementation will affect the achievement of OPI & E indicators for the length of expressways sections that will be build and an increase in the length of roads adapted to the load of 115 kN / axle. Achieving the goal of increasing number of expressways in Poland will not be obtained if the investment will be partially implemented.

Directives

Directives coherent with EIA procedure are as follows:

1) Council directive No 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment

2) Council directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora;

3) Directive of the European Parliament and of the Council No 2001/42/EC of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment;

4) Directive of the European Parliament and of the Council No 2003/4/EC of 28 January 2003 on public access to environmental information and repealing Council Directive No 90/313/EEC;

5) Directive of the European Parliament and of the Council No 2003/35/EC of 26 May 2003 providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment and amending with regard to public participation and access to justice Council Directives 85/337/EEC and 96/61/EC

Other directives:
Following the requirements regarding Directive 2008/96/EC of 19 November 2008 implementation on road infrastructure safety management the General Directorate of National Roads and Motorways signed two decrees:

- Decree No 17 of 11 May 2009 on the phases and composition of design documentation for roads and bridges in the phase of tasks preparation,
- Decree No 42 of 3 September 2009 on the impact assessment on road safety and road safety audit.

Arrangement for management, monitoring, control and evaluation

The chosen technical solutions seem to be optimal , taking into account the aspects of location, environment and risks. The technical solutions are justified in terms of identification and definition of its objectives and the findings of the traffic capacity forecast. Therefore, no further questions or requests to the Beneficiary are needed.

The practical aspect of monitoring will be strongly affected by the fact that the first operating revenues will be generated in 2013.

The QA consultant doesn't expect the significant changes in the Project expenses, considering the GANTT chart as well as the financial and economic model (consistently with the GANTT chart presenting the time schedule of financial and economic values).

P.O. Box 4175
3006 AD Rotterdam
The Netherlands

Watermanweg 44
3067 GG Rotterdam
The Netherlands

T +31 (0)10 453 88 00
F +31 (0)10 453 07 68
E netherlands@ecorys.com

W www.ecorys.nl

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