Bosnia and Herzegovina

ROAD DIRECTORATE
FEDERATION OF B&H
Sarajevo

Public Company
"REPUBLIC OF SRPSKA ROADS "
Banja Luka

GUIDELINES FOR ROAD DESIGN, CONSTRUCTION, MAINTENANCE AND SUPERVISION

VOLUME I: DESIGNING

SECTION 1: ROAD DESIGNING

Part 1.: PLANINIG, DESIGN AND INVESTMENT DOCUMENTATION

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1 INTRODUCTION

1.1 Scope

Planning and preparation of expert research for deciding on road infrastructure investments is one of the most important activities of the Road Directorate.

The preparation of plan proposals must be based on the following:

Prompt and continuous monitoring of conditions of roads and road structures, which is provided for in the road database (RD) information system;

- Individual special situation measurements and other current data;
- Analysis regarding condition of roads and road structures;
- Taking into account national planning and other development documents (several years, medium-term);
- Compliance with regulations and specifically prepared and other established methodologies;
- Compliance with the Government's decisions and applicable legislation regarding the preparation of annual maintenance and development plans.

In addition to the above, the following documents are prepared, evaluated and adopted for the purpose of preparing plan proposals:

- Project identification (P-ID): It is prepared by the Directorate itself or submitted by local authorities (municipalities) or other interested legal entities or natural persons in case of planning activities regarding municipal infrastructure or other planning of importance to the local community where co-operation of the government is expected;
- There is kept the Investment purpose database (INV-PDb) featuring basic data on possible measures as a consequence of condition of roads or initiatives from project identifications;
- Preliminary feasibility studies regarding implementation of measures, notably on road corridors or
- Concept studies and feasibility studies for larger road sections;
- Other draft development programmes, directly or indirectly related to measures regarding roads;
- Investment project identification document (IDIP) being the basic financial document;
- Preliminary investment study and Investment programmes approved by the investor's decision and prepared on the basis of prescribed methodology;
- Annual work programmes for work related to maintenance, services or replacement investment.

The Planning Department of the Roads Directorate must also be included in interministerial work groups, which prepare documents of wider significance, e.g. national Spatial Plan, rehabilitation of transport infrastructure in border areas, etc.

Preliminary analyses and research are essential for optimal planning of road infrastructure development:

With regard to research-methodology:

- Methodology for determining value and costs regarding road building and maintenance;
- Methodology for economic road management related to traffic safety and needs of developing traffic;

- Methodology for stochastic and mathematic models, which describe the national road network in a representative way;
- Methodology for collection of data of measurements on the field, their aggregation on a qualitatively higher user level and modular inclusion in the Directorate's overall information system.

With regard to analysis:

- Studying traffic safety and importance and "weight" of human factor in traffic and road accidents;
- Longitudinal studies;
- Financial and cost analyses;
- Organisational studies.

With regard to development and planning:

- Development of analytical tools for decision-making process of managerial staff and project managers;
- Quality project planning and implementation, establishing successful project groups, training and practical education of people involved in the project;
- IT-application support to medium-term planning.

Below we specify some tasks and documents required for planning and management of procedures for preparing investment projects, which different from existing and which are as for experience in other countries in EU useful by investment management in to road and structures.

1.2 Terms Used

Project: A range of activities for implementation of measures on roads.

Legal regime A legal regime is legal rules whereby the regulations in the area of administrative law stipulate the method for obtaining and enjoying property rights in a particular area. The entity or municipality may in the procedure of preparation of spatial planning documents adopt temporary measures for protection of spatial arrangements, the areas of protection and limitations are those secured, endangered and other protected areas, which are defined in accordance with the Spatial Planning Act and may be determined in nature to the lot. A geodetic company may by markings, which must be clearly distinguishable from boundary stones, mark in nature areas within a legal regime and prepare a study on determining the borders of the area within a legal regime.

Engineer: means a legal or natural person that provides engineering as a commercial activity.

Consultant: means a legal or natural person that provides consulting as a commercial activity.

Works are buildings or civil engineering works fixed to the ground and made of construction products and natural materials together with any inbuilt installations and technological fittings.

Construction means design and execution of construction works and other works, and includes the construction of new works, the reconstruction of works, replacement construction, the removal of works and maintenance of works.

Buildings are works with one or more premises into which a person can enter and intended for residence or the performance of activities.

Civil engineering works are works intended for satisfying human material and spiritual needs and interests that are not residential and are not intended for the performance of activities in buildings.

Works of national importance are works important to the development of the entity, works that can affect the health and safety of a large number of people or have a significant impact on the environment, or works and the environs of such works that are of particular importance to defence and security against natural and other disasters.

Works with environmental impact are works for which environmental protection regulations prescribe a mandatory environmental impact assessment.

Works in public use are works whose use is intended for all under the same conditions; such works are divided in terms of manner of use into public areas and non-residential buildings intended for public use.

A public area is an area whose use is intended for all under the same conditions, such as a public highway, a street, a square, a marketplace, a playground, a car park, a cemetery, a park, a green or a recreation area.

A non-residential building intended for public use is a building whose use is intended for all under the same conditions, such as a hotel, a motel, an inn or a similar building for accommodation, a bank, a post office, an office or a similar commercial building, a building for trade and services, a railway or bus station building, an airport building or a port terminal building, a cable car station, a garage building or a similar building for transport and communications, a building for entertainment or recreation, a museum, a library, a school building or any other building for education, a hospital building or institutional care building, a sports hall, or a building for worship and for religious activities.

Public infrastructure works are civil engineering works that form a network serving a specific type of public utility of national or local importance or forms a network of general benefit to the public.

Complex works are such buildings whose total volume exceeds 5,000 m3 and that are more than 10.00 meters in height, measured from the ground to the eaves, a civil engineering works whose bearing spans are greater than 8.00 meters, a works intended for the storage and handling of radioactive substances, works with deep foundations, an underground works whose level of structure is more than 10.00 meters below the ground, pre-stressed structure, dams more than 10.00 meters in height, bridges on which at least one clearance between two successive columns is more than 8.00 meters, tunnels, public railways, motorways, fasts, main or regional highways, harbours, public airports, passenger cable cars or any other cable cars that pass over buildings, silos or reservoirs with a volume of more than 1,000 m3, power facilities with a thermal rating of more than 10 MW or electric power ratings of more than 5 MW, electric transmission lines with a voltage of 110 kV or more and the appurtenant transformer stations, long-distance water pipelines, wastewater collectors, solid waste dumps for two or more municipalities, any hazardous waste dumps, gas or oil distribution pipelines, or any other works that are more than 18.00 meters in height.

Plain (less complex) works are buildings whose total volume does not exceed 5.000 m3 and that are no more than 10 meters in height, measured from the ground to the eaves, or any civil engineering works not classified as complex works;

Simple works are less demanding works in terms of structure that do not require any special static analysis or technical verification, is not intended for residence and are not works with environmental impact; simple works are classified as auxiliary works, temporary works, practice works, memorials and urban equipment;

Auxiliary works are works for the user's own needs that serve to improve the living conditions or agricultural or amateur activities of individuals and their families, a fence that restricts access by third parties to yards, gardens or other land, an auxiliary infrastructure works that form part of public infrastructure works, including toll stations, or part of any other public infrastructure works or network in public use, a connection to

such infrastructure works or such a network, or an auxiliary agricultural/forestry works used in agriculture, hunting, forestry or fishing.

Temporary works are simple prefabricated works made from light materials and are intended for seasonal tourism use, an event, temporary storage or a similar purpose and are erected solely for the duration of such tourism, such an event or such storage.

Practice works are simple works intended for sport and open-air recreation, such as football, volleyball, handball, tennis, golf, take-off areas for hang gliders and micro lights and other similar sports airfields, recreational riding, cycling, jogging and other similar sports grounds and recreational areas in the open air, or simple works intended for protection and rescue drills, military drills or similar purposes under the condition that such works do not alter the aquatic or relief features.

Memorials are simply structured statues, plaques or other monuments intended to mark a historical event, a cultural event or any other significant occurrence or for a public event.

Urban equipment comprises simple mobile works that assist in ensuring the intended use of public areas.

A built public asset is land intended for such general use as defined in terms of its purpose of use by law or regulations issued on the basis of law, and the works constructed thereon if intended for general use.

A built public asset of national importance is a built public asset belonging to the network of public infrastructure works of national importance and the public area thereon.

A built public asset of local importance is a built public asset belonging to the network of public infrastructure works of local importance, the public area thereon, and any works or parts of works intended for use by all under the same conditions, such as a highway, a street, an arcade or any other public transport area of local importance, a marketplace, a playground, a car park, a cemetery, a park, a green, sports grounds or a recreation area.

Building regulations are the technical regulations that define in detail the essential requirements for specific types of works, the conditions for design, the selected levels and classes for the construction products and materials that may be built in and the manner in which they are built in, the methods for execution of works, the method for determining if works comply with the prescribed essential requirements, and other conditions and rules to ensure the reliability of works throughout the working life of works.

The state of the art is the state that, at the given moment when the project documentation is being made or the works are being executed, represents the level of development attained in the technical capabilities of construction products, processes and services based on recognized scientific findings, techniques and experience in the field of construction, reasonable costs having been taken into consideration.

A technical guideline is a document that for the specific type of works sets out the most precise definition of the essential requirements, the conditions for design, the selected levels and classes for the construction products and materials that may be built in and the manner in which they are built in, and the methods for execution of works with the aim of ensuring the reliability of the works throughout their working life, and, if appropriate, the procedures according to which it can be determined whether such requirements have been fulfilled.

The participants in the construction are the investor, the designer, the contractor, the supervisor and the auditor.

The investor is a legal or natural person that commissions the execution works or executes the works by himself.

The project designer is a legal or natural person that provides project design services as a commercial activity.

The responsible project designer is the individual responsible to the designer for the compliance of the design with spatial planning acts, building regulations and the conditions of the relevant approving authorities.

The responsible design manager is the individual responsible to the designer for the mutual compliance of all the designs that make up the project documentation and for the quality of the processing of the entire project.

The contractor is a legal or natural person that provides services in the execution of preparatory works on the construction site, in the execution of works, in the assembly and building-in of machinery and electrical installations and in the execution of finalization of works, as a commercial activity.

The auditor is a legal entity or natural person that provides services of auditing project documentation as a commercial activity.

The responsible auditor is the individual responsible to the auditor for ensuring that the plans audited thereby are in accordance with building regulations and that the works will fulfil the prescribed essential requirements.

Designing means the making of project and technical documentation and the technical advising connected thereto, and is divided in terms of the type of designs that make up such documentation into architectural and landscape architectural project design, construction project design and other project design.

Terms of reference (the project assignment) is a systematically ordered documentation which comprises the textual and graphical material and other necessary texts in the form of guidelines for how the project designer should formulate the project documentation.

The project documentation is a systematic composition of plans and/or technical descriptions and reports, calculations, drawings and other appendices setting out the urban, functional, formal and technical properties of the intended construction and the scope of the first design , the project for acquiring the building permit, the project for the tender and the project for execution.

The technical documentation is a systematic composition of documents, pictures and drawings, plans, texts and other elements such as guarantees, certificates, confirmations, lists, schemes and instructions that set out the rules for using or operating and maintaining the works and the scope of the project of the executed works, the project for the operation and maintenance of the works and the project for entry in official records.

An audit of the project documentation comprises control of the faultlessness and mathematical soundness of those elements of the project for acquiring the building permit that serve to demonstrate that the works will fulfil the prescribed essential requirements, that it will be in accordance with the spatial planning documents and the building regulations, and that it will be functional and of appropriate form and its use effective, safe and cost-efficient.

Technical advising is consultation and representation of the investor related to construction.

The approving authority is the national body, local authority body or holder of a public authority that is defined by law or regulations issued on the basis of law as a competent body for issuing the conditions for designing and approvals for the construction.

The conditions for designing are the conditions for designing that are stipulated by the relevant approving authority in accordance with the conditions specified in the spatial planning documents and in accordance with the approving authority's powers and responsibilities as defined by law or regulations on the basis of spatial planning documents.

Approval is confirmation from the relevant approving authority that the project documentation has been designed in accordance with the conditions for designing

stipulated by the approving authority.

Influence area is the three-dimensional space around, above and below planned works in which the permissible emission of substances or energy from the works into the environment and other impacts on the environs from the works are envisaged, the building regulations and conditions for construction being applied.

The building permit is an administrative decision by which the relevant administrative body allows such execution of works and prescribes the specific conditions that must be observed during execution of works, after having found that the intended construction is in accordance with the spatial planning document, that the works will fulfil the essential requirements and that the intended execution of works will not prejudice the rights of third parties or the public good..

Proof of the right to build is evidence of title, another material right or any other right on the basis of which the investor may carry out construction on a particular piece of land or a particular works.

A building plot is land consisting of one or more parcels of land or parts thereof on which a works stands or is envisaged and on which areas that serve such a works are located or envisaged.

A municipal utility connection is a work's connection to those works of public infraworks and networks thereof without which the works cannot serve its purpose.

The marking-out of a works is the transfer of the floor plan of the perimeter of the planned works to the ground inside the building plot, or the transfer of the axes of the line of longitudinal works of public infraworks.

The construction of a new works is the execution of works by which a new works is constructed or a works is completed or upgraded and owing to which its external appearance is significantly altered.

The reconstruction of works is an alteration of the technical properties of an existing works and adaptation of the works to a change in the intended purpose of use or a change in needs, or the execution of works by which there is no significant change in the size, external appearance or intended purpose of use but there is a change in construction elements or capacity and by which other improvements therein are carried out.

Replacement construction is the execution of works when a new works is constructed on the site of a previously removed works or within the immediate vicinity thereof, within the building plot, by which there is no change in the intended purpose of use, exterior, size and environmental impact of the previous works that is removed before the use of the replacement works commences.

The removal of works is the execution of works by which a works is removed, demolished or deconstructed and the previous situation restored.

Self-managed construction means that the investor as a natural person alone, with the help of family members or with the help of neighbours or a society with the help of its members constructs a works needed for his own purposes of residence or for the performance of society activities.

A change in the intended purpose of use is the execution of works that do not entail construction and by which the external appearance of a works is not altered, but that do entail a change in the use of the works or a part thereof such that its impact on the environs consequently increases.

A change in use is the execution of works that entail a change in the intended purpose of use but owing to which there is no alteration in the size or external appearance of the works and no increase in its impact on the environs, or a change in the intended purpose of use when the performance of activities in commercial premises is replaced with other similar activities.

The maintenance of works is the execution of works by which the works is kept in a sound state and the use thereof is facilitated, and includes regular maintenance works, investment maintenance works and maintenance works of public benefit.

Regular maintenance works entail the execution of minor repairs and works on a works or in premises located in a works, such as repainting, door repair, window repair, floor replacement, or replacement of fittings with fittings of equal dimensions, by which the capacity of installations, equipment and technological appliances is not altered, there is no encroachment on the construction of the works and there is no alteration in the capacity, size, intended purpose of use or external appearance of the works.

Investment maintenance works entail the execution of repairs, construction works, installation works, artisan works and improvements that follow the progress of techniques and by which there is no encroachment upon the construction of the works, by which there is no alteration in the capacity, size, intended purpose of use or external appearance of the works and by which the installations, fittings, technological appliances and equipment are modernized or other improvements therein are carried out.

Maintenance works of public benefit entail the execution of maintenance works and other works for which it is stipulated by a separate act of law or regulations issued on the basis of a separate act of law that the capacity of the works and in this connection the size of the works may be altered for the purpose of ensuring the provision of a specific type of public service.

A permit of use is a ruling by which the administrative body that issued the building permit for the construction, on the basis of a technical inspection conducted in advance, allows the use of the works to commence.

A technical inspection is an inspection of the constructed or reconstructed works by which it is determined whether the works has been constructed or reconstructed in accordance with the building permit and whether it will fulfil the prescribed essential requirements.

Proof of the reliability of the works is an appended declaration that demonstrates that the works as a whole will fulfil the prescribed essential requirements during use and maintenance.

1.3 Used Abbreviations

EU	European Union
€	Euro – the European currency
RD	Road database – information system
NV-PDb	Investment purpose database
P-ID	Project identification
IDIP	Investment project identification document
INVP	Investment programme
PIS	Preliminary investment study
PIIS	Planned investment implementation study
IIR	Investment implementation report
RMII	Report on monitoring impacts of the investment project
NSDS	National Spatial Development Strategy
NSO	National Spatial Order
DPNI	Detailed Plan of National Importance
NDP	Long-term National Development Programme
LTNRDP	Long-term National Roads Development Programme
DPP	Development Programmes Plan
MSI	modified Swiss carriageway damage index

IRI	Carriageway damage index
SWOT	Analysis: strengths, weaknesses, opportunities and threats
SMART	Approach: Specific, Measurable, Achievable, Realistic and Time bound
AADT	Average annual daily traffic
CoD	Concept design
DP	Design project
CPP	Construction permit project (MP – main project)
PFT	Project for the tender
WEP	Works execution project (IP – implementation project)
ZGO	Building Act
DOF	Digital orthophotography

1.4 LEGAL BASIS

- The Roads Act (Official Journal of the Federation of BiH, no. 6/02) /Zakon o cestama (Službene novine Federacije BiH", broj 6/02)/
- The Public Roads Act (Official Journal of the RS, no. 3/04) /Zakon o javnim putovima ("Službeni glasnik RS", broj 3/04)/
- The Bases for Traffic Safety Act (Official Journal of the SFRY no. 21/91) /Zakon o osnovama bezbednosti saobraćaja (Sl.l. SFRJ 21/91)/
- The Bases for Road Traffic Safety in BiH Act (draft, Sarajevo, June 2004) /Zakon o osnovama sigurnosti prometa na cestama u BiH (Nacrt, Sarajevo, jun 2004)/
- The Spatial Planning Act (Official Journal of the Federation of BiH, no. 52/04) /Zakon o prostornom uređenju (Službene novine FBiH", broj 52/04)/
- The Building Act (Official Journal of the Federation of BiH, no. 55/02) /Zakon o gradnji (građenju), (Službene novine Federacije BiH", broj 55/02)/
- The Spatial Planning Act (Official Journal of the RS, no. 84/02) /Zakon o uređenju prostora (Sl. glasnik RS, broj 84/02)/
- The Territorial Organisation and Local Self-Government Act (Official Journal nos. 11/94, 6/95, 26/95, 15/96, 17/96 in 19/96) /Zakon o teritorijalnoj organizaciji i lokalnoj samoupravi (Sl. glasnik 11/94, 6/95, 26/95, 15/96, 17/96 in 19/96)/
- The Federal Units (Cantons) Act (Official Journal of the Federation of BiH, no. 3/96) /Zakon o federalnim jedinicama (kantonima – županijama) (Sl. novine FBiH 3/96)/
- The Establishing of New Municipalities in the Federation of BiH Act (Official Journal of the Federation of BiH, no. 6/98) /Zakon o konstituiranju novih općina u FbiH (Sl.l. FbiH 6/98)/
- The Determining of Urban Areas and Changes of Names of Urban Areas in Certain Municipalities Act (Official Journal of the SRBiH nos. 24/86, 33/90, 32/91 and the Federation of BiH no. 14/04) /Zakon o utvrđivanju naseljenih mjesta i o izmjenama u nazivima naseljenih mjesta u određenim općinama ("Službeni list SRBiH 24/86, 33/90, 32/91 i FBiH" br.14/04)/
- The Protection of Assets Proclaimed National Monuments by Decisions of the National Monument Protection Committee Act (Official Journal of the Federation of BiH, no. 27/02) /Zakon o zaštiti dobara koja su odlukama Komisije za zaštitu nacionalnih spomenika proglašena nacionalnim spomenicima BiH ("Službeni list FBiH" br. 27/02)/
- The Protection of the Environment Act (Official Journal of the Federation of BiH, no. 33/03) /Zakon o zaštiti okoliša, (Sl. novine FBiH 33/03)/
- The Protection of the Environment Act (Official Journal of the RS, no. 53/02) /Zakon o zaštiti životne sredine (Sl. glasnik RS, broj 53/02)/
- The Nature Protection Act (Official Journal of the Federation of BiH, no. 33/03), (Official Journal of the RS, no. 50/02) /Zakon o zaštiti prirode, (Sl. novine FBiH 33/03), (Sl. glasnik RS, broj 50/02)/
- The Air Protection Act (Official Journal of the Federation of BiH, no. 33/03), the Air Protection Act (Official Journal of the RS, no. 53/02) /Zakon o zaštiti zraka, (Sl. novine FBiH 33/03), Zakon o zaštiti vazduha (Sl. glasnik RS, broj 53/02)/

- The Water Protection Act (Official Journal of the Federation of BiH, no. 33/03), (Official Journal of the RS, nos. 53/02, 54/94) /Zakon o zaštiti voda, (Sl. novine FBiH 33/03), (Sl. glasnik RS, broj 53/02, 54/94)/
- The Waste Management Act (Official Journal of the Federation of BiH, no. 33/03) /Zakon o upravljanju otpadom, (Sl. novine FBiH 33/03)/
- The Budgets in the Federation of BiH Act (Official Journal, no. 20/98) /Zakon o proračunima-budžetima u FBiH (Sl. novine 20/98)/
- The Treasury of the Federation of BiH Act (Official Journal, no. 19/03) /Zakon o trezoru FBiH (Sl. novine 19/03)/
- The Decree on Work of the Treasury, the General Ledger System of the Treasury and the Management Methods for the Single Account of the Treasury and General Provisions (Official Journal of the Federation of BiH, nos. 23/00, 37/01) /Uredba o radu riznice (trezora), sistemu glavne knjige riznice (trezora) i načinu vođenja jedinstvenog računa riznice (trezora) i opće odredbe (Sl. novine FBiH 23/00, 37/01)/
- The Rules on Drafting, Preparing and Adopting of Plans by Using Summary Procedure (Official Journal of the RS no. 8/97-255) /Pravilnik o pripremi, izradi i donošenju planova po skraćenom postupku (Sl.gl. RS 8/97-255)/
- The Rules on Contents of Plans (Official Journal of the RS no. 7/03-9) /Pravilnik o sadržaju planova (Sl.gl. RS 7/03-9)/
- The Decision on Drafting and Preparing of Spatial Planning and Technical Documentation, Rehabilitation, Reconstruction and Building of Structures (Official Journal of the RS no. 49/01-994) /Odluka o pripremi i izradi prostorno-planske i tehničke dokumentacije, sanaciji, obnovi i izgradnji objekata (Sl.gl. RS 49/01-994)/
- The Land Register in the Republic of Srpska Act (Official Journal of the RS no. 67/03) /Zakon o zemljišnim knjigama R Srpske (Sl.l. RS 67/03)/
- The Archive Documentation in the Federation of BiH Act (Official Journal of the Federation of BiH no. 45/02) /Zakon o arhivskoj građi FBiH ("Službeni list FBiH" br.45/02)/
- The Decree on Organisation and Implementation Methods for Archiving in Administrative Bodies and the Civil Service (Official Journal of the Federation of BiH no. 22/03) /Uredba o organiziranju i načinu vršenja arhivskih poslova u organima uprave i službama za upravu ("Službeni list FBiH" br.22/03)/

The following documents are in the process of preparation in the Republic of Srpska:

- Preparing of the National Environmental Action Plan (NEAP) /Izrada Nacionalnog akcionog plana o zaštiti životne sredine RS (NEAP)/
- The Stability Pact and the Adriatic-Ionian Initiative
- Preliminary work for the preparation of the new Spatial Planning Act /Pripreme za izradu novog Zakona o prostornom planiranju/
- Final preparation of the Spatial Plan of the Republic of Srpska for the 1996-2015 Period /Dovršenje prostornog plana Republike Srpske za period 1996-2015.god./
- Activities related to harmonisation of spatial planning documents and legislation with the neighbouring countries and the EU /Aktivnosti na usuglašavanju prostorno-planske dokumentacije i zakonske regulative sa bližim okruženjem i EU/
- Preliminary work for the preparation of the spatial information basis /Pripreme za izradu informacione osnove o prostoru/
- Economic Policy for 2004 (the Government of the Republic of Srpska, January 2004) /Ekonomska politika za godinu 2004 (Vlada R Srpske, januar 2004)/
- Public Investment Programme 2004 – 2006 (the Development Co-ordination Unit of the Republic of Srpska, United Nations Development Programme) /Program javnih ulaganja 2004 – 2006 (Jedinica za koordinaciju razvoja Republike Srpske, Razvojni program UN)/
- The Spatial Plan of Bosnia and Herzegovina for the 1981 – 2000 Per. (consolidated text) 15/89-389 /Prostorni plan Bosne i Hercegovine za period od 1981. do 2000. g. (prečišćeni tekst) 15/89-389/
- The Study on the Transport Master Plan in BiH (Japan International Cooperation Agency – JICA, March 2001)

- Regional Balkans Infrastructure Study – Transport (EU, REBIStransport JV, July 2003)
- Monograph: "Roads, Railways, Airports « - Methodology of Road Designing, Authors: PhD, prof. Anđus and PhD, prof. Maetić, Faculty of Civil Engineering of the University in Belgrade, 1993.

1.4.1 CERTAIN PROVISIONS OF THE APPLICABLE LEGISLATION

The Spatial Planning Act (Official Journal of the RS, no. 19/96)

The Act prescribes a number of measures related to building processes, spatial and urban planning, urban, architectural and building design and constructing…

Article 5, Item 10 defines building as a process, which includes preparatory and construction work for building structures, reconstruction, expansion and superstructure of existing works, installation of equipment…
Item 16 – concept design
Item 17 – design project
Item 18 – main project
Item 19 – implementation project
Article 9 – reserved area for building
Article 21 – building of infrastructure systems, structures and installations
Article 26 – subdivision of building land
Article 33 – plans as referred to in the Act are as follows: the spatial plan of the Republic, area, municipality, urban plan, regulation plan, urban planning project
Article 69 – urban planning approval
Article 71 – contents of the urban planning approval
Article 75 – issued by the Ministry for M and R roads
Article 81 – technical documentation – the implementation project consisting of several projects
Article 82 – contents of the works execution project
Article 89 – building permit
Article 98 – building
Article 105 – permit of use
Article 106 – technical inspection
Article 132 – administrative supervision – the Ministry
Article 133 – inspection supervision
Article 154 – secondary legislation required pursuant to the Act:
- Contents of plans (Article 34)
- Contents, methods of preparation and control of technical documentation (Articles 82 and 87)
- Nostrification of technical documentation (Article 84)
- Taking professional examinations (Article 125)
- Legitimisation of the urban planning-building inspector
- Keeping inspection and construction logs (Article 101)
- Carrying out expert supervision during construction (Article 104)
- Carrying out technical inspection (Article 115)
- General rules of urban planning regulation and land subdivision
- Keeping and using data and documents (Article 130)
- Conditions for planning and designing structures for disabled persons
- Forms of administrative decisions
- Technical norms for foundations of structures
- Technical measures and conditions for performing research work
- Technological equipment and the required number of staff for obtaining a building permit

The Spatial Planning Act (Official Journal of the Federation of BiH, no. 52/04)

Spatial planning in the Federation of Bosnia and Herzegovina (hereinafter: the Federation), within the meaning specified herein, provides for planned management, use and protection of space.

Article 6 – the documents are as follows: spatial base, programme of measures, spatial plans (of the Federation, cantons, areas, several cantons, municipalities), urban plan, detailed plan (regulation plan, urban planning project), other documents

Article 23 – preparing the spatial planning document (type, borders, deadlines, responsible entities…)
Article 35 – building permit

Article 37 – urban planning approval
Article 58 – integrated spatial information system – records

Required secondary legislation:

- Decision on spatial plan implementation
- Decision on detailed plan adoption
- Decision on preparing or amending spatial planning document
- Decision on prohibiting of building
- Decision regarding registered legal entities authorised to prepare spatial planning documents
- Decision on appointing a committee or authorising an organisation for expert evaluation of the building arrangements

The Building Act (Official Journal of the Federation of BiH, no. 55/02)

The Act shall stipulate: preparing of technical documentation (hereinafter: designing), construction of structures, procedure for issuing building permits and permits of use, supervision, maintenance of structures and technical and other properties to be complied by the structures

Article 4 – technical properties for building (safety, stability, fire protection, noise protection…)

Article 15 – building products and equipment

Articles 17-21 – participants in building (investor, designer – registered, with a passed exam), contractor, building supervision

Article 22 – project auditor; The legal entity referred to in paragraph 1 hereunder shall appoint an authorised auditor, who shall be responsible for co-ordination of supervision of individual stages or parts of the main / implementation project. The authorised auditor referred to in paragraph 2 hereunder shall organise preparation of a summary report on supervision of the total project documentation on the basis of individual reports on supervision of individual stages or parts of the project, which shall be enclosed to the summary report. The authorised auditor shall supervise the project for compliance with all conditions specified in Article 26 herein. All main and implementation projects of housing with more than two housing units, public buildings, service and business premises as well as any projects for which building permits are issued by the Ministry shall be subject to project auditing.

Article 24 – investment-technical documentation (main project, works execution project, marking and protection of the project, project supervision, project nostrification)

Article 29 – building permit (application, proof of the right to build, issuing procedure, duration, changes)
Article 48 – permit of use
Article 50 – technical inspection
Article 61 – use and maintenance

Required secondary legislation:

- Rules on conditions for unhindered access to functionally disabled persons
- Rules defining activities, which may endanger the environment, conditions, method and form for keeping construction logs and construction books on the construction site shall be prepared by the Ministry
- Technical inspection shall be regulated by the Ministry in specific rules
- Decision of the National Monument Protection Committee

2 ROAD PLANNING

2.1 ROAD PLANNING OBJECTIVES

When setting objectives, one should proceed from knowledge of the role played by the transport infrastructure and its condition and from the environment in question. The so-called SWOT analysis thus comprises the analysis of strengths and weaknesses of the infrastructure under management and opportunities and threats coming from the environment.

The use of SMART approach is recommended in setting of objectives:

- Specific – we must identify exactly the effects to be achieved by the project;
- Measurable – measuring of effects with regard to objectives;
- Achievable – achievability of measurements;
- Realistic – is the objective achievable; and
- Time bound – objectives must be met in a specific time period.

Road planning objectives must be in line with:

- The national Strategy of Economic Development;
- The national Spatial Development Strategy;
- The long-term National Development Plan; and
- The Long-Term Roads Development Programme.

Objectives are divided into:

Strategic objectives, enabling:

- Appropriate conditions of access with regard to geographical position and efficient and economic links in the entire national territory by taking into account demographically threatened, border and tourist areas;
- Cheap and quality transport;
- Traffic safety;
- Inclusion of the region in the international road network;
- Environmentally acceptable traffic loads.

Structural objectives, which are the following:

- Priority preservation of the existing road network;
- Increasing traffic safety, including the safety of population living alongside roads, reducing negative impacts on the environment;
- Improving driving conditions;
- Rational setting of measures in all planning stages, from planning to implementation; and
- Providing and increasing direct economic effects on transport.

Road management can also include objectives such as determining effects of road infrastructure investments, which may be:

- Direct and can be quantified; and
- Indirect, where only qualitative links between measures and effects can be determined and the quantification is limited.

The following must be assessed for every planned programme of road infrastructure work as well as for each project:

- Socio-economic necessity and eligibility;
- Importance of the road in space (which is already specified in the road

classification and must be envisaged in planning documents of the future new route);

- Contribution to economic cohesion; and
- Technical necessity.

Estimated investment costs and direct user benefits are taken into account in the assessment of socio-economic eligibility.

The road's classification points to the importance of the road and linking function.

Road infrastructure investments have in addition to direct user benefits also indirect socio-economic impacts. In other words: the AADT indicator is not necessarily their indicator. In developed areas, economic activity is reflected in the volume of traffic. In less developed areas, infrastructure must be built in order to achieve a certain level of economic activity and the beneficial effects are evident after a certain time period. These are areas (municipalities) with low purchasing power, areas with decrease of population, registered unemployment above the national average, proportion of farmers above the national average, developmentally impaired areas, border areas in 10-kilometre zone from the border and other areas with limiting factors. Road infrastructure investments in such areas are one of the factors enabling their economic cohesion with the rest of the country.

The assessment of economic impacts should be based on the primary objective of such investments, i.e. increase of traffic safety. After the implemented measures, the number and gravity of accidents usually decreases. Given the knowledge of average consequences of an accident and related costs, the estimated decrease can be translated into monetary value.

In order to determine impacts of implemented measures, we should define criteria, such as for example:

- For investments in traffic safety, efficiency is measured by decrease in number and consequences of accidents;
- For investments in increased capacity such as new construction, reconstruction, bypasses, modernisation, the measure can be saved time and consequent lower costs of users; and
- The measure for periodic maintenance of the existing network can be its value.

2.1.1 Supervision of Plan Implementation

Implementation indicators should be prepared for supervision of plan implementation.

We propose the system, which is methodologically derived from the EU document "Template for measure definition", which refers to the document "Vademecum for Structural Funds Plans and Programming Documents" setting minimal contents of indicators. Individual measures must have a planned method for measuring effects, presented as indicators: input, output, result and impact.

Input indicators are for example different sources: financial, human, technical, organisational.

Output indicators are for example: prepared and approved spatial planning, project and investment documentation, duration or number of prepared measures, all including specifying of reasons for deviations and proposals for their elimination.

Result indicators are for example: availability, shorter travel time, saved time in transport of goods and people, it is about achieving general and specific objectives (e.g. increased freight transport).

Impact indicators, which are usually long-term, are for example: induced traffic (increase volume of traffic due to improved conditions – increased speed, shorter travel time), changed noise levels, changed traffic safety, savings in maintenance costs.

2.2 BASES FOR ROAD PLANNING

2.2.1 NATIONAL STRATEGY DOCUMENTS

Road planning must be a part of wider transport planning, which must support national and regional objectives.

Road planning requires a number of decisions taken on various levels. Organisation of the planning process and sequence of steps can influence the quality of results. It is essential to make clear which public interest objectives are and to provide reliable technical data which can be counted on in the decision-making process. The wider social environment naturally has an impact on decisions, however suitable information provide much better understanding of additional costs and advantages, which such socially acceptable solution would bring in comparison to a purely technical one.

2.2.2 Long-Term National Development Programme (NDP)

The long-term National Development Programme should include at least 20-year period. It should be regularly updated and adjusted to any needs for amendments.

The NDP is divided into several chapters. The introduction presents the structure, contents and procedures for preparing strategic documents at the national level, notably the National Strategy of Economic Development.

The second chapter presents the macroeconomic environment, condition of socio-economic reforms and international position of the country. It specifically discusses economic relations with neighbouring countries. The situation and problems related to regional development provide the basis for analysis and preparation of activities, proposed in subsequent chapters of the National Development Plan.

Country analysis in the third chapter sets the basis for Strength, Weaknesses, Opportunities and Threats analysis (hereinafter: SWOT analysis) of the national economy and target development scenario for the next planning period.

Fourth chapter is the central part of the National Development Plan. It deals with the analysis of individual development priority tasks and development goals. A SWOT analysis is provided for each development priority task. Specific goals by programme and sub-programme are defined for each development priority task. Each development priority task consists of several programmes and each programme has several sub-programmes. Financial tables for individual development priority tasks are also prepared.

Fifth chapter summarises the institutional organisation for management, administration and supervision of assistance from the EU and others. This chapter presents contents of the required EU technical assistance in implementation of the NDP, a special subchapter is also devoted to financial aid.

Tracking the supplementation principle of funds and financial tables are presented in the sixth chapter.

The document concludes with two sets of appendices. The first set of appendices is divided in three parts:

- Appendix one presents financial tables for the target development scenario by individual year and period;
- Appendix two presents the process of document preparation, informing and consulting and inclusion of the general public;
- Appendix three gives development goals indicators and their measurement.

The second set of appendices consists of graphic attachments.

Constituent parts of the National Development Plan are also Ex-Ante Evaluation and Strategic Assessment of Impact of the NDP to the Environment and Health, which are given separately from the NDP text itself.

The transport sector as a whole, and roads and traffic in particular, usually forms a standalone chapter in the national NRP.

2.2.3 Documents Based on Spatial Legislation

Road planning is taking place in the area covered by spatial planning legislation, where the following terms are used:

- Spatial arrangements are set out and planned by spatial planning documents.
- Spatial planning documents are national, municipal, and joint spatial planning documents.
- National spatial planning documents are the National Spatial Development Strategy, the Spatial Order and the Detailed Plans of National Importance.
- Municipal spatial planning documents are the Municipal Spatial Development Strategy with the Conception of Urban Development and the Conception of Landscape Development and Protection, the Municipal Spatial Order and the Local Detailed Plans.
- The spatial arrangements of common significance are planned jointly. The joint spatial planning document is the Regional Conception of Spatial Development.
- Two or more municipalities may agree on a joint preparation of spatial planning documents.

Below is the description of certain documents providing the basis for road planning and at the same being strategic documents either related to the national level, the area of transport or roads in particular.

2.2.3.1 National Spatial Development Strategy (NSDS)

The Spatial Development Strategy is based on documents such as the "Assessment of Situation and Trends in the Area" and the "Spatial Planning policy".

The Spatial Development Strategy takes into account and supplements all previously applicable spatial planning elements of the long-term plan for the 1981 – 2000 period and spatial planning elements of the medium-term national plan for the 1990-2000 period.

The Spatial Development Strategy takes into account social, economic and environmental factors of spatial development. Spatial development is influenced by changes in socio-economic and legal situation and related national development objectives, accelerated development of market economy, changed geopolitical situation and newly established international relations, process of globalisation and process of accession to the European Union and transition to the information society. Important role is played by process of regionalization and increasing role of the regional level, increased importance of spatial relations as location factors, demographic trends, migrations and changes in economic and social structure of the population, changing values and lifestyles, increased mobility of companies and capital, greater role of foreign capital, harmonisation with the European standards and norms and penetration of new information-communication technology.

The Spatial Development Strategy takes into account the need for providing and protecting quality of the environment. Preservation of nature, cultural heritage and spatial identity and protection and improved quality of living and working environments are the basic development imperatives, included by the Spatial Development Strategy as a constituent part of managing spatial development.

The Spatial Development Strategy notably includes and takes into account guidelines for sustainable spatial development as specified in the European Spatial Development Perspective - ESDP (European Commission, Potsdam 1999) and Guiding Principles for Sustainable Spatial Development of the European Continent (Conference Europeenne des Ministres Responsables de l'Amenagement du Territoire, Hannover 2000), adopted by the

Council of Ministers of the Council of Europe in Strasbourg in 2002 as Recommendation (2002)1 on basic principles of spatial development of the European continent.

The Spatial Development Strategy takes into account the following European guidelines for sustainable spatial development:

- Development of balanced and polycentric system of towns and establishing a new relationship between urban and rural areas.
- Providing equal access to infrastructure and knowledge and sustainable spatial development by preserving nature and prudent management and preservation of cultural heritage.

In accordance with international guidelines (Agenda 21, Rio De Janeiro, 1992, Agenda Habitat Istanbul, 1996, Guiding principles for Sustainable Spatial Development of the European Continent, Hannover, 2000, European Spatial Development Perspective, Potsdam 1999) and national development documents, the principle of sustainable development is the basis and guiding principle of spatial development. Sustainable development enables satisfying the needs of present generations and takes into accounts the possibility for satisfying needs of future generations. It is based on equal handling and harmonising of social, economic and environmental interests with the aim of strengthening sources of welfare and enhancing development factors where space and spatial development are crucial.

Sustainable spatial development is the basis of the Spatial Development Strategy. It means ensuring of such land use and spatial arrangements, that enables the fulfilment of the needs of the current generation without endangering the needs of future generations, while protecting the environment, conserving nature, ensuring the sustainable use of natural assets, protecting cultural heritage, and other qualities of the natural and living environment;

The objective of encouraging and managing spatial development is to achieve progress, well-being of the society and freedom of the individual. In accordance with the above and the sustainable spatial development principle, the Spatial Development Strategy establishes efficient use of space and safety of life and assets. The aim is to preserve features of space and strengthen national identity and local/regional identities, which in conditions of European competition offers comparative advantages while at the same time enhances quality of life of the people.

2.2.3.2 National Spatial Order (NSO)

The National Spatial Order lays down the basic rules for spatial planning and management at the national, regional, and local levels in accordance with the Spatial Development Strategy.

The National Spatial Order may also lay down more detailed spatial planning and management rules for the entire territory of the Entity or its individual regions, ensuring a uniform implementation appropriate legislation, and creating requirements in connection with spatial planning, as well as with architectural and landscape design with regard to the features and characteristics of individual regions of the country.

In the detailed rules, the Spatial Order may also lay down the criteria and conditions for planning and construction of facilities and structures pertaining to the spatial arrangements of national significance.

As a rule, the Spatial Order is adopted by the Government.

2.2.4 Documents of Transport Sector

2.2.4.1 Analysis of Development Opportunities Regarding Transport Infrastructure in Space

The analysis of development opportunities regarding transport infrastructure is prepared as an expert base for preparing of the National Spatial Plan.

It includes all transport subsystems – road, railway, air and sea with particular emphasis on public transport of passengers and lately also on development of logistics centres.

The analysis must include the following:

- Analysis of implementation of the existing plan;
- Analysis of the situation and trends regarding space;
- Analysis of development opportunities and needs of transport subsystems with regard to development of activities in space;
- Projected increase of transport requirements.

The result may be several scenarios, which all include the following guidelines:

- Establishing of quality, comprehensive and integrated transport system, which ensures the required mobility of the entire population;
- Providing for proportionate loading of all elements of the transport system, which at the same time enables its optimal utilisation at given capacity;
- Establishing a network of logistics and distribution centres and adopting transport policy measures supporting combined transport, which has a positive impact on proportionate loading and business competitiveness.

The obtained result represents the concept / design of the long-term national transport infrastructure development and forms the basis for preparing the document called Transport Policy. It is a basic document adopted by the Government or even the parliament.

2.2.4.2 Long-Term Roads Development Programme (LTRDP)

On the basis of aforementioned documents and/or for the purpose of their preparation, the Long-Term Road Infrastructure Development Programme (older term also "national programme") is prepared.

The Long-Term Roads Development Programme should present the following:

1. Strategic goals of the programme for managing, maintenance and development of national roads;
2. Objectives of individual programmes and projects;
3. Compliance of objectives with national development priorities;
4. Physical and financial indicators required for monitoring the implementation of the Long-Term Roads Development Programme;
5. Detailed breakdown of institutional framework and organisation of the programme implementation, evaluation and supervision;
6. Activities for implementing the principle of partnership with local communities and institutions of civil society in preparation and implementation procedures;
7. Legal and other bases taken into account in preparation of the Long-Term Roads Development Programme;
8. Compliance of the indicative financial plan with the presentation of overall costs and sources of finance (entity budget, donations, budgets of local communities, private funding, etc.);
9. Projection of effects of implementation of the Long-Term Roads Development Programme to economy and welfare, protection of the environment, regional development and spatial planning.

Strategic goals related to development and maintenance of Entity roads must be in line with the national Strategy of Economic Development and the long-term National Development Programme. Measures should be primarily aimed at preventing dilapidation of road infrastructure, improving traffic safety and providing access.

Key investment tasks in the area of national road infrastructure should thus be aimed at the following programmes or sets of measures (the specified order takes into account efficiency and urgency of measures):

- Road surface recoating programme (usually the most pressing problem regarding the condition of roads);
- Measures for providing (improving) traffic safety;
- Rehabilitation of landslides, slopes and road surroundings;
- Measures on structures (bridging structures and support and stay structures);
- Regulation of Entity roads through populated areas;
- Modernising macadam roads;
- Railway crossings;
- Construction of new roads and structures;
- Reconstruction of roads and structures;
- Bypasses;
- Protection of the environment from traffic impacts.

All programmes defined in this manner should be assessed and priorities set. The aim of such assessment is to determine the combination of projects giving optimal results with regard to limited finance. Multiple variants of moving funding between groups of projects should be studied. Setting priorities of projects, programme development and assessment must be simultaneous as this is the only way for obtaining the most appropriate mixture of projects.

The long-term development programme should be regularly updated at least every five years so that changed situation and needs can be taken into account.

An analogous process applies to municipal public roads.

2.2.4.3 Project Identification

The Roads Directorate should prepare the **road condition analysis**, which it uses to determine where and what measures should be taken to provide satisfaction to users.

The road and road structures analysis should at least contain data on the following deficiencies of roads and road structures, which must be defined accurately with regard to the section and position:

- Carriageway damage index (MSI or IRI);
- "Black" sector, crossroads, point;
- Macadam carriageway;
- Landslide;
- Landslide on a slope;
- Landslip;
- Damaged or in any other way inappropriate bridging structure;
- Damaged stay or support structure;
- Inadequate technical elements of the road (horizontal and vertical course and narrowing);
- Level railway crossings;
- Exceeded road capacity;
- Demands of the local community specified in the special project identification (P-ID) form.

The collected data enable determining the possible measure(s) on a particular section (measures may also be in stages – temporary measures, permanent measures). Once

measures are financially evaluated, such data set can be used to plan priorities and prepare plans.

Such analysis is also input data for the Long-Term Roads Development Programme as well as the medium-term plan or the development programmes plan.

Users must also be included in the process of road infrastructure management. Therefore the road management entity must use various procedures to encourage local communities and individuals to give their opinion on the road infrastructure conditions and suggest improvements.

Such initiatives may help the road management entity to additionally identify the situation, notably in cases when the local community plans to work on the utility infrastructure or road route through populated area and measures could be implemented simultaneously.

We propose a form **(Annex 1)** for preparing the initiative (project identification), prepared by the Directorate itself or submitted by local authorities (municipalities) or other interested legal entities or natural persons in case of planning activities of importance to the local community where co-operation of the government is expected;

2.3 PREPARATION OF INVESTMENT PLAN

2.3.1 Investment Purpose Database (INV-PDb)

The investment purpose database includes basic data on possible measures (projects) as a consequence of condition of roads or initiatives from local communities.

The project code list including at least the following is established in the investment purpose database:

- Project code;
- Project title;
- Type of the measure (code list);
- Location (section, position, route);
- Short description of the planned investment;
- Identification date;
- Type of investment document (if any);
- Approval date of the investment document;
- Situation regarding spatial planning and project documentation;
- The investor's project manager;
- The engineering's project manager.

The project code uniformly identifies the project and is used until conclusion of all activities, i.e. until the fixed asset is entered in bookkeeping records and other official records of the Surveying and Mapping Authority of the Republic of Slovenia.

The investment purpose database is constantly supplemented with new projects as well as updated with finished projects. In Annex 2, there is an example of the contents in the MS ACCESS application presented.

2.3.2 Development Programmes Plan (DPP)

In the process of preparing the financial plan, management entities substantiate public needs and possibilities for achieving objectives of the national strategy in the areas of their underlying competence with tasks they must implement and objectives, which justify the required expenditure for implementation of these tasks. The above also applies to road management and maintenance.

The Development Programmes Plan (DPP) is a short-term – four-year – list of projects

(with descriptions), which presents the needs of the sector and is thus the functional / operational presentation of planned expenditure in the next four years.

It enables people deciding on allocation of funds by area an insight in effects of such allocation and helps them determine which projects should be made a priority within the limited financial sources.

The Development Programmes Plan includes a part of expenditure, related to the national development policy, which is in line with long-term development documents such as the Strategy of Economic Development and development programmes in individual areas.

The Development Programmes Plan is presented by individual programmes / areas of expenditure, main programmes, sub-programmes consisting of projects, i.e. investments and financial aid or combination of both and other development projects.

The Development Programmes Plan presents planned expenditure for investments, aid and other development projects with regard to roads for the next four years and is divided by:

- Individual programme. sub-programme and project of direct users;
- Year, in which expenditure for programmes and projects will be charged to financial plans for future years; and
- Source of financing for comprehensive implementation of programmes and projects.

The Development Programmes Plan is financially limited (i.e. has known sources) and is supplemented annually.

Decisions on including the projects and programmes in the Development Programmes Plan are taken on the basis of objective criteria, namely:

- Efficiency and economy of the investments determined by the Regulation on Unified Methodology,
- Conformity with the goals of the Strategy on Economic Development and national development priorities,
- Fulfilment of the criteria and conditions determined in advance for ranking the projects in an individual field (field methodologies).

It is appropriate to prepare a Development Programmes Plan also at other levels of road management (local communities). All such plans form the base for transport planning, transport policy and consequently development of roads.

Enclosed is an example of a project from database for the purpose of preparing the Development Programmes Plan.

In **Annex 2a**, there is a project registration form for the Development Programmes Plan.

2.4 ECONOMY OF THE PLANNED SOLUTION

The feasibility of a proposed investment into road infrastruture must be evaluated in order to find an optimal solution with regard to: the space (geographical, economic, cultural) of the investment, the traffic (both current and planned), investment and construction costs, and possibly other specific requirements (e.g. urgency of the work because of elementary emergency events or because of the poor condition of an existing structure). Besides, the feasibility evaluation of proposed investments is also required by the law and by various financial institutions that provide funding for the investment.

It's up to the investor to decide when to begin these procedures and what inputs to use. Since road infrastructure investments involve large amounts of money and funding often comes from budgets, loans, or concessions, evaluation of the proposed investments should begin at a very early stage.

For the purposes of long-term plans, analyses and strategic assessments may be

prepared based on the needs and on experience from previous projects.

For middle-term plans (refered to in these guidelines as Development Programme Plans), pre-investment bases should be prepared, including estimates of construction costs on the basis of variant studies of draft designs. These may also form the basis of the Investment Project Identification Document (being the first in a series of investment documents), which, once it is approved by the appropriate institution, also represents a commitment to actually proceed with the investment.

If more data is available, or if a limited number of variants are available, it is reasonable to prepare a comparative study of variants (or a feasibility study), which, however, requires a draft plan for each of the variants to ensure that they can be compared.

A comparative study of variants is also the professional basis for the preparation of a national location plan.

2.4.1 COMPARATIVE STUDY OF VARIANTS

2.4.1.1 Feasibility Study (Study of Corridors) – Comparative Study of Variants

The corridor feasibility study is a set of feasibility studies or comparative studies of variants for a particular wider long-distance traffic area. Such studies seek and assess alternative planning methods. It is always required to compare at least two variants: to do nothing (zero variant) and other possibilities / variants.

Corridors study may result from needs recognised in the long-term development programme or are used at the planning level for preparing the long-term development programme.

Individual design projects and further analysis are made for those alternatives, which are recognised as the best and included in the Long-Term Roads Development Programme. In this stage, different variants for design, routes and concepts are considered. The result is so-called placement of the route in space and adoption of the Detailed Plan of National Importance (DPNI).

Basic steps regarding preparation of the corridor feasibility study are as follows:

- Defining of the corridor to be analysed;
- Describing current situation (traffic system, traffic sources, population and economy growth);
- Specifying concrete problems to be dealt with and priority of their solving;
- Developing and assessing several variants (the project examination level must be the same for all variants thus making construction and other costs comparable and most of all adequately accurate);
- Examining this group of variants and excluding a smaller number and studying it in greater detail;
- Analysing and assessing this smaller group of variants;
- Comparing evaluation results;
- Deciding on a variant to be further processed.

Should no variant prove to be beneficial, we may choose to do nothing.

After the adoption of the Detailed Plan of National Importance and on the basis of its provisions, the building permit project and the works execution project are prepared.

2.4.1.2 Definition of Variants

The comparative study of variants is usually prepared for more complex constructions of roads and structures in the stage of preparation of the Detailed Plan of National Importance / placement of the route in space.

Variants are formed and assessed in several steps from the widest range, where the most appropriate corridor is determined, to a narrower still acceptable range, where all the remaining variants lie within the most appropriate narrower corridor. Basic limitations regarding the routes of variants are specified in the project task based on the spatial plan, the Long-Term Entity Roads Development Programme and other applicable, notably spatial planning and environmental, legislation, specifying that the following criteria must be taken into account in planning of variants:

- Traffic efficiency must be provided;
- Conditions for keeping possibilities and encouraging regional and urban development must be taken into account;
- Protection of human living environment and natural components of the environment;
- Economy; and
- Social acceptability.

The methodological Directive DOC EURET/385/94 (Directive DOC EURET/385/94: Commission of the European Communities, Directorate General for Transport: COST-BENEFIT AND MULTI-CRITERIA ANALYSIS FOR NEW ROAD CONSTRUCTION), which envisages assessment of economic and transport efficiency, safety and protection and improvement of the environment by four methods is also used for assessment of projects for new roads. These methods are as follows:

- Money "as payment" / price;
- Attributed financial value;
- Impacts, which are measured but not evaluated; and
- Impacts, which are only described (physically immeasurable impacts).

The purpose of the comparative study of variants is identification of impacts of a particular variant and assessment and comparison of variants whereby expert bases for substantiated decision-making process are formed.

All variants should thus be compared by taking into account the following aspects:

- Impacts on regional and urban development;
- Construction-technical aspect;
- Environmental impacts;
- Social acceptability;
- Transport economic aspect; and
- Management/maintenance aspect (for toll roads or structures) – the investment's financial flow.

The selection of the most favourable variant is decided by the Government on the proposal of the Minister of Spatial Planning and the Ministry of Transport, which is based on assessment of the greatest public good.

2.4.1.3 Assessment of Variants

Assessment of variants is performed by using the following scale:

- Very high level of adequacy – *The variant is highly appropriate*

  The local community fully and without any objections supports the variant, no impacts on the environment;

- High level of adequacy – *the variant is more appropriate*

  The local community supports the variant, however it has some objections regarding minor changes of the route, impacts on the environment are

small, mitigating measures have been implemented;

- Medium level of adequacy – *the variant is appropriate*

  The local community supports the variant, however it has objections significantly altering the proposed route, impacts on the environment are moderate, mitigating measures have been implemented;

- Low level of adequacy – *the variant is less appropriate*

  The local community only conditionally supports the variant with demands for large-scale changes, impacts on the environment are large and very large, mitigating measures may be implemented;

- The route is inadequate – *the variant is inappropriate*

  The local community submits no opinion regarding the variant or rejects it, impacts on the environment are very large, no mitigating measures can be implemented;

2.4.2 IMPACTS ON REGIONAL AND URBAN DEVELOPMENT

This chapter requires specific description of possible long-term impacts of variants with regard to the following:

- Structure of towns/villages in the area (physical structure of settlement and morphological sample);
- Urban planning design of towns/villages, development of activities;
- Functional areas and links (linking of the new road to the existing network);
- Linking of towns/villages – existing communications, conditions during construction and long-term use of diversions;
- Tourism; and
- Accompanying arrangements (spatial and programme integration in space, promotion of the area and country, economic use of space, taking into account interests of the local community).

Assessment shall be made in form of a description with regard to fulfilling particular functions from the point of view of improving the situation with assessments on adequacy of the variant and as overall assessment of impacts on regional and urban development.

2.4.3 ENVIRONMENTAL PROTECTION ASPECT

Comparison of variants with regard to impact on the environment is limited to issues where given the knowledge of situation in the area and characteristics of discussed variants, differences regarding impacts can be expected: These are:

- Terrain
- Hydrogeological situation;
- Surface waters;
- Biotopes and wild animals;
- Natural worth;
- Cultural heritage;
- Landscape characteristics;
- Noise;
- Farming potentials; and
- Forestry potentials.

RELIEF

Essential for the impact assessment regarding terrain are foremost earthworks (cuts and embankments, flooding plains, erosion hotspots) and regulation of watercourses. Areas of increased vulnerability include:

- Areas with steep inclinations (15-30% inclination) – possible erosion;
- Areas of quality terrain (natural beds of watercourses, sinkholes, dry river branches, farming terraces); and
- Plains near watercourses.

HYDROGEOLOGICAL CONDITIONS

Comparison of variants is made on the basis of conducted hydrogeological research or studies. Vulnerability of water sources and consequent complexity of their protection is established. The following is taken into account in assessment and classification of variants with regard to measures for protecting body of the road:

- Draining of background and underground water;
- Rehabilitation of cavernous limestone areas; and
- Rehabilitation of sinkhole areas.

Individual variants are classified by sensitivity as the basis for planning protection measures; individual categories of sensitivity are added together by length and are also represented in proportions.

The problem with comparison of variants is usually variable level of data accuracy for individual variants.

Assessments are expressed with the following values:

Assessment	Proportion of length
Insensitive	up to 10%
Moderately to little sensitive	10 – 20%
Moderately sensitive	20 – 25%
Sensitive to moderately sensitive	25 – 30%
Sensitive	30 - 50%
Very sensitive	more than 50%

SURFACE WATER

Surface water includes all forms of water environment where the water surface forms a visible surface. The waterside area includes all areas formed by water and on which water has prevailing influence (flooding areas, subsoil…). The following can be defined as areas of increased vulnerability of surface water:

- Natural beds of watercourses;
- Flooding areas;
- Forsaken riverbeds – meanders;
- Limestone sinkholes;
- Springs; and
- Flooding – sinkhole plains.

The assessment and classification of variants primarily takes into account the extent to which the planned road route affects individual elements of vulnerability of surface water:

- Length of natural riverbed lost;
- Length of required regulation;
- Surface of flooding areas;
- Number of sinkholes covered by the road and diversions;

- Number of springs;
- Surface of flooding – sinkhole plains;
- Complexity of draining of surface background water; and
- Complexity of draining of road water.

In individual variants, efforts can be made to manage the changed water regime and reduce negative impacts of the road to surface water.

BIOTOPES AND WILD ANIMALS

Assessment is made of the adequacy of variants with regard to their impact on biotopes – areas with increased level of conservation of nature and areas with migration corridors of wild animals, notably big game and amphibians. Comparison of variants is made on the basis of field research, use of orthophotography and prepared special studies. The criterion is the length of the road's route passing through vulnerable areas, both during construction and operation, as the road brings artificial barriers in space. Negative impacts during construction are the result of earthworks, noise of construction machinery, reshaping of the terrain, regulation of watercourses and leaking of harmful substances in water and underground, while the negative impacts during operation are closing of established moving paths of wild animals and separation of previously united ecosystems.

Starting points for the comparison are as follows:

- More adequate variant is that, which destroys less vulnerable biotopes and cuts off less migration routes;
- More adequate variant is that, which includes solutions for crossing the road's route; and
- The most adequate is the variant with the least tangencies.

NATURAL VALUABLENESS

Comparison of variants is performed on the basis of project solutions of variants and requirements specified in the Nature Protection Guidelines. The length of route passing through vulnerable areas is established, namely:

- Length of route passing through areas of natural heritage; and
- Length of route passing near areas of natural heritage.

Assessments are in form of a description, namely: appropriate, less appropriate, inappropriate.

CULTURAL HERITAGE

Comparison of variants is made on the basis of project solutions of variants by use of orthophotography, field research and prepared studies. The scope and value of individual affected structures and areas on the road's route are assessed. The following characteristics of individual variants must be taken into account:

- Length of the route passing through areas of cultural heritage, which will result in destruction thereof;
- Length of the route passing through areas of cultural heritage, which will result in damage and obstruction thereof; and
- Length of the route passing near and in visual sight of areas of cultural heritage.

Assessments are in form of a description, namely: appropriate, less appropriate, inappropriate.

LANDSCAPE PROPERTY

Spatial relations change by placement of a new road in space. It is particularly disturbing in areas, where landscape composition is characterised by small-scale elements.,

Comparison of variants is made on the basis of project solutions of variants by use of orthophotography, field research and prepared studies. Vulnerability of cultural landscape is defined on the basis of expected impacts of construction and operation of the road on landscape composition and notably on visible characteristics.

Vulnerability of visual landscape is defined by data on characteristics of landscape composition on which high quality of visual landscape (landscape variety, exceptional and characteristic landscape patterns) and landscape visibility (visual contact, permeability of landscape, distance of the most frequent points, visual shadowing) are based. The visual exposure relates towns/villages, tourist facilities, hiking and recreational destinations.

The following characteristics are taken into account in assessment of impact of individual variants on landscape quality:

- Quantity of waste material and required quantity of built-in material (excavations);
- Dimensions of planned embankments and cuts; and
- Length of planned anti-noise barriers, significant change of relations between landscape elements.

More adequate is a variant:

- With smaller proportion of excavations and waste material;
- With smaller dimensions of embankments and cuts;
- Which changes landscape relations to a lesser extent;
- Which causes less permanent changes in landscape; and
- With the route passing through less vulnerable areas.

Assessments are in form of a description, namely: appropriate, less appropriate, inappropriate.

NOISE

Comparison of variants is performed on the basis of project solutions of variants and noise impact studies for individual variants. The definition of vulnerability is based on data on settlement, assessment of impact and projection of road traffic noise, width of areas where noise levels would be exceeded and number of buildings with excessive levels of noise from the road.

Variants are assessed on the basis of comparison of the number of buildings with excessive noise levels and the required protection from excessive noise. The adequacy level for variants is defined by mutual comparison, i.e. the size level of each set of numeric data.

FARMING POTENTIALS

Comparison of variants is performed on the basis of project solutions of variants and data on classification of farmland to first-rate and other farmland specified in spatial plans. The proportion of farmland, which will be permanently unusable for farming purposes and the accompanying arrangements are of particular importance for the impact assessment. Indirect influences, which will result from traffic emissions and cause pollution of farmland, are also important.

The impact assessment takes into account the following:

- Length of the route of a variant passing on first-rate and other farmland; and
- The quantity of farmland to be permanently unusable for farming.

FORESTRY POTENTIALS

Comparison of variants is performed on the basis of project solutions of variants and data on forested areas specified in spatial plans. The proportion of forests, which will be

permanently unusable for farming purposes and the accompanying arrangements are of particular importance for the impact assessment. Indirect influences, which will result from traffic emissions and cause pollution of forest soil and vegetation are also important. This chapter foremost discusses the impact on wood producing function of forests, as other aspects are discussed in different chapters.

The wood producing function of forests means appropriateness and ability of forests to produce wood. The size of wood stock is taken into account as the area of increased vulnerability, namely:

- The area with large wood stock – above 300 m^3/ha – highly vulnerable area; and
- The area with less wood stock – up to 250 m^3/ha – vulnerable area.

The impact assessment takes into account the following:

- Length of the route of a variant passing through wood producing forests with large or less wood stock; and
- The quantity of forests to be permanently unusable for forestry.

OVERALL ASSESSMENT

The assessment of variants and their evaluation with regard to environmental impacts are defined on the basis of determining of vulnerability of individual elements of the environment, which were recorded on the basic 1:5000 scale topographic maps or aerial photographs (DOF) and are graphically presented on 1:25,000 scale maps. The areas of vulnerability of individual elements of the environment must be defined by assuming negative environmental impacts of construction and operation of individual variants. The adequacy level of a particular variant thus results from findings determining to what extent a variant passes through vulnerable areas and to what extent it touches such areas.

The assessment of adequacy of individual variants is prepared on the basis of level of expected impacts / negative changes in space:

- *No impact*:the intervention will cause indeterminably small impacts on the residential environment;
- *Small, negligible impact*: the intervention will cause noticeable changes, however the quality of the environment will not be significantly changed;
- *Moderate impact*: due to relatively small scale of disturbances in the environment, impacts are on a small scale;
- *Large impact*:: the intervention will have large environmental impacts, but is not destructive and is still within legal limits;
- *Very large, destructive impact*: the intervention destroys or intolerably changes the environment in the affected area along the route, property of the environment is significantly deteriorated, noise and/or air pollution exceed legally tolerated values…

Or in another way:

- Negligible impact: very adequate variant
- Small impact: adequate variant
- Moderate impact: less adequate variant
- Large impact: conditionally adequate variant
- Very large impact: inadequate variant

2.4.4 CONSTRUCTION-TECHNICAL ASPECT

Construction-technical indicators show the complexity of implementing a particular variant with the assumed construction deadline – technical feasibility assessment. Investment costs are also included. Comparison between variants is performed with regard to the following:

- Length of the route;
- Number and location of connections;
- Length of diversions;
- Length of larger structures;
- Level of earthworks;
- Geological situation;
- Hydrogeological conditions;
- Length of watercourses regulation;
- Required time for construction;
- Traffic during construction; and
- Investment costs.

Comparison of investment values is performed on the basis of measured or estimated quantities.

Assessments are in form of a description, namely: more appropriate, appropriate, less appropriate, inappropriate.

2.4.5 SOCIAL ACCEPTABILITY

The opportunities for participation of the general public are an important element of the planning process. Their purpose is to ensure that planners are familiar with views, concerns and values of all groups affected by transport projects and that these concerns have an impact on planning procedures.

Determining social acceptability of individual variants is the assessment of variants' adequacy with regard to their impacts in social environment. It includes wider and local communities, the selection is usually influenced by characteristics and response of the public.

1. Wider social acceptability

Wider social acceptability is expressed by adopting a national programme or other document at the national level, approved for example by the parliament. Final assessment of the wider social acceptability is formed at the time of facing with local interests in a concrete area and in harmonisation procedures.

2. Narrower social acceptability

Checking of the narrower social acceptability of the project takes place in legally prescribed public exhibitions, public discussions, spatial conferences, surveys…

It is appropriate that when preparing a spatial planning documentation, simultaneous co-operation with local communities is planned thus providing timely identification of interests regarding space in question and any conflicts between those interests. The public should become involved even before the beginning of planning of variants and should be included in all stages of preparation of spatial planning documentation up to and including the selection of the most appropriate variant.

2.4.6 TRANSPORT AND ECONOMIC COMPARISON

Many methods exist for evaluation of projects, including:

- Classification of projects in accordance with gravity of the problem or assessed benefits / impact of projects;
- Formal cost/benefit analysis or cost/performance analysis; and
- Optimisation methods, notably for maintenance of carriageways and structures.

In continuation we propose the use of cost/benefit analysis with regard to road users mainly as a very useful method for investment and replacement investment in road infrastructure.

Calculation of investment viability, presented in this chapter, is based on the differentiation method. Analysis of costs of road users is prepared in accordance with the "Navodila za izdelavo študij upravičenosti izgradnje ceste /*Instructions for Preparation of Feasibility Studies for Road Construction*/: Dorsch consult, Louis Berger Inc, Ljubljana, 1974« and the »Revised Guidelines for Highway Feasibility Studies – Slovenia, Dorsch consult, IJŠ, Omega consult d.o.o. and PNZ d.o.o., 1995"

Calculation of socio-economic viability of road infrastructure investments is based on cost/benefit analysis of road users. Value of the investment, condition of road sections before and after the investment, one-year investment and present and projected traffic loads are taken into account.

Calculation of economic viability from the point of view of benefits to road users takes into account benefits of users, which are determined as the difference between:

- Costs of users on the road section before the investment; and
- Costs of users on the road section after the investment.

The main purpose of economic evaluation is to provide forecasts for the following key economic parameters, which are required for preparation of the traffic projection:

- Vehicle registration;
- Production/consumption;
- Growth in economic activities;
- Tourism; and
- Fuel consumption.

It depends on the particular road in question to what extent should the feasibility study use principles and findings from development economics.

The chapter related to the transport part is one of the key chapters for preparation of the feasibility study. It is divided into four subchapters:

- Analysis of existing traffic;
- Traffic projections;
- Characteristics of traffic with regard to operating costs; and
- Induced traffic with regard to project evaluation.

The next chapter is calculation of investment costs, which is carried out on the basis of data from the construction-technical part of the feasibility study or from the project documentation, which must be accurate to the level enabling good estimate of investment costs.

As the purpose of the feasibility study is assessment of variant solutions regarding road routes and selection of a variant, data for all variants must have the same accuracy level.

The chapter on transport economics analyses the following:

- Operating costs of vehicles;
- Benefits for road traffic;
- Financial, economic and individually allocated costs;
- Reallocation of traffic between different means of transportation; and

- Summary of calculation of overall benefits.

2.4.6.1 Data for Economic Evaluation of the Project

The economic viability analysis for individual measures is made by using dynamic methods of economic evaluation, by taking into account discounted economic flow of benefits and rediscounted flow of costs in the same time cross-section.

Net present value and internal rate of return are calculated.

The sensitivity analysis is prepared by taking into account changes of costs and benefits in the range from –10% to +30%.

The required input data are as follows:

- Operating costs by vehicle type (at least 10 types of vehicles of different categories);
  - Consumption costs (fuel, lubricants, tyres, maintenance and repairs); and
  - Time-dependent costs (depreciation, interest, overheads and payments of the driver).
- Time saving of passengers is calculated from statistical data on the average wage in the country, time saving for a vehicle in one hour is calculated separately for business and consumer travel. Occupancy of individual vehicle types and evaluation in % is taken into account.
- Traffic data must be provided for four vehicle categories:
  - Local personal vehicles;
  - Foreign personal vehicles;
  - Buses; and
  - Freight vehicles.
- Data representing input data on technical elements of the road are as follows:
  1) Road section number;
  2) Road subsection number;
  3) Variant;
  4) Length of the subsection;
  5) Calculated speed;
  6) Permitted speed;
  7) Road type;
  8) Number of lanes;
  9) Width of lanes;
  10) Distance from hindrances;
  11) Type of overlay layer;
  12) Ascends and descends;
  13) Horizontal curvature of the route;
  14) Sight distance;
  15) Condition of the carriageway; and
  16) Number of limitations due to level railway crossings, narrow structures, etc.
- Total investment value by year in accordance with the planned dynamics of construction.

- The discount rate is prescribed by the government. In Slovenia, for example, the discount rate equals 8%, in other EU members (Great Britain, Germany, France) the discount rate used is significantly lower, between 3 and 5%. In Spain, 6% discount rate is used.
- The observed period of 20 years is used for calculation of transport-economic assessment for a particular investment. The same period is used in the project documentation, as road dimensions are designed for a 20-year period after opening the road for traffic.

  In countries of Western Europe (Great Britain, Germany) longer observed periods are used. Usually at least 30 years. The use of lower discount rates makes longer observed period reasonable.
- Increase factors (up to 1.2) and decrease factors (up to -0.9) of costs and benefits of an investment are used for calculation in the sensitivity analysis. By taking into account the given assumptions, various internal rates and net present values are calculated, indicating the sensitivity of an individual project.

2.4.6.2 Determining Investment Feasibility

The following basic results need to be calculated in order to determine the investment feasibility:

- Costs of users;
- Net present value;
- Internal rate of return; and
- Sensitivity analysis.

2.4.6.3 Costs of Users

Costs of users are calculated for the entire section length, all vehicle categories and for the whole observed period and are presented separately for each year. They are given in the local currency at a specific price level.

Costs of users are divided into certain cost categories and by vehicle type. Total costs of users i.e. summary of costs consist of the following:

- Operational costs;
- Additional costs;
- Overheads;
- Time costs;
- Maintenance costs; and
- Cost of accidents.

OPERATIONAL COSTS represent consumption of fuel, lubricants, oil and wearing of tyres. They depend on the type of vehicle and technical elements of the road. The base is the vehicle's speed of 80 km/h for cars and 72 km/h for lorries.

ADDITIONAL COSTS represent additional costs of consumed fuel and time due to jams resulting from narrowing of the carriageway, influence of crossroads, pedestrian crossings, railway crossings, etc.

OVERHEADS represent overheads of operating lorries and buses. They depend on the amount of overheads of a vehicle per kilometre and the average annual speed of vehicles in the same group (lorry or bus). Overheads also include maintenance and spare parts required for maintenance and repair of vehicles.

TIME COSTS represent the value of time consumed by a vehicle with regard to its occupancy and actual speed. Time costs also include depreciation and interest.

MAINTENANCE COSTS represent maintenance costs of the road network in question in

relation with traffic volume (AADT), road type (notably the width of the carriageway) and the condition of the carriageway.

COSTS OF ACCIDENTS represent total costs of accidents occurring on a particular road network, which is the subject of analysis. They depend on the road type (motorway, highway, main road, regional road) and the traffic volume (AADT). Factors, which represent accidents on a particular road at a particular traffic volume, are determined on the basis of these data. The software calculates the costs of traffic accidents for the road network in question on the basis of information on the cost of an accident.

COSTS BY VEHICLE TYPE are combined total costs by vehicle type, separately for domestic personal vehicles (VT1), foreign personal vehicles (VT2), buses (VT3) and freight vehicles(VT4).

2.4.6.4 Net Present Value

The net present value represents the balanced value of discounted values of user benefits in 20-year period and discounted investment costs. The larger the net present value, the more a particular investment is feasible.

Investment benefits represent the difference between costs regarding the network without the investment and the network including the investment in a certain observation period, 20-year period after a particular road is opened for traffic is usually used for new constructions.

2.4.6.5 Internal Rate of Remunerativeness

The internal rate of return represents the discounted rate at which the net present value of the investment equals zero. In the calculation of the net present value and the internal rate of return, it is appropriate to use the 8% discount rate, which must be prescribed by the government.

2.4.6.6 Sensitivity Analysis

The sensitivity analysis presents sensitivity of a particular project with regard to changes of investment costs and user benefits by, for example, +20% and –10% to the net present value and the internal rate of return (experience have shown that these parameters are suitable for projects related to road construction).

2.4.7 MANAGEMENT AND MAINTENANCE

The criterion related to management and maintenance of a motorway (financial flow of the investment) may be an additional criterion, when the discussed variants have routes, which have a significant impact on the maintenance costs, but foremost differences between variants regarding the projected amount of collected tolls are essential. Individual motorway variants may provide significantly different quality and even scope of parallel connections, which influences the distribution of traffic and its impacts.

There is about a choice between variants:

- Variants, which are fully or partially routed in the corridor of an existing road, which is being rebuilt and modified as a motorway; and
- Variants, which are routed in an entirely new corridor, leaving the existing road at the disposal of regional and local traffic.

The difference in routes between variants can result in substantial differences in use of the motorway given the influence of tolls: due to a quality parallel connection, the outflow of traffic can be significant in particular subsections thus reducing the amount of collected tolls. From the point of view of the road management entity, the differences in financial effects of individual variants are thus large and cannot be ignored in assessment of

adequacy and in comparison and selection of a variant. Therefore it is justified to include them in the comparison as a special criterion.

The following must be considered in the financial flow analysis:

- Investment costs;
- Regular maintenance costs for the motorway and the parallel road;
- Replacement investment costs for the motorway and the parallel road;
- Inflows from tolls; and
- The residual value of the road.

Regular maintenance costs (per km/year) include:

- Labour costs;
- Electricity costs;
- – Costs of spreading material; and
- Costs of major maintenance work.

Replacement investment costs (per km in 20 years) include:

- Costs of carriageway reconstruction;
- Costs of structures reconstruction;
- Costs of equipment replacement.

Replacement investment on the existing road begins in year 1 as it is usually in poor shape. Each year, 10% of the entire amount required in the planned period is assumed. Replacement investment on the motorway commences in year 13 (10 years after finishing) and each year, 10% of the entire amount required in the planned period is assumed.

Inflows from tolls:

In calculation of the financial flow, tolls collected with regard to particular motorway variants in conditions of a closed toll collecting system are assumed as inflow. The basis is the projected traffic load obtained from the traffic analysis.

Residual value

In order to calculate the residual value of a road, the methodology, prescribed by applicable regulation on rates of regular write off of intangible long-term assets and tangible fixed assets, is used.

The financial flow is prepared for the 20-year period with the assumption that the entire investment will be finished in one year. Given that this is the variants comparison stage, such simplification is adequate.

2.5 PREPARATION OF NATIONAL LOCATION PLAN

In the field of spatial regulation and preparation of the spatial, design and technical documentation, there are two new laws of core importance:

Spatial Development Act (Zakon o urejanju prostora – ZureP)

Building Act (Zakon o graditvi objektov – ZGO)

in a close connection with other laws, particularly with:

Protection of the Environment Act (Zakon o varstvu okolja – ZVO) and

Nature Protection Act (Zakon o varstvu narave – ZVNOP)

2.5.1 Expert Bases Necessary

For the preparation of the National Location Plan, there are the following expert bases necessary to carry out a comparative study of variants:

1. Construction-technical elaborate: depending on exactness of the intervention with the space, it is necessary to prepare a conceptual design or preliminary design (the contents is described in Chapter 8.7) and comparative study of variants
2. Transport-economic elaborate
3. Study of impacts on regional development
4. Elaborate of social acceptability

2.5.2 ASSESSMENT OF IMPACTS ON THE ENVIRONMENT – ENVIRONMENTAL REPORT

In order to prepare the Environmental Report, it is necessary to carry out for all the variants:

1. Analysis on present status of the environment
2. Determine the zero status
3. Prepare elaborates on impacts on the environment
4. Carry out the assessment according to variants

Some general principles may include:

The interventions foreseen have to comply primarily with the adopted spatial planning acts, and the economic eligibility has to be checked at the same time.

A newly designed road or bridging structure:

- Shall to the greatest possible extent take into account the landscape and ambient characteristics of space through which it passes;
- Shall change the existing environmental conditions in the area as little as possible;
- Shall not essentially alter the landscape through which it passes and shall not or shall as little as possible hinder the development and life of flora and fauna; and
- The route shall be to the greatest possible extent brought in line with requirements of the competent approving authorities.

Among other things, the route of a road or bridging structure shall:

- Not hinder flow of water courses or change the water regime in the wider area;
- In water protection areas by proper implementation ensure adequate protection of such areas (e.g. water tightness, retaining reservoirs, waste water treatment plants…).
- When passing through protected nature (e.g. wetlands, important habitats…) ensure solutions, which are the least disturbing and, if need be, replace the destroyed biotopes;
- When passing through areas on which movement paths of particular animal species are cut off (e.g. amphibians, bears…) provide appropriate protection and devices for directing animals to specific passages above/below the road level; and
- When passing through an area of protected natural or cultural monument, archeological site or other, provide solutions, which are prescribed by the competent approving authority, however these cannot have an essential impact on the transport function.

In planning of a new route or large-scale reconstruction of an old one, particular attention must be given to permanent dumping sites for waste material resulting from the construction. A special study must be prepared for such cases whereby the adequacy with

regard to geomechanical stability, impacts on the environment and social acceptability must be established.

If possible, such project must be prepared and included in the detailed plan.

The same conditions must be taken into account in implementation of less complex measures on roads and structures as well as in road management and maintenance.

2.5.3 NATIONAL LOCATION PLAN (NLP)

The National Location Plan plans in detail the spatial arrangement of national significance. It lays down planning conditions for the preparation of designs for obtaining building permits in accordance with the regulations on construction, as well as implementation measures in accordance with the Spatial Planning Act.

The National Location Plan may not be in conflict with the Spatial Development Strategy and the Spatial Order and/or with the Regional Conception of Spatial Development if it has been adopted for the area in question.

The National Location Plan shall specifically set out:

1. The planning zone of the detailed plan;
2. The location of the planned spatial arrangement showing the impacts and links of the spatial arrangement with neighbouring zones;
3. Lots of building land plan;
4. The concept of design solutions for transport, power, water supply, and other municipal infrastructure in the zone with the obligations concerning the connection to it;
5. Solutions and measures for the environmental protection, conservation of nature and cultural heritage, and sustainable use of natural resources;
6. Solutions and measures for the defence and protection against natural and other disasters;
7. The stages of the spatial arrangement execution, if envisaged, and other conditions and requirements concerning the plan execution;
8. The deadlines for the execution of spatial arrangements and land acquisition if they are shorter than those provided by the law.

The Plan also has the following compulsory attachments:

1. A publicly summary;
2. An abstract from the strategic spatial planning document referring to the spatial arrangement under consideration;
3. Explanation and grounds;
4. Expert research providing the basis for the solutions set out in the spatial planning document, and a list of ministerial decisions and regulations which were taken into account in preparing the National Location Plan with summaries thereof relating to the contents of the spatial planning document;
5. Guidelines and opinions of competent approval authorities;
6. The record of the document preparation and adoption procedure.

The National Location Plan also lays down planning conditions for the preparation of designs used to obtain building permits, particularly the conditions concerning the purpose, position, function, size and design of facilities and structures, and their construction.

The planning zone of the detailed plan is set out so as to show:

1. Areas in which permanent structures and facilities are planned;

2. Areas in which facilities required for the implementation of the detailed plan are planned, and which shall be restored to the original condition after the detailed plan has been completed.

The structures and facilities referred to in the preceding paragraph shall be functionally interconnected and shall correspond to the purpose of the spatial arrangement as planned in the detailed plan.

A National Location Plan also contains a financial budget in cases when there are several participants in the financing of a spatial arrangement specified in the detailed plan.

Preparation of the National Location Plan commences on the basis of the preparation programme. The preparation programme contains at least:

1. The assessment of the reasons and the legal basis for the preparation;
2. The subject and programme bases;
3. The skeleton planning zone if the programme concerns the preparation of the Regional Conception of Spatial Development, a detailed plan, or a supplement to the Municipal Spatial Order;
4. The identity of the spatial planning stakeholders who provide guidelines and opinions, and other participants who will participate in the preparation of the National Location Plan;
5. A list of the expert research necessary for planning the envisaged spatial arrangement;
6. The method for obtaining expert solutions;
7. Reference to and the method for obtaining the geodetic bases;
8. The deadline for preparation of the Detailed Plan of National Importance and its individual stages as well as the deadline for planning guidelines;
9. Obligations in connection with financing of the Detailed Plan of National Importance.

The preparation programme is adopted by the Minister of Spatial Planning in agreement with the initiator while the mayor adopts the preparation programme for municipal spatial planning documents.

The preparation programme shall be published in the national official gazette or the municipal official gazette, as the case may be.

The so-called spatial planning conference, to which any person/entity affected in any way whatsoever by the planned land use is invited, is organised prior to publication of the preparation programme. Preliminary opinions and suggestions are collected, which are later appropriately taken into account in subsequent proceedings.

In continuation, expert bases (i.e. the design project of the selected variant from the comparative study), the environmental impact report and other documents are prepared.

The public exhibition of the draft National Location Plan is organised for the purpose of informing the general public and acquiring opinions, suggestions and objections to the planned spatial arrangement. Public exhibitions are organised in the municipality, local community or other level of local administration.

The draft National Location Plan is then supplemented by taking into account suggestions obtained in the public exhibition. Written positions to individual suggestions are also prepared.

An opinion of spatial planning stakeholders, specified in the preparation programme, is obtained with regard to the supplemented draft proposal.

The final, harmonised draft proposal of the National Location Plan is prepared on the basis of the above, which is then adopted by the Government and published in the Official Journal.

Summary

The procedure leading to the adoption of the Regulation on NLP by the Government includes the following stages:

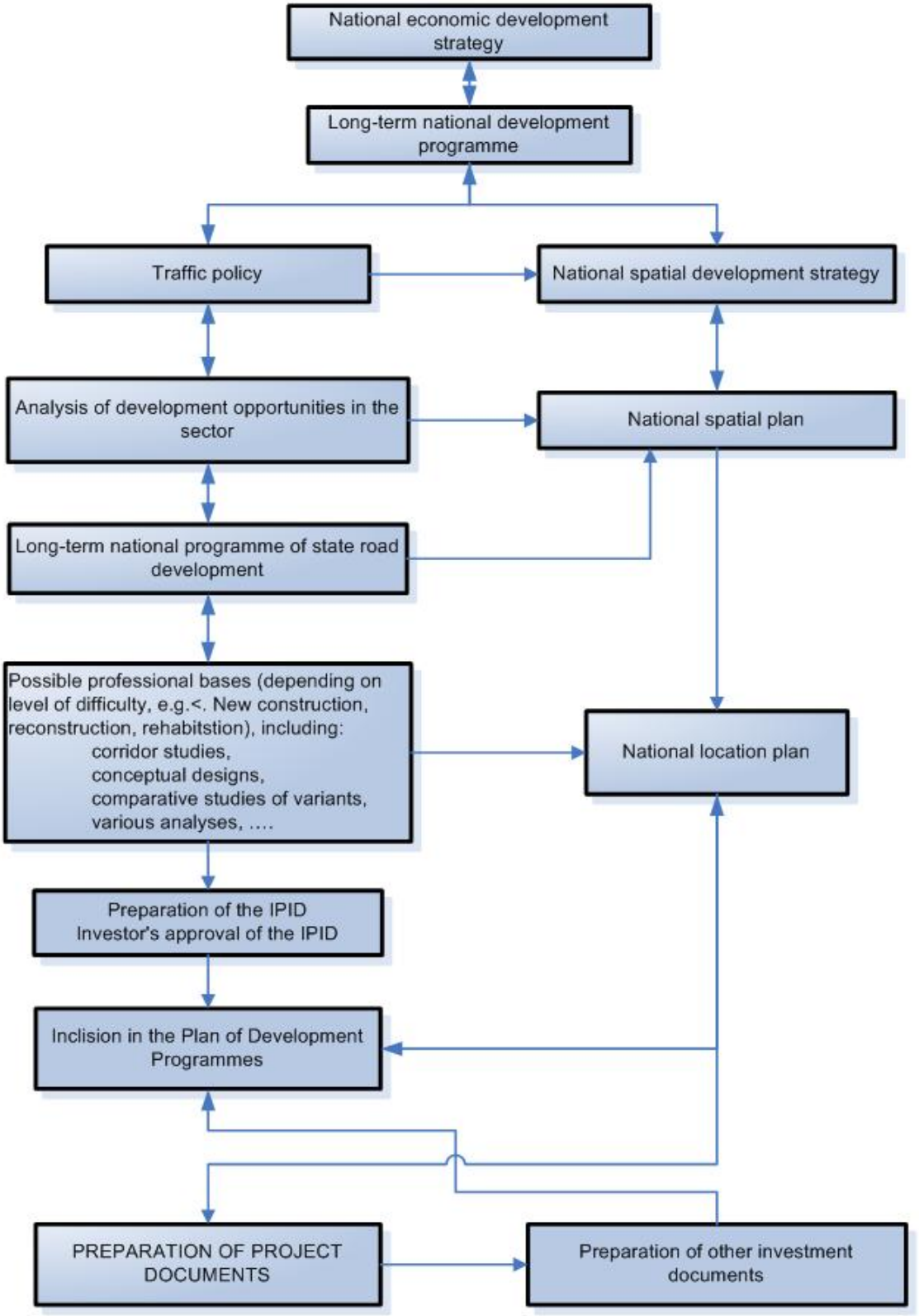
- Initiative
- Programme on preparation
- First spatial planning conference
- Directions, project conditions and recommendations
- Analysis of directions and preparation of guidelines for a designer
- Development of comparative study of variants (CSV)
- Public presentation of CSV
- Discussion on CSV with a proposal on the most relevant variant by the Government of the RS
- Development of the NLP proposal
- Second spatial planning conference
- Public presentation and discussion on NLP
- Preparation of answers and adoption of positions concerning the comments
- Amendment of the NLP proposal in accordance with the adopted positions
- Acquisition of opinions about the amended NLP
- Development of the harmonised DPNI
- Adoption by the Government and publication in the Official Gazette

Supplement 14 shows the process of preparing the investment and design documents, which form the professional basis for the preparation of the national location plan. It also shows the position of the national location plan in the entire process of obtaining and preparing various documents.

2.5.4 DIAGRAM OF THE REQUIRED SEQUENCE OF PLANNING DOCUMENTS

(see next page)

The required sequence of planning documents



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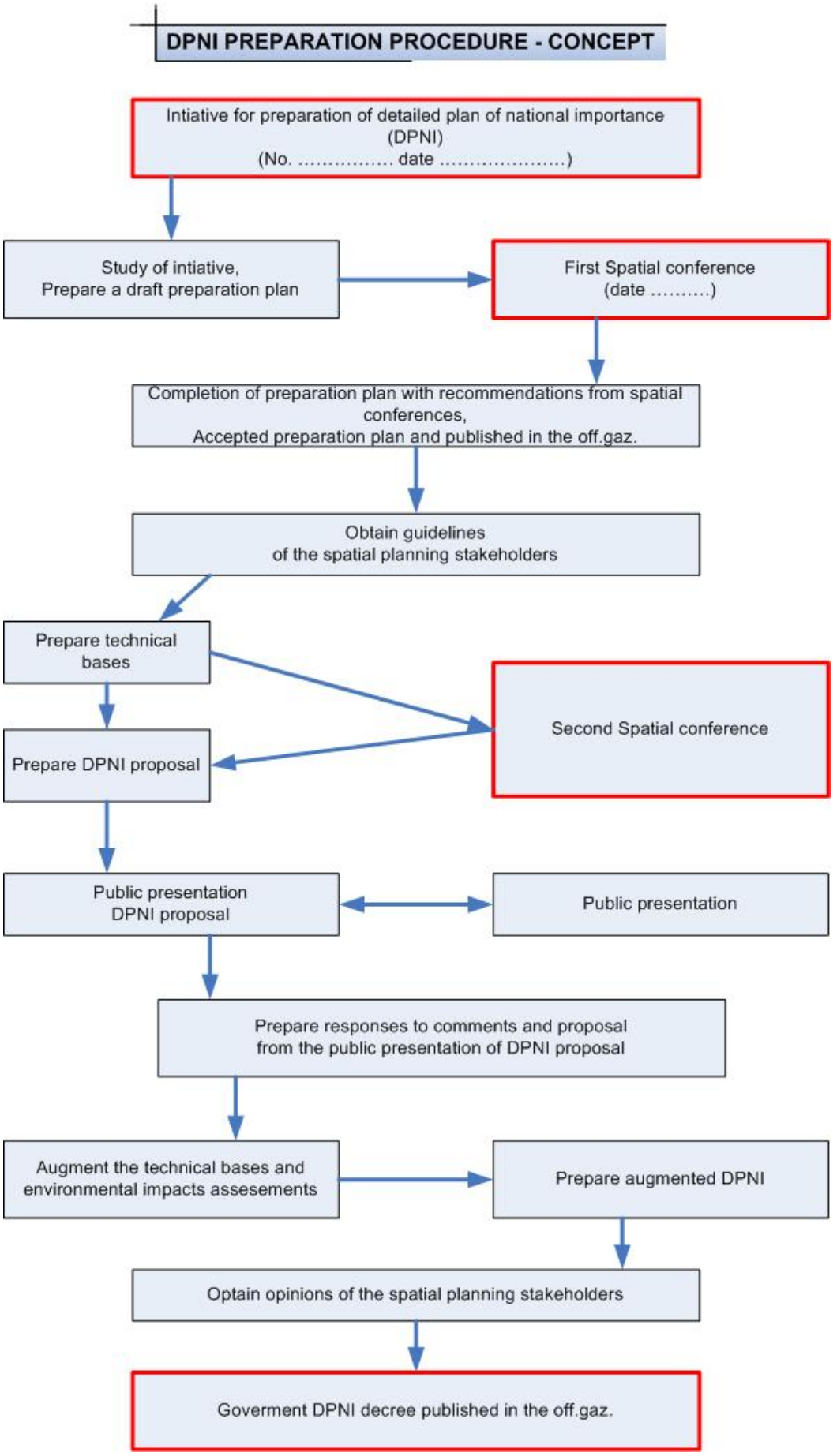
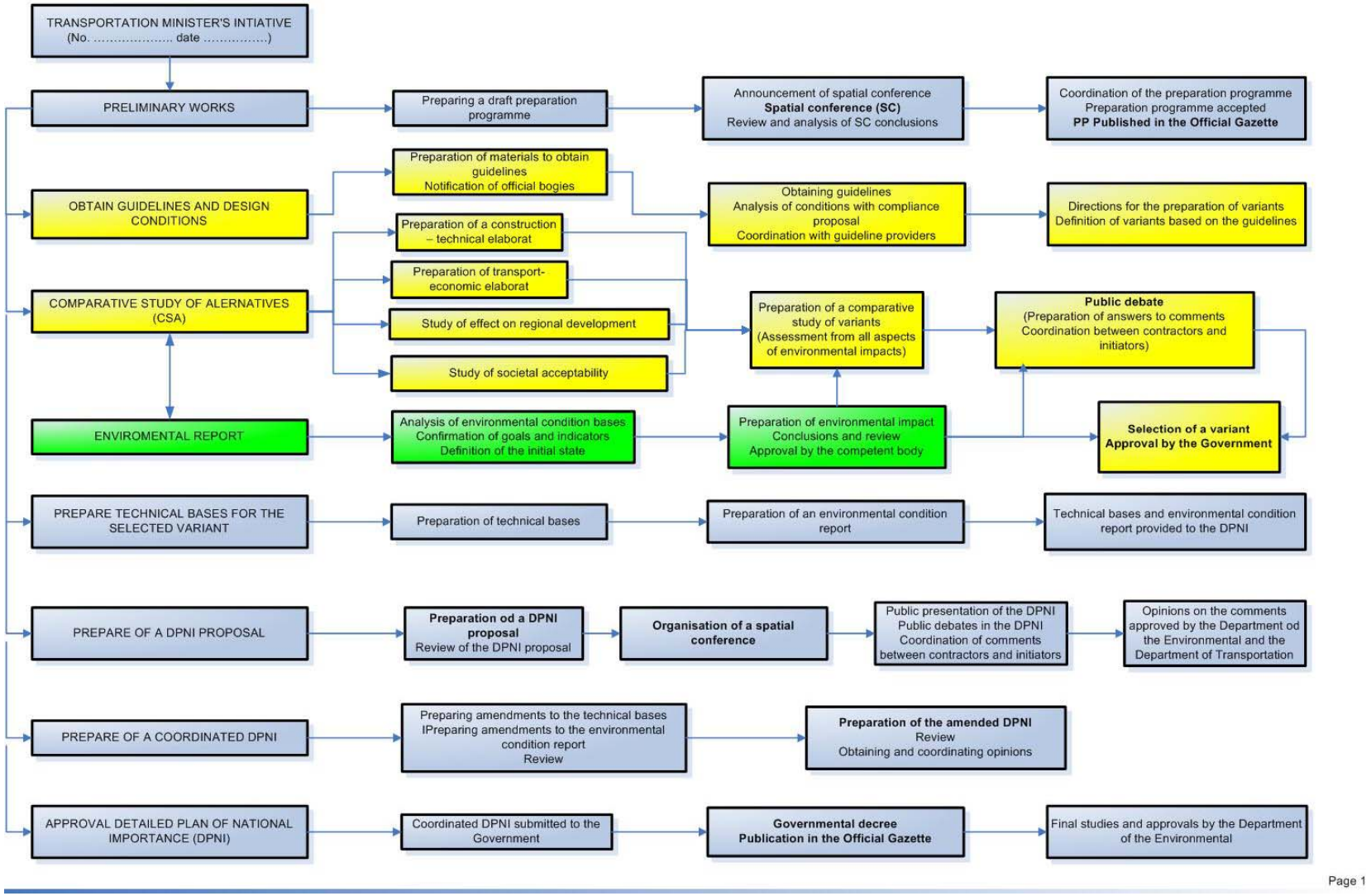

DPNI PREPARATION PROCEDURE - CONCEPT
Intiative for preparation of detailed plan of national importance (DPNI) (No. ..... date .....)
Study of intiative, Prepare a draft preparation plan
First Spatial conference (date .....)
Completion of preparation plan with recommendations from spatial conferences, Accepted preparation plan and published in the off.gaz.
Obtain guidelines of the spatial planning stakeholders
Prepare technical bases
Prepare DPNI proposal
Second Spatial conference
Public presentation DPNI proposal
Public presentation
Prepare responses to comments and proposal from the public presentation of DPNI proposal
Augment the technical bases and environmental impacts assesements
Prepare augmented DPNI
Optain opinions of the spatial planning stakeholders
Goverment DPNI decree published in the off.gaz.

DPNI Preparation Procedure – In Detail



3 INVESTMENT DOCUMENTATION

Under the decision taking processes concerning the implementation of an investment, the Public Finance Act and Public Procurement Act usually determine the contents and types of the investment documentation, and the procedures and criteria for assessment of efficiency, which act as a basis for taking decision on whether a specific investment will be implemented at all.

The investor uses the investment documentation for the following purposes:

- To establish necessary project costs, to prepare the framework for investment implementation, maintenance, in short, to prepare a transparent and comprehensive information on the project and to be able to supervise the investment on the basis of the underlying documentation;
- To determine the investment's socio-economic viability and whether the investment will be financially viable in case it generates direct financial revenues;
- To reduce risks in project implementation; and
- To acquire necessary funding (loans, grants, financing form the EU Structural Funds…) for project implementation on the basis of the prepared documentation.

The investor usually contracts an engineer or consultant for preparation of the investment documentation and trusts him with the project preparation, which includes the following:

- Preparation of individual documents; and
- Co-ordination of individual solutions also in relation to the project and spatial planning documentation.

The Contracting Entity approves the documentation after the performed examinations/ audits.

The Contracting Entity also participates in preparation of investment documents and guides the entity preparing the documentation to the joint goal.

Summary of document types:

Document type	**When needed?**	**Prepared by whom?**	**What does it serve?**
Investment project identification document – IPID	Prior to implementation, for investments of up to €.....(250.000 €)	Engineering organisation	Determining project objectives
Preliminary investment study – PIS	Prior to decision on the implementation variant, prior to inclusion in the development programme, for investments exceeding €.....(2.200.000 €)	Engineering organisation, consulting organisation	Defining different variants and selecting the optimal variant
Investment programme – INVP	Prior to implementation, prior to inclusion in the budget (development plan), for investments exceeding €.....(500.000 €)	Engineering organisation, consulting organisation	Determining objectives, costs, time schedule
Amendments to the investment programme	During implementation, in case costs exceed for example 15% or if e.g. the time schedule is jeopardised	Engineering organisation, consulting organisation	Determining changed values, deadlines, consequences
Planned investment implementation study – PIIS	Can be prepared as a part of the investment programme, compulsory prior to any public tenders	Engineering organisation	Defining the required project implementation procedures
Investment implementation report – IIR	At least annually	Engineering organisation	Supervising investment programme implementation

Report on monitoring impacts of the investment project – RMII	Upon putting to use	Investor	Determining actual impacts with regard to those envisaged in planning documents

Note: The value limits of investment concerning individual level of the investment documentation are determined by the Government

3.1 Investment Project Identification Document (IPID)

The Investment Project Identification Document (IPID) includes data, which are required for determining investment purpose and objectives in the form of functional requirements to be fulfilled by the investment. The Investment Project Identification Document may thus include the basic technical or technological elements of solutions and forms the basis for deciding on subsequent preparation of the project and investment documentation or continuation of the investment.

Depending on the dynamics foreseen for the investment implementation, the expert basis for IPID may include only the assessment from the Long-term Roads Development Programme. In any case, it is necessary to indicate the percent of the investment assessment exactness, which significantly depends on the level and exactness of the expert bases.

The Investment Project Identification Document includes at least the following information:

- Specification of the investor and experts or departments responsible for supervision and preparing of the appropriate project and investment documentation;
- Analysis of the current situation and underlying reasons for the intended investment;
- Definition of the purpose and objectives of the investment;
- Determining various possible implementation variants, where at least the "no investment" variant, i.e. the minimal variant with no changes of capacity and any other "with investment" variants should be defined.
- Definition for each variant of the type and estimated scope of the investment, estimated preliminary value of the whole investment (from preliminary work to finishing of construction, based on the analysis of already implemented investments, if possible), a time schedule framework, definition of estimated environmental impact of the investment and the measures envisaged for their mitigation, specification of possible financial sources;
- Definition of basic elements, which determine the investment (the preceding idea or study, location, scope and specification of the investment, protection of the environment, implementation time schedule, financial and other resources);
- Determining the reasonableness and the possibility for preparing the preliminary investment study and investment programme;
- Time schedule for preparation of investment and project documentation; and
- Graphic and other annexes.

In case the investment programme is not compulsory with regard to the limit investment value on the basis of the appropriate project documentation (we suggest: < € 250.000) the Investment Project Identification Document shall be supplemented with:

- Cost/benefit analysis for individual variants; and
- Description of selection of the optimal variant.

In such a case the Investment Project Identification Document gains characteristics of the investment programme and forms the basis for deciding on the investment.

Preparation of the Investment Project Identification Document is provided by the investor.

The investor submits its opinion on the IPID and by a decision in writing:

- Approves the Investment Project Identification Document and thus approves the preparation of the preliminary investment study or the investment programme i.e. investment implementation;
- Returns the IPID for acquiring additional information; or
- Rejects the IDIP and specifies the reasons for doing so.

The contents of the IDIP includes at least:

1 Decision on approval of the IDIP

2 Definition of responsibility

2.1 Experts of the investor responsible for preparation and supervision of the project and investment documentation

2.2 Experts of the engineer responsible for preparation and supervision of the project and investment documentation

3 Analysis of the current situation and underlying reasons for the intended investment

3.1 General description of the network in question

3.2 Technical description of the road network's present condition

3.3 Traffic (AADT, structure, characteristics, distribution, domestic, foreign vehicles)

4 Definition of the purpose and objectives of the investment

5 Determining variants

5.1 Description of the selection procedure regarding variants

5.2 Summary of the comparative study of variants

5.3 Description of variants and selection of a variant

5.4 Assessment of investment value by variant

5.5 Environmental impact assessment by variant

6 Presentation of the proposed variant

6.1 Technical characteristics

6.2 Estimated value of the proposed variant

6.3 Financing of the investment

7 Time schedule

8 The required project and investment documentation

9 Graphic annexes

3.2 Preliminary Investment Study (PIS)

The Preliminary Investment Study discusses all variants, which are likely to fulfil objectives from the IDIP in terms of economy, finance, time and technical aspect, but at least the minimal, i.e. "no" investment variant and the "with" investment variant, by taking into account any technical, financial, legal and other limitations and determining consequences of individual variants and substantiating the proposal regarding the optimal variant.

The Preliminary Investment Study is a summary of preceding work and analyses and their results, which include:

- Studies and research of demand, economic analyses and studies substantiating the type, necessity, justifiability and benefits of the investment as well as

compliance with the planed development strategy;

- Technological research and studies and the technological plan with the selection and overview of the required equipment;
- Concept designs related to construction and other issues;
- Geological, geomechanical, seismological, water management, environmental and other research; and
- Data on possible locations of the structure and analysis of environmental and other impacts with envisaged measures.

The Preliminary Investment Study discusses individual variants in such detail that the selection and substantiation of the optimal variant is as reliable as possible (at least the level of the conceptual design, but better the preliminary design).

A compulsory content of the Preliminary Investment Study includes the following:

- Summary of the Investment Project Identification Document with specification of the investor and objectives / strategy;
- Analysis of the current situation with regard to subject of the investment including the presentation of needs for the investment in question and compliance of the investment project with the Strategy of Economic Development and the national programme of activities;
- Analysis of variants with estimated costs and benefits of the investment and calculation of efficiency for the useful life of the investment;
- Analysis of variants' locations with description of significant impacts of the investment (notably environmental impacts), analysis of possible locations with regard to providing balanced regional development;
- Analysis of human resources by variant;
- Framework time schedule of investment implementation with dynamics of financing by variant;
- Preliminary financial construction of individual variants;
- Calculation of financial and economic indicators (repayment period for investment funds, net present value, internal rate of return, relative net present value) for individual variants with description of costs/benefits, which cannot be expressed in moneys, for preliminary investment studies of bigger
- estimated investment projects also development criteria;
- Sensitivity analysis for each variant;
- Description of criteria and weights for selection of the optimal variant;
- Proposal with description of the optimal variant; and
- Procedure and participants of preparation and evaluation of the Preliminary Investment Study.

The Preliminary Investment Study required for bigger and more complex investment projects is provided by the investor.

The investor, after first examining the prepared documentation for compliance with regulations and checking the accuracy of financial indicators, by a decision in writing:

- Approves the Preliminary Investment Study and gives approval for preparation of the investment programme; or
- Rejects the Preliminary Investment Study as inadequate basis for preparation of the investment programme and gives the reasons for doing so.

The investor may appoint an expert committee for review and evaluation of the investment documentation, which prepares the expert opinion.

The Preliminary Investment Study is required for all investments exceeding (supposed 2.200.000 €)

1 Summary of the IDIP
1.1 Section, position and location
1.2 Identification of the investor
1.3 Approval date of the IDIP
1.4 Type of the envisaged measure
1.5 Purpose and objective of the investment
1.6 Estimated investment value
1.7 Dynamics and sources of financing
2 Analysis of the current situation
2.1 Geographical and functional significance of the area
2.2 Technical characteristics of the road section
2.3 Analysis of the current traffic
2.3.1 Previous traffic development
2.3.2 Traffic volume
2.3.3 Changes of traffic flow intensity in time
2.3.4 Characteristics of the traffic flow with regard to the distance of travel
2.4 Traffic projections by variant
2.4.1 Sources for the traffic projection
2.4.2 Projection of traffic flows growth
2.4.3 Traffic loads on individual sections of the network in question
2.5 Analysis of capacity
2.6 Description of essential differences between variants with regard to traffic
3 Description and analysis of variants with estimated investment costs
3.1 List of auxiliary variants
3.2 Description and analysis of variants with regard to the construction-technical and technological part
3.3 Cost estimate
3.4 Available documentation
3.5 Essential differences between variants with regard to estimated investment costs
4 Analysis of variants' locations with environmental impact
5 Time schedule and dynamics of financing
6 Financial plan
7 Calculation of financial and economic indicators
8 Sensitivity analysis by variant
9 Description of criteria for variant assessment
10 Comparison of variants with the proposal and substantiation of the selection of a variant

3.3 Investment programme (INVP)

The investment programme with its technical-technological and economic part represents the expert base for deciding on the investment.

The investment programme is the optimal variant discussed in detail and is based on the following project documentation:

- At least the design project as the technical-technological basis for preparing the investment programme, which must include all required elements and findings for as realistic assessment of the investment value as possible;
- The implementing spatial planning document with the site documentation in case of the detailed spatial development conditions (with defined conditions regarding the investment);
- The technological project with specification of equipment; and
- Geological, geomechanical, seismological, water management, environmental and other research.

The project task must also be made for preparation of the investment programme; the project task includes the following:

- List of requirements and documents, which are required for preparation of the investment programme and will be provided to the entity preparing the investment programme by the Contracting Entity; and
- Investment Project Identification Document.

With regard to the type and objectives of the investment, the contents of the investment documentation, which is in any case prescribed by the Government's decree, may be adjusted to an individual investment (e.g. classic public procurement, performing public utility services – concession projects…).

Specific methods of project evaluation, e.g. environmental protection criteria, are also determined with regard to the type of the project.

A compulsory content of the investment programme includes the following:

- Introduction and summary
- IDIP
- PIS
- Key findings from the INVP
- Basic data on the investor
- Analysis of the current situation as description of characteristics of the existing road with presentation of needs for the investment in question
- Traffic (present and future, basic characteristics with specification of basis for the projection)
- Construction-technical part (specification of prepared documentation, technical report, preliminary estimate of costs of construction work, detailed technical description of the route…)
- Environmental impact analysis (description of the environmental impact of the existing road, description of the environmental impact of the new road, mitigation measures for negative impacts and cost estimate)
- Investment at constant and current prices (the level of prices and the basis for calculating price increases, evaluation of the investment at constant prices)
- Investment implementation time schedule (in text and graphic and dynamics of the investment at constant and current prices)
- Financial plan (at constant and current prices)
- Calculation of the investment's viability in useful life (net present value, internal rate of return, sensitivity analysis), including the description of benefits, which cannot be measured in moneys
- Conclusion and explanation of results

The investment programme is provided by the investor.

The investor, after first examining the prepared documentation for compliance with

regulations and checking the accuracy of financial indicators:

- Approves the investment programme by a decision in writing on approving of the investment implementation; or
- Rejects the investment programme by a decision in writing specifying the reasons for such action.

In case the Contracting Entity in accordance with the Public Procurement Act is not at the same time the investor, the investment programme must also be approved by the Contracting Entity.

The investment programme is required in case the investment value exceeds (supposed 500.000 €)

Contents of the investment programme should include at least the following:

1 Introduction and summary
  1.1 Introduction
    1.1.1 Summary of the Investment Project Identification Document or the Preliminary Investment Study
    1.1.2 Introductory project presentation
    1.1.3 Changes with regard to the IDIP or the PIS with listing of main reasons
    1.1.4 Identification of the investor
    1.1.5 Analysis by location
    1.1.6 Summary of discussed variants with the proposed selection
    1.1.7 Definition of the investment in applicable planning documents
  1.2 Summary of the investment programme
    1.2.1 Purpose and objective of the investment
    1.2.2 Investor
    1.2.3 Traffic data
    1.2.4 Construction-technical part
    1.2.5 Investment value
    1.2.6 Financial plan
    1.2.7 Summary of the time schedule
    1.2.8 Feasibility of the investment
2 Investor profile
  2.1 Activity
  2.2 Subject of business
  2.3 Management
3 Analysis of the existing road network
  3.1 Definition of road category on the road network
  3.2 Elements of the existing road
4 Traffic
  4.1 Road function
  4.2 Analysis of the current traffic
    4.2.1 Past development
    4.2.2 Traffic volume
    4.2.3 Changes of traffic flow intensity in time
    4.2.4 Transit and target-source traffic
  4.3 Traffic forecast

3.4 Amendments to the Investment Programme (INVP)

Amendments to the investment programme or document, on the basis of which the last decision on the investment was adopted, are made if key assumptions from this document have changed (e.g. change of technology, implementation time schedule, sources of finance, changes on the market, etc.) to the extent, which will result in at least 15% change of costs or benefits of the investment.

The need for amendments to the investment programme (or any other investment document) is checked prior to beginning of investment implementation and upon receiving reports on the investment implementation.

Amendments to the investment programme must contain at least the following data:

- Summary of the document on the basis of which the last decision on the investment was adopted (IDIP, INVP, amendments) with specification of changes and reasons thereof;
- Summary of amendments including at least the following:
- Objectives of the investment
- List of expert bases with determination of changes and reasons thereof
- Reasons for preparing amendments and causes
- The planned organisation for investment implementation if the investment implementation study has not been prepared separately
- Presentation of the amended investment value with the envisaged financial plan
- Presentation of the amended results of the investment's feasibility calculation
- Analysis of the existing road /road network condition, analysis of current traffic, traffic projections (in case any of the relevant assumptions has changed)
- Analysis of data on the investment value, including at least the following:
- Summary of the preceding document with the list of expert bases, bases for investment assessment, price options and the calculation method for current prices, presentation of the investment's value
- Determining changes and reasons thereof
- Presentation of amended investment value with overview of contracts and signed annexes, dates of introducing contractors, list of expert bases, revaluation of amended value (already performed work until the date of validity of amendments, separately by contract, main items with determining scope in relation to the basic document, more/less work, additional work, non-contracted work) to the level of constant prices in the basic document on the basis of which the original decision on investment was adopted.
- Financial implementation by contract and item
- Comparative overview of the investment and the amended investment value
- Investment implementation time schedule, comparatively
- Financing of the investment and loan repayment (amended financial plan)
- Calculation of viability during useful life, calculation of financial and economic indicators by using static and dynamic methods (repayment period for investment funds, net present value, internal rate of return, relative net present value) for the investment project with description of costs/benefits, which cannot be expressed in moneys
- Conclusion and explanation of results

The investment programme is provided by the investor.

The investor, after first examining the prepared documentation for compliance with regulations and checking the accuracy of financial indicators:

- Approves the investment programme by a decision in writing on approving of the investment implementation; or
- Rejects the investment programme by a decision in writing specifying the reasons for such action.

The investor may appoint an expert committee for review and evaluation of the investment documentation, which prepares the expert opinion.

In case the Contracting Entity in accordance with the Public Procurement Act is not at the same time the investor, the investment programme must also be approved by the Contracting Entity.

The contents of the amendments are as follows:

1 The system of processing chapters with indication of contents
2 Introduction
  2.1 Summary of preceding documents
  2.2 The reasons for preparing amendments
3 Summary of amendments
  3.1 Subject, purpose and objective of the investment
  3.2 List of expert bases for preparing amendments
  3.3 Underlying causes for amendments
  3.4 Organisation for investment implementation
  3.5 Investment at fixed prices including cost of financing
  3.6 Financial plan
  3.7 Calculation results for socio-economic viability
4 Analysis of conditions regarding the existing road network and traffic
  4.1 Analysis of existing conditions on the road network
  4.2 Traffic
    4.2.1 Analysis of the current traffic
    4.2.2 Traffic forecast
5 Analysis of the investment value
  5.1 Bases for investment evaluation in preceding documents
    5.1.1 Expert bases
    5.1.2 Price options and the calculation method for current prices
  5.2 Bases for evaluation of the amended investment
    5.2.1 Determining causes and changes
    5.2.2 Presentation of the amended investment value
6 Comparative overview of the investment and the amended investment value
7 Investment implementation time schedule, comparatively
  7.1 Investment implementation time schedule
  7.2 Dynamics of the amended value at constant and current prices
  7.3 Investment implementation dynamics, comparatively
8 Financing of investment and loan repayment
  8.1 Financing of investment, comparatively
  8.2 Calculation of cost of financing and the amortisation plan
9 Socio-economic assessment of the newly evaluated investment

9.1 Calculation of economic viability of the investment with regard to direct benefits
9.1.1 Analysis of costs of road users
9.1.2 Presentation of input data and calculation results
9.1.3 Evaluation of socio-economic viability
9.2 Presentation of indirect benefits of the investment (criteria of compliance with the objective of macroeconomic development)

10 Conclusion

3.5 Planned Investment Implementation Study (PIIS)

The planned investment implementation study is a list of all activities required for investment implementation including activities for putting into operation. The investment implementation study can also be a constituent part of the investment programme. The planned investment implementation study includes the following:

- Organisational solutions regarding the implementation;
- Methods and procedures for selecting contractors and suppliers of equipment;
- Time schedule for all activities, which are required for investment implementation and putting into operation;
- List of the required investment-project documentation in accordance with the applicable regulations;
- The method of final acceptance and putting into operation.

The implementation study must be prepared at least until the beginning of public tender procedures for awarding construction (other) work in accordance with the Public Procurement Act.

In case several public tenders are required for investment implementation, the implementation study for the planned investment may be amended or supplemented with regard to investment project implementation.

The contents include at least:

1 Organisational solutions regarding the implementation
1.1 Location, data on the project
1.2 Investor profile
1.3 Engineer profile
2 Activities for project implementation and persons/entities in charge
2.1 Allocation of duties
2.2 Time schedule for all activities, which are required for investment implementation and putting into operation
2.3 List of the required investment-project documentation in accordance with the applicable regulations
2.3.1 Prepared documentation
2.3.2 Planned documentation
2.4 Methods and procedures for selecting contractors and suppliers of equipment
2.4.1 List of legislation to be taken into account in awarding contracts
2.4.2 Public tender procedure
2.4.3 Public tender method
2.5 Construction – work implementation
3 The method of final acceptance and putting into operation

3.6 Investment Implementation Report (IIR)

The purpose of the investment project implementation report is timely determining of deviations from the planned implementation and specifying measures for their elimination. The investment project implementation report includes at least:

- Results of the comparison of investment time schedule implementation with the time schedule specified in the investment programme until the date of report preparation (supervision of time schedule implementation);
- Comparison of actual expenditure of finance with the expenditure planned in the investment programme (control of investment project budget spending);
- Causes and consequences of any deviations and measures for their elimination.

Investment implementation report forms the expert base for decisions on any amendments to the investment programme.

The person in charge of the investment project implementation prepares a report on investment implementation at least annually or in case of deviations referred to in Article 7 of this Decree and upon issuing of the permit of use, which is a constituent part of the report. The person in charge of the investment project implementation also prepares the proposal for any amendments to the investment programme. The competent person of the investor decides on any preparation of amendments.

Contents of the investment implementation report for investments under € 500.000 :

1 Location, data on the project
2 Investment time schedule implementation
3 Financial implementation of the investment
  3.1 Financial dynamics in accordance with the IDIP
  3.2 Financial implementation on the project
    3.2.1 Past implementation dynamics
    3.2.2 Past and planned investment implementation
  3.3 Analysis of causes for deviations and any required measures
  3.4 In case of amendments, proposal of decision on amending the IDIP or preparing the INVP
4 Report on implemented technical elements with regard to the IDIP
5 Report on warranties

Contents of the investment implementation report for investments between 500.000 and 2.200.000 €:

1 Location, data on the project
2 Investment time schedule implementation
  2.1 Specification of activities from the INVP
  2.2 Analysis of causes for deviations from the planned time schedule
  2.3 Measures for meeting planned deadlines
3 Financial implementation of the investment
  3.1 Financial dynamics in accordance with the investment programme
  3.2 Financial implementation on the project
    3.2.1 Past implementation dynamics
    3.2.2 Past and planned investment implementation
  3.3 Analysis of causes of deviations
  3.4 Measures related to deviations from the planned financial implementation
  3.5 In case of amendments, proposal of decision on amending the INVP

Contents of the investment implementation report for investments exceeding 2.200.000 €:

1 Location, data on the project

2 Investment time schedule implementation
- 2.1 Specification of activities from the INVP
- 2.2 Analysis of causes for deviations from the planned time schedule
- 2.3 Measures for meeting planned deadlines

3 Financial implementation of the investment
- 3.1 Financial dynamics in accordance with the investment programme
- 3.2 Financial implementation on the project
  - 3.2.1 Past implementation dynamics
  - 3.2.2 Past and planned investment implementation
- 3.3 Analysis of causes of deviations
- 3.4 Measures related to deviations from the planned financial implementation
- 3.5 In case of amendments, proposal of decision on amending the INVP

4 Report on warranties

3.7 Report on Monitoring Impacts of the Investment (RMII)

The purpose of the report is to establish actual impacts of the investment in comparison with impacts envisaged in the investment programme.

The report on monitoring impacts includes at least:

- Description of the original situation and those results from the investment programme, which form the basis for comparison with results of the investment project (monitoring changes in results of the investment project with regard to capacity and quality);
- Comparison of results with the original situation and analysis of deviations, foremost with regard to utilisation of capacity, met standards and operating costs.

The report on monitoring impacts of the investment is prepared after the final expert examination of the concluded investment and final invoicing and is provided by the investor.

The contents include at least:

1 Location, data on the project

2 Purpose of the investment and objectives

3 Traffic-technical part
- 3.1 Technical description of the implemented investment
- 3.2 Description of performed work on the basis of the project of executed works
- 3.3 Traffic
  - 3.3.1 Traffic loads from the investment programme
  - 3.3.2 Actual traffic loads
  - 3.3.3 Traffic loads comparatively
  - 3.3.4 Calculation of capacity with regard to actual traffic loads and comparison
- 3.4 Condition of the carriageway and road
- 3.5 Additional project requirements during operation
- 3.6 Presentation and description of measurements in accordance with the regulations on protection of the environment

4 Investment value
   4.1 Presentation of investment value at constant and current prices
5 Post project evaluation
   5.1 Bases for calculating the investment feasibility
   5.2 Calculation of costs of users and estimate
   5.3 Description of the investment's indirect benefits
   5.4 Analysis of achieved results of operation
6 Comparing results of the investment with the original situation
   6.1 Analysis of deviations with reasons
   6.2 Proposal of measures for any increase in efficiency of the investment
7 Report on warranties

4 DESIGN DOCUMENTS

4.1 GENERAL

Based on the information on the location, the investor and the project designer, respectively, acquires the conditions relating to the works conformity with the spatial planning document for the preparation of the design documents.

The project designer taking over the preparation of the design documents has to appoint responsible project designers for all plans comprising the project.

The responsible project designers may be individuals registered in relevant records at the authorised professional chamber who have acquired, in addition to the accomplished university degree programme, at least five years of working experience in the field of the project design services when they act as responsible project designers in designing of complex works, or at least three years of working experience in the field of the project design services when they act as responsible project designers in designing of less demanding or simple works; and at least seven years of working experience in addition to the accomplished high vocational education programme for designing of complex works, or at least five years of experience for designing of less demanding and simple works.

A responsible geodesist is appointed for the development of the geodetic plans included in the design documents, in accordance with the regulations regulating the geodetic activity.

A design shall take account of the following:

1. Provisions of the Construction Act and regulations issued on the basis of this law;
2. Information on the location;
3. Conditions of the investment programme where the latter is mandatory, or of the terms of reference prescribed by the investor;
4. Conditions by the relevant authorities in view of the design;
5. Building regulations applicable to individual structural types;
6. Other regulations applicable to a certain location type;
7. Measures for protection of health, humans, and properties, for a healthy and safe work, fire protection, environment protection, and provisions for a minimum energy consumption;
8. Provisions ensuring functionally hindered persons an access, entry, and use without any built and communication obstacles;
9. Suitable technical solutions in accordance with achievements of science, technology, and economy, as well as of the up-to-date construction technique;
10. Realistic costs of materials, services, and construction products intended for construction;
11. Realistic costs of preparatory site works, common construction works, installations, and final construction works;
12. Rules of measurement required for preparation of bills of quantities and cost estimations;
13. Provisions of importance to defense, and measures for protection and rescue upon natural and other disasters;
14. Results of a preliminary verification of reliability of existing structural elements, foundation soil load bearing capacity and stability, and applicability of construction products already built-in where a reconstruction is in question.
15. If the intended construction works are located in the area regulated by the location plan, the design documents have to show conformity of the works location in the land, the works use and design, building land and municipal utility

installations, with the solutions included in the location plan.

16. If the intended construction works are located in the area regulated by the spatial order, the design documents have to show conformity of the works location in the land, the works use and design, building land and municipal utility installations, with the conditions stipulated by the spatial order, and the influence area of the works has to be shown in addition to the design documents.
17. The project designer determines the influence area of the works by means of checking up eventual possible works impact on the soil, water, air, neighbouring works and health of people, and presents such impacts in the design documents.

4.2 ASSESSMENT OF PRESENT CONDITION

Taking account of the fact that only two levels of design documents are foreseen by the current legislation, i.e. preliminary design and main design, it is suggested that more levels should be introduced, particularly for more complex construction works such as reconstruction of existing roads/structures, and construction of new roads/structures.

By more levels of design documents particularly more economical solutions are ensured at all the design stages: technical solutions as well as the contents of design documents adapted to the procedures foreseen.

To perform the indicated contents of design documents, the following regulations shall be adopted:

1. Decree of the introduction and use of a unified classification of all structural types, and of determination of structures of national importance;
2. Rulebook of the types of complex, less complex, and simple structures
3. Rulebook of the form of technical guidelines for design, construction, and maintenance of structures.
4. Rulebook of ensuring an undisturbed access, entry, and use of all types of public structures and residential buildings;
5. Rulebook of detailed contents of both design and technical documents, of the method of working out such documents and of types of schemes, which are constituent parts of the design documents for individual types of structures;
6. Rulebook of preparation and execution of open competitions;
7. Rulebook of the format and contents of the form for the report on the design audit;
8. Rulebook of the method of preparation and detailed contents of a document to prove that the structure will implement all the prescribed essential requirements;
9. Rulebook of employees, rooms, and other conditions to be fulfilled by the professional chamber;
10. Rulebook of the format and detailed contents of the registers of professional chambers, and of the method of entering the names;
11. Rulebook of the programme and method of performing professional exams under the lead of professional chambers.

4.3 TYPES OF DESIGN DOCUMENTS

4.3.1 DESIGNS

In view of the intended use, design documents can be classified in the following types:

1. **Conceptual design (COD)**, which goal is to acquire the design conditions directed by the relevant authorities– (according to Prof. Anđus, analogy of a part of the general design),;

2. **Preliminary design (PrD)**, which goal is to select the most appropriate alternative of the intended construction and the execution method respectively, as well as to determine competent authorities and to obtain their design conditions in the course of determination of design guidelines;
3. **Building permit design (BPD) –** according to Prof. Anđus, the **main design (MaD)**, which goal is to obtain the building permit on the basis of approvals by relevant authorities; it can also be used for the execution of simple structures;
4. **Tender design (TeD)**, which intention is to invite prospective tenderers and to select the most appropriate contractor to execute the intended construction or services.
5. **Project execution design (PED)**, on the basis of which a complex or a less complex structure can be executed.

The latest three levels of documents concern specific selected contents necessary for actual procedure stages, because the contents as foreseen in the effective main design seem to be too comprehensive for various levels of decision-making.

When abbreviations of the design types are used in design documents, administrative procedures, and other acts, the abbreviations indicated above shall be used.

The remaining documents, such as for instance the Project Execution Design (PED) – according to Prof. Anđus, the archive design – are considered the technical documentation and will be described under the Chapter »Supervision«. There belongs also the maintenance and operation design and the design for registration at official records.

4.3.2 DRAWINGS

Since the road designs, as a rule, are considered complex projects comprising the civil engineering works and buildings; we listed in the contents all types of designs. The projects include individual designs. The types of designs include:

1. Architecture designs,
2. Landscape architecture designs,
3. Designs of building structures and other construction designs,
4. Designs of electrical installations and electrical equipment,
5. Designs of mechanical installations and mechanical equipment,
6. Designs of telecommunications,
7. Technological designs,
8. Designs of excavations and basic under-construction for underground works,
9. Geodetic designs, and
10. Other construction related designs, such as a study on fire safety, and other technical studies or elaborates, when necessary due to specific characteristics of individual type of works or location intended for the construction of the works, or where required by specific regulations.

4.4 CONTENTS OF DESIGN DOCUMENTS

The contents of the design types are minimum mandatory contents of design documents intended for construction of all types of buildings and civil engineering structures (road-construction designs include all types of construction – also buildings).

For special purposes, different or additional contents can be specified by special regulations.

The investor and designer can make an agreement on some additional contents of the design, as well as on its different purpose.

Notwithstanding the abovementioned considerations, the building permit application shall comprise such contents of the building permit design that is specified by the Construction Act. The administrative body, competent to issue a building permit, is entitled to refuse or send back certain documents, if the latter are not necessary to make a decision upon a certain issue or they are beyond the required building permit design contents.

A format and contents of design documents are proposed below (**ANEX 6**). They must be adapted to the actual type of structure and phase of construction to which the documents apply. The title page and the leading folder are always the same, the sequence and labels of documents also remain unchanged (although some may be omitted when not required), while the designs are inserted as necessary (depending on the complexity of the structure, building type, and so on).

4.5 TERMS OF REFERENCE (THE PROJECT ASSIGNMENT)

Minimum contents of terms of reference for preparation of design documents for roads and structures on roads are proposed. The contents are logically adjusted to the structure complexity and type, as well as the type of the intended intervention and include:

- Name of the structure
- Description of present condition
- Proposal of solution (fundamental investor's directives to the designer in view of the type of intervention to be considered by the design)
- Application of laws and regulations
- Technical conditions for the design:
    - Proposed measures, required investigations
    - Bases for design (land surveying data, layout drawing, reports by experts, preliminary opinions, and approvals)
    - Consideration of regulations
    - Design guidelines
    - Design service life, traffic, and design speed
    - Characteristic cross section
- Design contents (general part, textual part, drawings, design analysis, traffic arrangement, public utilities, staking out, cadastral report, ...); the design shall be handed over in a digital form as well; other special requirements by the investor
- Specification of the bid
- Given time to complete the design.

Terms of reference shall be provided and approved by the investor. Terms of reference can also be worked out by the investor's representative or consultant, or, in case of more complex structures, by a specialized institution engaged by the investor on the basis of invitation for tenders.

4.6 CONCEPTUAL DESIGN (CoD)

The conceptual design is a sketch and description of key characteristics of the intended construction. The stage aims at possibility of the optimum concept of the road layout.

In the preparation of the conceptual design for the bridging structure, it means a possibility of optimising the road layout concept depending on the geometry of the structure.

The design documents include:

The leading folder of the conceptual design comprises a title page, a table of contents of the design, general information on the intended construction, and information on design

companies and responsible designers. The leading folder also contains the location data and all the required evidences.

The location data indicated in the conceptual design leading folder shall include descriptions and/or graphical presentations of the following:

- position, size, and shape of the building plot(s),
- position of the structure on the ground showing its layout (dimension in plan) and shape,
- distance between the intended structure and adjacent parcels, buildings, protected zones),
- characteristic sections (profiles) and shaping the structure and ground, if reasonable,
- connections to the public infrastructure, when such connections have been foreseen and their course is known; otherwise a need of carrying out connections to the public infrastructure shall be indicated.

Notwithstanding the precedent passage, in case of a reconstruction, the location data only include a presentation of connections to the public infrastructure, when the capacity of the structure is increased by the reconstruction to such an extent that new or different connections are required.

When a change of the intended use is in question, a description of both existing and foreseen condition is sufficient.

The conceptual design leading folder shall contain the following evidences:

- an evidence that the design company, that has worked out the conceptual design, fulfils the conditions prescribed for such companies;
- an evidence that the responsible design project manager and the responsible designers, who have worked out the constituent parts of the conceptual design, fulfil the prescribed conditions; such an evidence must not be older than six months, unless an individual engineer has already been registered by the competent professional chamber;
- an evidence submitted by the design company that the latter has insured its liability;
- when a spatial planning document has still not been recorded by the legal regime database established in compliance with the spatial arrangement regulations, the following shall be comprised as well:
  - an information on location, or
  - construction criteria and conditions issued by the relevant authority, if they are included in the national spatial order, or
  - a copy of both textual and cartographic part of the location plan of the area of the foreseen construction, when the latter is located in an area regulated by a municipal or national location plan.

A conceptual design for civil engineering structures shall comprise at least all those types of schemes, which are necessary to issue design conditions.

The drawings in the schemes shall include at least a plan view and two characteristic sections perpendicular one to another. The drawings for civil engineering structures shall be such as to achieve the same level as prescribed for buildings.

Irrespective of the precedent passages of this chapter, a conceptual design does not include any schemes, when a simple structure, a change of the intended use, or a removal of an existing structure are in question.

4.7 PRELIMINARY DESIGN (PrD)

The preliminary design is a systematically arranged composition of such designs, which enable the investor to take a decision on the most appropriate variant of the intended construction. The conceptual design of the bridging structure is a mandatory component of the road preliminary design.

A preliminary design includes a title page, table of contents, general information on the intended construction, as well as the information on the design companies and responsible designers. The leading folder of the preliminary design also comprises a summarized design report, location data, and evidences required.

The summarized report includes a recapitulation of the entire construction cost estimation.

The location data indicated in the preliminary design leading folder shall include descriptions and/or graphical presentations of the following:

- position, size, and shape of the building plot(s),
- position of the structure on the ground showing its layout (dimension in plan) and shape,
- distance between the intended structure and adjacent parcels, buildings, protected zones),
- characteristic sections (profiles) and shaping the structure and ground, if reasonable,
- connections to the public infrastructure, when such connections have been foreseen and their course is known; otherwise a need of carrying out connections to the public infrastructure shall be indicated.

Notwithstanding the precedent passage, in case of a reconstruction, the location data only include a presentation of connections to the public infrastructure, when the capacity of the structure is increased by the reconstruction to such an extent that new or different connections are required.

When a change of the intended use is in question, the preliminary design leading folder does not include any graphical presentation of the location data, but only a description of both existing and foreseen condition.

The preliminary design leading folder shall contain the following evidences:

- an evidence that the design company, that has worked out the preliminary design, fulfils the conditions prescribed for such companies;
- an evidence that the responsible design project manager and the responsible designers, who have worked out the constituent parts of the preliminary design, fulfil the prescribed conditions; such an evidence must not be older than six months, unless an individual engineer has already been registered by the competent professional chamber;
- an evidence submitted by the design company that the latter has insured its liability;
- when a spatial planning document has still not been recorded by the legal regime database established in compliance with the spatial arrangement regulations, the following shall be comprised as well:
  - an information on location, or
  - construction criteria and conditions issued by the relevant authority, if they are included in the national spatial order, or
  - a copy of both textual and cartographic part of the location plan of the area of the foreseen construction, when the latter is located in an area regulated by a municipal or national location plan.

In **Annex 3,** we present an example of the Road Reconstruction Preliminary Design.

4.8 BUILDING PERMIT DESIGN (BPD)

Building permit design is a systematically arranged composition of such designs, which enable the competent body to assess all the circumstances important for issuing a building permit.

The building permit design has to prove that the works as a whole will fulfil the prescribed essential requirements and comply with the spatial planning documents.

The preliminary design of the bridging structure is an integral part of the BPD design.

If the investment programme or project assignment were prepared earlier, the project designer has to overview them and point out the deficiencies or unconformity with the spatial planning documents and building and other regulations ascertained, and request their improvement.

The paragraph 24 of the current Construction Act deals with the **main design**, which is a whole of mutually harmonized schemes providing a technical solution of the structure to be executed.

As the building permit design is issued on the basis of the main design, the latter can also be called the **building permit design (BPD)**.

Depending on the type of the structure, a main design (building permit design) shall include the following:

- an architectural scheme,
- a structural scheme,
- a scheme of hydro-installations,
- a scheme of electrical installations,
- a bill of quantities and a cost estimation for all the works,
- other types of schemes,
- an information on geotechnical and other investigations where required,
- an expert's report on waste disposal, when such a disposal is in question, which shall be disposed in compliance with provisions of a special law,
- an expert's report on the environment protection, when such a structure is in question, which can be harmful to the human environment as defined by the relevant rulebook,
- an expert's report on fire and explosion protection.

Depending on the type of the structure/building, the architectural scheme shall comprise the following:

1. A layout solution
2. All the plan views
3. Two sections
4. Façades
5. Characteristic details
6. Schemes of joinery and locksmith's works
7. Technical descriptions
8. Other schemes/drawings required.

The following solutions of the building permit design (BPD) contents are proposed below:

4.8.1 BPD Leading Folder

In addition to the title page, table of contents, general information on intended

construction, and information on design companies and responsible designers, the building permit design shall contain the following:

1. Statement of conformity of schemes, and of fulfilling essential requirements by the responsible project manager of the building permit design (attached thereinafter)
2. Summary of design audit report, if a design audit is prescribed (attached thereinafter)
3. Summarized design report
4. Graphical presentation of conformity with spatial planning documents
5. Graphical presentation of the influence area of intended structure
6. Information on location
7. Information on acquiring design conditions and approvals (attached thereinafter)
8. Evidences

When it is allowed by the complexity and characteristics of the intended construction as well as by the location and the type of the relevant spatial planning document, the individual contents mentioned in the precedent passage can be presented in a joint drawing, and the latter is mandatory for all the types of designs of simple structures.

4.8.2 Summarized Design Report

A summarized design report shall include a description of conformity of the design with spatial planning documents, a description of the influence area, a summary of contents from the technical reports of individual schemes, and complete construction cost estimation.

The description of the conformity of the design with spatial planning documents shall include:

- the title of the spatial planning document(s) valid in the area of the intended construction, and the date of its issue and eventual modifications,
- requirements resulting from the spatial planning document shall be stated by items and in a sequence in compliance with the information on location, criteria and conditions of the national spatial order, or with a copy of the corresponding part of the location plan
- a description of conformity of the design with the requirements resulting from the spatial planning document in a same sequence as above,
- a description of conformity of the design solution with admissible deviations, when the intended construction will be carried out within the admissible deviations.

The description of the presented influence area shall include:

- an indication of expected impacts by the intended construction as well as by the structure in its service life,
- a description of the existing condition of the surroundings, where the results of the measurements already performed can also be used,
- a description and an assessment of expected impact of the intended construction on the environment, and
- a description of how the measures to prevent or reduce the expected impacts on the environment have been considered in the individual schemes of the BPD.

The summary of the contents from the technical reports of the individual schemes shall include abstracts from those constituent parts of the technical reports, from which it is evident, that the intended construction will implement all the essential properties, also enabling an undisturbed motion of functionally hindered persons where this is explicitly required.

4.8.3 Graphical Presentation of Conformity with Spatial Planning Documents

The conformity of the intended construction with the spatial planning documents shall be so presented as to draw the plan or the layout of the foreseen structure directly into the location plan layout, when a construction is foreseen in an area regulated by a national or municipal location plan, or directly into spatial order drawing showing the intended use of the space, when a construction is foreseen in an area regulated by a national or municipal spatial order.

4.8.4 Graphical Presentation of the Influence Area of the Structure

The influence area of an intended structure shall be determined on the basis of previously established expected impacts on the environment, and shall be presented as:

- the influence area during the construction, and
- the influence area of the completed structure when the latter will be in use.

The expected impacts on the environment shall be assessed in view of properties of the intended construction, taking account of the constructional and other regulations, as well as construction conditions, the foreseen admissible emission of substances or energy from the structure to the surroundings, other impacts of the structure on adjoining buildings and on the health of humans in those buildings.

From among the expected impacts on the environment particularly the following ones shall be considered:

- impacts on the mechanical resistance and stability,
- impacts on the safety from fire,
- impacts on the hygienic and sanitary protection as well as environment protection,
- impacts on the safety at use,
- noise protection, and
- saving energy and preserving heat.

In the graphical presentation of the influence area, each type of the impacts shall be clearly indicated apart from the others. In addition, a joint influence area of all the expected impacts shall be presented. Each individual impact shall be clearly marked in the impact legend. Form the graphical presentation of the influence it shall also be evident, to which buildings/structures the expected impact of the intended construction is extending.

The graphical presentation of the influence area shall be worked out in a land surveying plan at such a scale and for such an area as to enable a presentation of the entire influence area of the structure.

Irrespective of the precedent passage, a graphical presentation of the influence area of the intended intervention can be carried out in the approved drawing of the cadastral plan, when there is an intention to demolish or reconstruct an existing structure, or to construct a new simple structure.

4.8.5 Information on Location in BPD

The information on location in a BPD shall include descriptions and graphical presentations comprising the following:

1. Position, size, and shape of the building plot(s),
2. Position of the structure indicating its dimensions in plan (layout) and its shape,
3. Distances between the structure and adjacent parcels, buildings, protected zones,
4. Arrangement of external areas indicating green and recreation surfaces and similar, when a new or a modified arrangement of those areas is foreseen,
5. Construction line, if specified by the spatial planning documents,

6. Staking out elements, if the design relates to construction of a new structure, or when the size or the shape of the building plot is changed,
7. Characteristic sections (profiles) and shaping both structure and ground, when this is reasonable in view of the structural type and the arrangement of external areas,
8. Characteristic heights, i.e. above sea level and relative ones,
9. Indication of foreseen connections to the public infrastructure including the locations and identification numbers of the existing public infrastructure to which the new structures will be connected,
10. Traffic arrangement comprising a presentation of an eventual new point of access, and presentation of surfaces for standing traffic,
11. Construction site area and elements of arranging the site, information required to work out a safety plan (data on existing installations and devices, other impacts of the site surroundings on the labor safety), information on how the construction site is protected from the surroundings, on auxiliary rooms at site, traffic communications, and emergency paths and exits, on possibilities of connecting the site to the infrastructure, on determining the location, space, and method of disposing and storing the material, etc.

The graphical presentations indicated in the precedent passage shall be carried out each in its own drawing, or in joint drawings, if this is feasible and reasonable.

When a structure is foreseen in an area regulated by a location plan, the BPD shall not comprise the information on location, but a copy of the textual and cartographical part of the location plan for the area of the intended structure shall be inserted, unless the latter is intended to be executed within the admissible tolerances specified by the location plan. In such cases, the information on location shall include a graphical abstract from the location plan clearly indicating the admissible tolerances, or a graphical presentation from which it shall be clearly evident that the design solution is still within the admissible tolerances.

When demolition/removal of an existing structure is in question, the information on location shall only include the position of the existing structure on the plot of ground, a list of connections to the public infrastructure, and the site area with all the elements of its arrangement.

Graphical presentations in the information on location related to the reconstruction of an existing structure can be worked out in an approved drawing abstracted from the cadastral plan.

4.8.6 Evidences as Constituent Parts of BPD

The BPD leading folder shall contain the following evidences:

1. an evidence that the design company, that has worked out the BDP, fulfils the conditions prescribed for such companies;
2. an evidence that the responsible design project manager and the responsible designers, who have worked out the constituent parts (schemes) of the BDP, fulfil the prescribed conditions; such an evidence must not be older than six months, unless an individual engineer has already been registered by the competent professional chamber;
3. an evidence submitted by the design company that the latter has insured its liability;
4. when a structure is intended in an area regulated by the spatial order: approvals by the relevant authorities or copies of requests handed over to authorities, when the approvals have not been issued;

when a structure is intended in an area regulated by the location plan: opinions by the relevant authorities to the location plan;

5. when a spatial planning document has still not been recorded by the legal regime database established in compliance with the spatial arrangement regulations, the following shall be comprised as well:
    - an information on location issued in compliance with the Spatial Planning Act, or
    - construction criteria and conditions issued by the relevant authority, if they are included in the national spatial order, or
    - a copy of both textual and cartographic part of the location plan of the area of the foreseen construction, when the latter is located in an area regulated by a municipal or national location plan.

4.8.7 Schemes as Constituent Parts of BPD

A building permit design (BPD) shall include all those types of schemes, which the responsible design manager has defined as mandatory in the statement of the conformity of schemes, and of fulfilling essential properties, taking account of the type of structure.

Notwithstanding the first passage of this chapter, a BPD for buildings shall include at least an architectural scheme, as well as all those schemes, which are indispensable in view of the purpose of the intended building. Analogically, a BPD for civil engineering structures shall comprise those schemes that are appropriate in view of the purpose of such a structure.

Irrespective of the provisions indicated in the precedent passages, a BPD for a simple structure shall comprise all the required constituent parts, however in a form of a single joint scheme.

When no new structure is intended, a BPD shall comprise:

1. Demolishing/removal of a structure: scheme of demolishing works only, where such a method of demolishing/removing the structure is indicated as to ensure human safety and to minimize impacts on the environment; the condition after the demolishment is completed shall be indicated;
2. Horizontal or vertical extension of a structure: also a survey of existing conditions enabling to clearly mark those structural parts, which will be altered or supplemented due to any extension of the existing structure;
3. Substitutive construction: also a survey of the existing condition;
4. Change of intended use: only a survey of the existing conditions and an architectural scheme; when a sort of production is in question, schemes of both mechanical and electrical installations, as well as a technological scheme or any other schemes shall be included;
5. Reconstruction: also a survey of the existing condition; when products, that have already been built-in in the structure, are intended for a repeated use for the structure to be reconstructed, evidences shall be inserted proving that those products comply with the requirements of the relevant regulations dealing with construction products;
6. In case of acquiring a building permit for a structure already built: suitable schemes comprising surveys of the existing conditions instead of drawings:

    a) for buildings:

    - a survey of foundation and connections to the public infrastructure including an identification number of the existing network to which it is connected, a plan view of each storey including levels and relative heights (related to ±0,00), a survey of the roof, at least two characteristic sections perpendicular one to

another, a section through the staircase and the elevator shaft and engine room (when the building is equipped with an elevator), elevations of façades, as well as details when they are necessary to comprehend the existing condition, and

- a survey of installations and technological-product ional equipment that can also include some photos;

b) for civil engineering structures:

- an area layout also indicating all the existing structures,
- existing longitudinal sections and characteristic cross sections at a suitable scale,
- a survey of the technological-product ional equipment that can also include some photos, and
- other surveys if required in view of the structure type.

4.8.8 Summary of the Report on the Design Audit

When a design audit is mandatory in compliance with the Construction Act, a summary of the report on the audit of the complete design or individual schemes being constituent parts of the design shall be worked out. This applies to both a new structure and reconstruction of an existing structure. The enclosed form shall be used.

The investor and the design company can make an agreement on auditing the project execution design as well.

Notwithstanding the precedent passage, the content that has been additionally agreed, shall not be attached to the building permit design being a basis for issuing the building permit by the relevant authority.

In **Annexes 4 and 5,** we present an example of the contents of ROADS and CROSSROADS CONSTRUCTION BPD/PED

In Annexes we present the forms for:

Annex 7 - TITLE PAGE WITH BASIC INFORMATION ON THE SCHEME
Annex 8 - Table of Contents of a Scheme
Annex 9 - Summary of Report on Design Audit
Annex 10 - STATEMENT OF CONFORMITY OF SCHEMES AND FULFILLING ESSENTIAL REQUIREMENTS
Annex 11 - INFORMATION ON ACQUIRING DESIGN CONDITIONS AND APPROVALS

4.9 TENDER DESIGN (TED)

Tender design is a systematically arranged composition of such designs, which enable the investor to acquire the most relevant provider.

A tender design shall be prepared on the basis of a building permit design.

The leading folder of a tender design includes a title page and the general information on the intended construction only. The information on design companies and responsible designer can be omitted on the title page. The leading folder shall also comprise table of contents of the tender design.

Folders with schemes of a tender design shall be worked out in such contents and form as to comply with the public tender regulations or with the contract between the investor and the design company, when the investor is not obliged to follow the public tender regulations or in case that the tender design contents is not specified by those regulations.

Irrespective of the precedent passage, the tender design schemes shall include at least the following documents:

1. A presentation of the intended construction
2. Conditions affecting execution of works (e.g. climatic conditions, transport, site elements)
3. Types, technical characteristics, and quality of construction works, services, installations, devices, and equipment
4. Technical descriptions of works, quantities, types and delivery dates of equipment, schedules of services
5. Construction programme.

The tender design schemes can also include adequate drawings, diagrams, and tables, which might be necessary to a correct understanding of the tender requirements.

4.10 PROJECT EXECUTION DESIGN (PED)

Project execution design is a design for acquisition of the building permit amended by detailed designs, which enable the execution of the construction in accordance with the conditions included in the building permit.

4.10.1 Project Execution Design Contents for Complex Structures

A project execution design (PED) is used to construct/execute a structure. By the PED, the technical solution provided by the building permit design (BPD) is worked out in detail, thus the structure to be executed is fully defined.

A project execution design shall be prepared in compliance with the building permit design and construction conditions provided by the building permit.

On the basis of the project execution design, technical acceptance of the structure is carried through, and a permit of use is issued.

It is not obligatory that the project execution design is worked out by the company that has prepared the building permit design. However, the investor is obliged to submit the project execution design to the design company that has elaborated the building permit design, in order to ensure the conformity between both designs, as well as the compliance of the PED with the conditions provided by the building permit.

The design company, that has worked out the building permit design, shall immediately, but not later than within eight days, inform in writing the building inspectorate, that the project execution design has not been prepared in compliance with the building permit conditions, relevant legislation, special regulations, and norms.

The following general contents of a project execution design is proposed:

The leading folder of the project execution design shall include a title page, table of contents, general information on the intended construction, information on the design companies and responsible designers, a statement by the responsible project execution design manager, and evidences. (**Annex 11)**

The project execution design shall contain the following evidences:

1. an evidence that the design company, that has worked out the project execution design, fulfils the conditions prescribed for such companies;
2. an evidence that the responsible design project manager and the responsible designers, who have worked out the individual schemes, fulfil the prescribed conditions; such an evidence must not be older than six months, unless an individual engineer has already been registered by the competent professional chamber;
3. an evidence submitted by the design company that the latter has insured its liability;

A project execution design shall include all the drawings required for the construction.

In the schemes and experts' reports of the project execution design, the responsible designer may use individual constituent parts (such as drawings, essential calculations, analyses) of the building permit design, or he can only quote them as a reference; however, he shall clearly and accurately mark the location of those documents in the building permit design.

The schemes and experts' report in the PED shall have such a form and contents as to enable the contractor to perform the construction without any additional design services.

A PED can also comprise workshop drawings, if this is necessary for the intended construction. However, such drawings shall be signed and stamped by the responsible designer of the individual scheme.

In dependence on the type, complexity, size, and other features of the intended construction, the PED schemes shall particularly include the following:

1. Detailed drawings of all the constructional, craftsman (final), and installation works,
2. Joint drawings of all installations and equipment,
3. Schemes of technological systems,
4. Drawings of (dis)assembly of structural elements and their combinations,
5. Drawings of structural elements,
6. Drawings and details of construction methods,
7. Drawings and description of site arrangement, including all the information on the required infrastructure (e.g. communications, public utility connections, storehouses, deposit areas, workshops, rooms for labor), and information on how the construction site affects the environment,
8. Other drawings and presentations.

The drawings and description of the site arrangement indicated in item 7. of the precedent passage can also be constituent parts of the safety scheme, which is mandatory and shall be worked out in compliance with the regulations dealing with safety and health at work at provisional and movable construction sites. In such a case it is not necessary that the drawings and description of the site arrangement are constituent parts of the project execution design.

4.10.2 Project Execution Design Contents for Les Complex Works

In view of the type of works the following can be distinguished:

- Works interfering with areas outside the road space, thus spatial planning documents (e.g. a location plan), design documents, and a building permit are mandatory;
- Works carried out within the road space, thus an application for the works is sufficient – simple works – or the works for public benefit.

The following works can be considered as less complex ones:

- Placing overlays to, strengthening of, and rehabilitation of carriageways,
- Repairs or minor reconstructions of roads and structures on roads.

In these cases no building permit is necessary, as such interventions are in question, which do not require any new plots of ground; the works do not extend out of the road space, and they do not significantly change the gauges, i.e. structural heights in relation to the surroundings.

4.10.2.1 PED for Carriageway Renewal

A PED for carriageway renewal shall have the following minimum contents:

GENERAL PART:

- Basic information on the design (title page)
- Information on responsible design project manager and responsible designers
- Design contents (title)
- Scheme contents
- Terms of reference
- Statements, opinions, approvals, reports by different experts
  - Statement of consideration of regulations and standards
  - Statement of consideration of regulations dealing with safety at work
  - Statement of consideration of regulations dealing with fire protection
  - Statement of consideration of regulations dealing with maximum admissible noise levels
  - Expert's report – pavement structure design
- Approval of design by the investor
- Reports by responsible auditors, records of design audit discussions, a report on design supplement after the audit.

TECHNICAL PART:

- Technical descriptions and calculations
- Arrangement of points of access
- Traffic equipment and traffic signs
- Construction technology
- Bill of quantities
- Cost estimation including cost recapitulation
- Pavement structure design

DRAWINGS:

- Layout drawing, 1 : 5,000
- Longitudinal section, 1 : 5,000/500
- Constructional layouts, 1 : 500
- Longitudinal sections 1 : 1,000/100
- Characteristic cross section 1 : 50
- Cross sections
- Traffic arrangement layout
- Details
- Staking out expert's report
- Cadastral expert's report

4.10.2.2 PED for Repair or Reconstruction of Bridges and Supporting/Retaining Structures

The contents is analogous with those mentioned in the precedent chapter. However, some additional documents are required in the general part:

- Geological – soil mechanical report
- Hydrological report

The technical report shall include the following additional documents:

- Static and dynamical analyses,
- Drainage solution.

The following additional drawings shall be worked out:

- Plans, sections, elevations of bridges, walls, and culverts; reinforcement drawings, execution details.

Annex 15 presents the procedure on the preparation of the investment and design documents and others until issuing of the building permit.

Annex 16 presents the procedure on the investment execution.

4.11 DESIGN AUDIT

A design audit shall be carried through in accordance with the regulations dealing with the construction. By such a audit it is established whether the design drawings, calculations, etc. are faultless, thus proving that the intended structure will

- fulfil the essential prescribed requirements,
- be executed in compliance with the spatial planning documents and constructional regulations,
- be functional and suitable shaped, and
- ensure an effective and economical exploitation.

An audit is mandatory for such design documents, which relate to complex structures, which has been worked out abroad, and for which this is provided by special regulations.

Responsible auditors can be persons, who fulfil, in view of their sphere of activity and associated responsibility, the conditions provided by the Construction Act.

For the audit of individual schemes, the auditor shall appoint responsible auditors; from among them, an audit coordinator shall be selected.

The responsible auditor shall work out a summary of the report on the design audit using the enclosed form; to that completed form, the entire report on the design audit shall be attached.

A report on the design audit shall include the signature and identification number of the responsible auditor, as well as the stamp and signature of the responsible person employed by the auditor.

After having audited the design documents, auditor or responsible auditors submit a report in writing to the client (investor), thus they have no direct relation to the designer. Eventually required corrections and/or supplements of the design shall be carried out by the designer; the latter shall submit the corrected/supplemented design to the client (investor), who forwards it to the auditor for a repeated audit.

Rules of procedure on performing the design audit shall be worked out by the auditor.

4.11.1 Design Audit Contents

Both auditor and responsible auditor shall guarantee by the performed design audit that the building permit design for the intended construction is such as to ensure:

- fulfilling all the essential requirements such as
  - mechanical resistance,
  - stability,
  - fire safety,
  - hygienic and sanitary protection,
  - environment protection,
  - safe use,
  - noise protection,
  - energy saving,
  - preserving heat,
- conformity with spatial planning acts, and

- possibility of determining the influence area are directed by current regulations,

all in the spirit of provisions of the current Construction Act.

4.11.2 Design Audit Procedure

A design company submits a building permit design to the client (investor) or, if agreed, to the auditor.

The auditor prepares a proposal of responsible auditors and provides them with the corresponding parts of the design.

Within then agreed time period, responsible auditors present their reports on the audit to the design audit coordinator, who checks the reports and makes good any deficiencies/non-conformities.

The harmonized reports on the audit, including an approval by the design audit coordinator, are collected to a separate file, which shall be designated with design audit file number. All the documents related to the performed design audit shall be entered to this file.

The files/documents in connection with both design and design audit shall be preserved in compliance with the investor's requirements.

The responsible design audit coordinator prepares a summary of the report on design audit, and verifies it with his signature and personal stamp.

The summary of the report on design audit including the entire report on the design audit shall be submitted to the investor by the auditor.

4.11.2.1 Making Good the Nonconformities and Preparation of a Joint Report

In case that the responsible auditor has established

- discrepancies in view of spatial planning documents and in connection with ensuring reliability,
- non-fulfilling essential requirements,
- that the structure influence area is not determined as prescribed, and
- that no arrangements had been made in view of checking the correctness of the structural scheme calculations,

he does not work out any summary of the report on the design audit, but issues a special statement on the deficiencies established, including an explanation logically comprehending the answers to the questions and all the information required by the 2nd page of the summary of the report on design audit respectively. To such a statement, his own report on design audit shall be attached.

Statements and individual reports on design audit of all the responsible auditors who have taken part in the audit shall be submitted to the client/investor. The latter is entitled to forward these documents to the design company to mend the design accordingly.

After the design company has adequately mended/supplemented the building permit design, the latter is sent back to the investor/client, who forwards it to the auditor for a repeated/supplemental audit.

If the responsible auditors establish conformity of the mended/supplemented BPD in compliance with the Construction Act, they prepare a summary of the report on design audit and a supplemental (final) report on the audit.

Both summary of the report and the joint report are submitted to the investor/client, who has ordered the design audit. At the same time, the investor/client also receives the previous design documents, unless agreed otherwise with regard to preserving them.

4.11.2.2 Report on Design Audit and Summary of the Report on Design Audit

A report on design audit consists of the following:

- audits by all the responsible auditors,
- final report on design audit by the auditor.

A report on design audit shall include the following:

- signatures and identification numbers of responsible auditors,
- stamp of the auditor and signature by responsible person.

The responsible auditor shall prepare a summary of the report on design audit on a prescribed form.

All the report on design audit are collected in a design audit file and are placed to archives after the completion of audit.

To the design documents only the summary of the report on design audit shall be attached.

An auditor shall take care of the following:

- the organization and carrying through the ordered design audits;
- the preparation of proposals by the responsible auditors and audit coordinators for each individual constituent part of the BPD;
- a due and regular delivery of design documents to the appointed responsible auditors and audit coordinator for examination;
- a due preparation of reports on audit by the appointed responsible auditors;
- collecting individual reports on design audit and summaries of the reports;
- the suitability of prescribed form of the reports on design audit (all signatures, stamps, dates, correct addresses, etc.);
- the preparation of the design audit file (collection of harmonized reports on design audit);
- the submittal of the summary of the report on design audit and of the joint report on the design audit to the investor;
- the archives of reports and summaries of the reports on design audit;
- making contracts/agreements with non-resident engineers, i.e. responsible auditors and audit coordinator;
- approving of invoices issued by the non-resident engineers having taken part in the design audit;
- updating/managing a list of resident and non-resident responsible auditors, including their personal files, past experience, etc.;
- updating/managing and analysis of clients' files;
- managing records related to orders, contracts, invoices, etc.

Findings made by the auditing company or responsible auditors are business secrets and must not be available to public, media, or competition.

Only auditor, investor, and design company may be acquainted with the design audit results. Under certain conditions, the administrative body/authority competent to issue the building permit as well as prosecutors and tribunals may also be informed on those results.

An auditor keeps and internal reference book of the design audits performed either by the resident or non-resident responsible auditors.

An auditor makes agreements with non-resident responsible auditors to carry out a design audit.

Responsible auditors employed by the auditor (i.e. resident engineers) shall be paid in compliance with the auditor internal acts.

4.11.2.3 Audit of Extremely Complex, Urgent or Critical BPD/PED Documents

For particularly complex, urgent or critical cases, or when exceptional events occur during the construction itself, such as

- longer tunnels or tunnels unpredictable in view of geo-technical/hydro-technical conditions,
- landslides or rock falls,
- long or high viaducts,
- high dams,
- high buildings on unstable ground,
- retaining and supporting structures,
- all kinds of power plants, railway knots, airports, harbors, and similar,
- complex equipment and technology,

foreign experts can be exceptionally invited to the design audit. Notwithstanding that they do not fulfil the requirements provided by the domestic legislation, they may act as consultants to the auditor or responsible auditor.

A form of decree in **Annex 13** on appointing an auditing commission is proposed below.

4.12 DESIGN REVIEW

The design review is not mandatory and the investor implements it in its own discretion, namely for the studies, expert bases and different stages of the design documents, *except for the building permit design.*

With this purpose, the investor nominates the review committee, and based on its judgement also sub-committees. There shall be the rules adopted for the work of the committee and sub-committees. The work is implemented in the same way as in the Chapter 7.11.

The committee discusses the following design documentation, studies and elaborates:

- Roads, junctions, flyover junctions, crossroads
- Structures (bridges)
- Drainage
- Carriageway structures
- Architecture
- Traffic equipment and traffic safety
- Municipal utility, energy and information infrastructure and
- Others.

The sub-committee for tunnels discusses all studies, elaborates and design documents concerning the tunnels, shafts, headings and other underground works.

The sub-committee for traffic and traffic economy discuses all studies and analyses concerning the traffic and traffic economy:

- Traffic analyses and studies
- Traffic and economic comparisons of variants
- Studies and preliminary studies on (economic) eligibility and
- Others.

The sub-committee for the environment and spatial planning discusses all studies and design documents concerning:

- Expert bases in the context of complying with the environment protection legislation
- Reports on impacts on the environment

- Location designs
- Location documents
- Regulation designs
- BPD in the context of complying with the environment protection regulations
- Archaeological reports.

The sub-committee for geology, hydro-geology and geo-techniques will discuss all studies, elaborates and design documents concerning geo-techniques and hydrology.

The sub-committee for building will discuss all studies and design documents concerning:

- Toll stations
- Motorway maintenance stations
- Portal works in tunnels
- Border crossings
- Substitution works
- Removal of the existing buildings in the layouts of motorways and other roads or in their immediate vicinity and
- Other buildings.

5 REGULATION OF RELATIONS AMONG THE PARTICIPANTS IN EXECUTION OF INVESTMENTS

5.1 LIABILITY FOR DAMAGE

The investor of the intended works, the project designer, which has worked out the design documentation for such works, the contractor executing such works, the person supervising the construction of such works, and the person reviewing the design documentation for such works, are liable for direct damage occurring with the third persons as a result of their work and their contractual obligations.

5.2 LIABILITY INSURANCE

Before starting implementation of the activity concerned, the project designer, contractor, supervisor and reviewing person have to enter into liability insurance for damage, which might occur with the investors and third persons in relation to the implementation of their activities, and have to keep it during the whole period of their operation.

In accordance with the regulations on insurance, the annual insurance amount shall be agreed between the insurance company and participants in construction of the works from the previous paragraph, either for individual insurance case or for all insurance cases in a specific year.

The annual insurance amount determined in the insurance agreement may not fall below EUR 50,000.

5.3 EXCLUSION

As an investor, project designer and contractor, there may act different legal entities and natural persons providing that they comply with the conditions determined by the Building Act; however, the same legal entity or natural person may act as an investor, project designer and contractor at the same time if not otherwise stipulated by law. An example:

- As a supervisor may act only such legal entity or natural person, which does not act as a contractor in the construction, final or craft, assembling and other works, or as a supplier of the construction products, appliances and equipment relating to the works, for the construction of which such person executes the building supervision. In addition, the supervisor must not be in any mutual business connection with the contractor; in case where the supervisor is a sole proprietor, such supervisor must not be in any straight line family relationship with the contractor's responsible manager of works, or must not be married to such supervisor, nor he or she is allowed to live in a non-marital partnership with such supervisor.
- As a reviewing person may act only such legal entity or natural person, which does not act as a project designer or contractor in the works, for which such person carries out reviewing of the design documents, and is not in any family relationship with the project designer or contractor.
- If the project designer and supervisor are the same legal entity or natural person, the project designer must not execute the construction as a contractor in the works, for which such person has worked out the design documents. When the project designer acts also as a contractor, the project designer and the supervisor have to be different legal entities or natural persons that must not be in any mutual business relationship; and the responsible project leader and responsible supervisor must not be in any straight line family relationship, or married with each other, or living in a non-marital partnership.

- If the investor acts as the project designer and the contractor with the same works, or executes the works for its own needs or for sale, it must not act as a supervisor in such construction work, but has to assign the building supervision to the contractor, which does not execute the construction in the same works, or to another project designer. In such case, the contractor or the project designer taking over the building supervision must not be in any mutual business relationship with such investor; and the responsible construction site manager or responsible manager of works and responsible project leader must not be in any straight line family relationship, or married with each other, or living in a non-marital partnership.
- The investor may act as a supervisor, but in such case it cannot act neither as the project designer nor as the contractor in the works, for which it executes the building supervision.
- The investor may be also an auditor, but in such case it cannot act as the project designer, contractor and supervisor in the works, for which it has carried out the audit of the design documents.

6 ANNEXES

6.1 ANNEX 1 – Project Identification (P-ID)

PROJECT IDENTIFICATION (P-ID)

1. BASIC DATA ON THE PROJECT

Project title: _____

Location of the project: section _____ position _____ length _____
structure code _____
other _____

2. BACKGROUND AND HISTORY INFORMATION

(Specify essential information regarding the project from its beginning as well as any past events and data leading to the idea.)

_____
_____
_____
_____
_____
_____

3. PROJECT DESCRIPTION

a) Expand the description of the project's idea. Specify in detail the project's description with specific activities.

_____
_____
_____
_____

b) Short description of the project's elements, explain their link with the original idea.

_____
_____
_____
_____
_____
_____

4. PROJECT BENEFITS

Direct – specify details on the target group to benefit from the project.

Indirect – examine potential benefits for groups other than the target group, which groups are these, what is their size.

5. USER FEEDBACK

a) Feedback of target (direct) users (describe survey results)

b) Feedback of indirect users (describe survey results)

6. PURPOSE AND OBJECTIVES OF THE PROJECT

Purpose:

(The purpose must be specified as the objective at the higher – national level or as the objective of an individual programme.)

Objectives:

(An objective is a concrete problem or need, reformulated as the potential solution. It must be specified in a measurable form.)

7. RESULTS

8. PRELIMINARY COSTS, ESTIMATED REVENUES AND OTHER FINANCE-RELATED IMPLICATIONS

Projects, purchases, change of intended purpose, supervision:	
Construction work and equipment:	
Relocation of utility lines:	
Regulations:	
Accompanying projects:	

Describe and specify also indirect costs, which may be related to the project:

9. ASSUMPTIONS / RISKS

(Examine potential risks, which may hinder the project's development or influence its success.)

10. IMPACTS (SOCIAL AND ENVIRONMENTAL)

MAINTENANCE AND SUSTAINABILITY

Description and estimate of costs required to ensure the project's sustainability.

PROJECT DEFINITION DOCUMENT PREPARED BY:

Name: _____
Function: _____
Organisation/Department: _____
Address: _____
Telephone: _____

Persons assisting in preparation:

Name_____Function_____Address

_____

_____

_____

- If the estimated costs are less than € ……., we shall proceed with the implementation
- If the estimated costs are € ……., we shall prepare the investment programme
- If the estimated costs are more than € ……., we shall proceed with the preliminary investment study or feasibility study

---

(To be filled by the planning department.)

Date of submitting: _____

Received by the Planning Department, person in charge:

_____

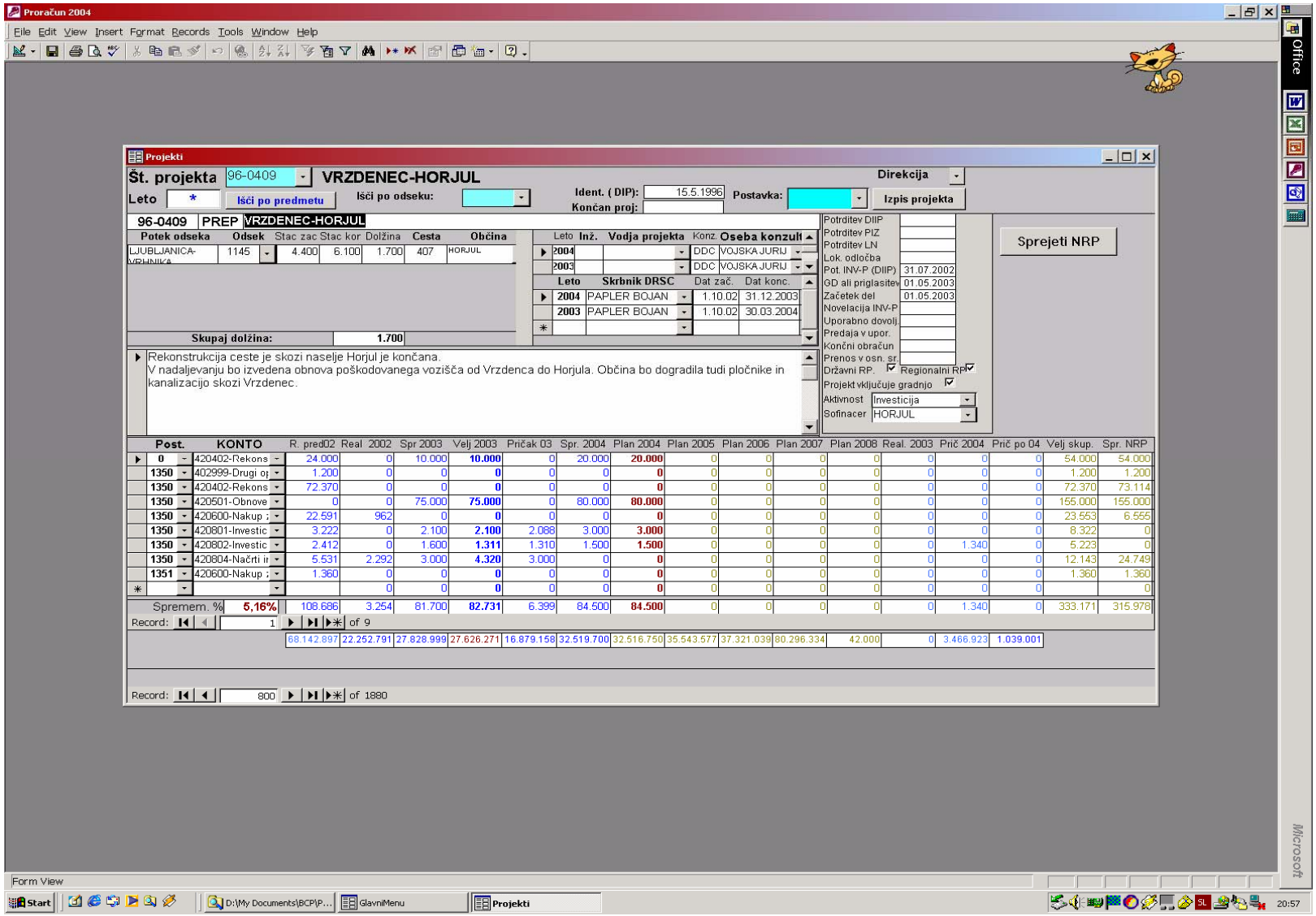
Examined and approved by:_____

(Head of the Planning Department)

- Approved for adoption or immediate preparation
- Approved for the investment programme
- Approved for the feasibility study or preliminary investment study
- Rejected, explanation sent to the initiator

Note: Enclose additional sheets should you require more space for data.

6.2 ANNEX 2 – An Example of the Investment Purpose Database Sheet



6.2a Annex 2a – Proposal on Project Registration in the Development Programmes Plan

PLAN OF DEVELOPMENT PROGRAMMES ***Form : PROJECT PROPOSAL FOR THE 2005-2008 NRP***

INVESTMENTS

Event	Date		Code	current Name (title
[DIIP] approved		*User:*		
[DLN] approved		*Municipality or municipalities:*		
Location information		*Regional programme (YES/NO):*		
[INVP] approved		*National development programme:*		
Building permit		*Main programme:*		
Work started		*Subprogramme:*		
[INVP] updated		*Project / investment:*		
Use permit		*Investor or coinvestor:*		
Handed over to the user		***Purpose, goal:***		
Final accounting				
Transfer among fixed assets				
Project includes construction (Y/N):				

	Sources of funding			***Total sum (2 through 9) - 3***	***Realized before 2007***	***2007***	***Applicable NRP 2007***	***Planned funding of the investme 2008***	***2009***	***2010***
	Item	***Account 6:***	***Account title***	***1***	***2***	***3***	***4***	***5***	***6***	***7***
BUDGET: (items, donations, targeted loans)				*0*						
				0						
				0						
				0						
				0						
				0						
				0						
				0						
				0						
				0						
				0						
	Total budget:			*0*	*0*	*0*	*0*	*0*	*0*	*0*
OTHER SORUCES: (municipainues, companies,...)	***Tax code***		***Co-funder's title, document***							
				0						
				0						
				0						
				0						
				0						
	Total funding from other sources:			*0*	*0*	*0*	*0*	*0*	*0*	*0*
	TOTAL SOURCES = budget + other sources			*0*	*0*	*0*	*0*	*0*	*0*	*0*
	TOTAL COSTS (realized and paid):			*0*	*0*	*0*				
	DIFFERENCE = SOURCES - COSTS:			*0*	*0*	*0*	*0*	*0*	*0*	*0*

Prepared by: *Date:* *Responsible person:*

Phone:

If the value of the project (investment) changes subsequently, enter comments into the frame below. Provide arguments for the change.

6.3 ANNEX 3 – Contents of a Road Reconstruction Preliminary Design

An example of contents of **a Road Reconstruction Preliminary Design** is indicated below:

G	**GENERAL PART**
G.1	**Information on design/scheme**
G.2.1	Information on design companies
G.2.2	Written approval for participation in design (when the responsible designer is not employed by the design company that has worked out the design/scheme)
G.3.1	Table of contents of the complete design (when the latter is composed of more schemes)
G.3.2	Scheme contents
G.4.1	Terms of reference
G.5	**Statements, opinions, approvals, reports by experts**
G.5.1	Statements
G.5.1.1	Statement of consideration of technical regulations and standards
G.5.1.2	Statement of consideration of regulations dealing with safety and health at work
G.5.1.3	Statement of consideration of regulations dealing with fire protection
G.5.1.4	Statement of consideration of regulations dealing with maximum admissible noise levels
G.5.1.5	Statement of mutual conformity of design documents related to this design/scheme
G.5.2	Opinions, approvals, protocols
G.5.2.1	List of authorities that issue approvals or design conditions
G.5.2.2	Conditions and approvals in compliance with paragraph ..... of the Construction Act
G.5.2.3	Brief summary of design conditions or approvals issued by relevant authorities, and a description of how those documents have been considered in the design/scheme
G.5.2.4	Evidence of handing over a written request to relevant authorities to issue design conditions or approvals, in case that they have not replied – to be inserted to the 1st copy only
G.5.3	Information on the location
G.5.4	Reports by experts
G.5.4.1	Geological – soil mechanical report
G.5.4.2	Expert's report on road pavement
G.5.4.3	Hydro technical report
G.5.4.4	Report on present condition of structures
G.6	**Documents dealing with design audit**
G.6.1	Record of design audit discussion
G.6.2	Reports by auditors
G.6.3	Answers to the record of design audit discussion and to the reports by auditors
G.7.1	Administrative permits prior to construction commencement
T	**TECHNICAL PART**
T.1	**Technical descriptions and calculations**
T.1.1	Technical report
T.1.1.1	Bases for design
T.1.1.1.1	General
T.1.1.1.2	Traffic data
T.1.1.1.3	Existing conditions
T.1.1.1.4	Land surveying bases
T.1.1.1.5	Ground configuration and geological conditions (summary of the report)
T.1.1.1.6	Hydrological and water economy conditions (summary of the report)
T.1.1.1.7	Urbanism and building development
T.1.1.1.7.1	Current spatial documents
T.1.1.2	Technical data
T.1.1.2.1	Type and importance of the road
T.1.1.2.2	Alignment elements

T.1.1.2.3	Cross section
T.1.1.2.4	Special conditions
T.1.1.3	Description of technical solutions
T.1.1.3.1	Course and problems of the solution alternative
T.1.1.3.2	Comparison of alternatives (listing of advantages and disadvantages for each alternative
T.1.1.3.3	Proposal by design company in view of selecting an alternative
T.1.1.3.2	Substructure
T.1.1.3.3	Pavement structure
T.1.1.3.4	Drainage (including an approximate calculation based on contributory areas and expected precipitation quantity, and dimensioning)
T.1.1.3.5	Crossroads and points of access
T.1.1.3.6	Accompanying structures
T.1.1.3.7	Rearrangement of public utilities
T.1.1.3.8	Road and railway deviations
T.1.1.3.9	Bridges and retaining walls (repair, new construction, demolition, …)
T.1.1.3.10	Water stream improvement
T.1.1.3.11	Service areas, bus stops
T.1.1.3.12	Traffic equipment and signs
T.1.1.3.12.1	Description of traffic signs and road marking
T.1.1.3.12.2	Description of traffic equipment
T.1.1.3.13	Slope arrangement and protection
T.1.1.3.14	Noise protection
T.1.1.3.15	Construction conditions
T.1.1.3.16	Ascertainment and proposals
T.1.2	Design analysis of structures
T.2.	**Bill of quantities and cost estimation**
T.2.0	Report (permanent and provisional deposit areas, …)
T.2.1	Bill of quantities (to indicate PRICES PER DAY…, separately for stages, extra for road, footway, bus stop construction, …)
T.2.2.1	Cost estimation
T.2.2.2.	Recapitulation of investment costs
T.2.2.3	(**) Presentation of entire investment
T.2.3	(**) Tabular presentation of investment costs per unit m^1 and m^2, e.g. for road, footway, …., drainage, …., and in total
T.2.4.	(**) Tabular presentation of contributory area, e.g. carriageway, footway, bus stops
T.2.5	Presentation of cubature
D	**DRAWINGS**
D.1	Layout 1 : 5,000 indicating road kilometers in compliance with the Road Data Base
D.2	Longitudinal section 1 : 5,000/500
D.3	Layout 1 : 500
D.4	Longitudinal section 1 : 1,000/100
D.5	Characteristic section 1 : 50
D.6	Cross section 1 : 100
D.7	Layout of existing and intended public utilities, and drainage, of 1 : 500 (1,000)
D.8	**Additional solutions**
D.8.1	**Supporting and retaining walls**
D.8.1.1	Longitudinal sections of supporting walls
D.8.1.2	Longitudinal sections of retaining walls
D.8.1.3	Cross sections of supporting walls
D.8.1.4	Cross sections of retaining walls
D.9	**Traffic arrangement layout 1 : 500 (1,000)**
D.10	**Special solutions**

D.13 Cadastral report

D.13.1 Cadastral layout 1: 500 (1,000) (including road kilometers in compliance with the Road Data Base, public utilities, construction stages; each concerned/affected parcel number shall be suitably marked)

D.13.1 Annexes to cadastral layout

D.13.1.1 Report

D.13.1.2 Table of concerned/affected parcels (consecutive numbers 1.2.3), parcel number, owner (name, surname, address), cadastral municipality, cadastral register entries, type of use, class, areas (in ha, a, m^2): common, required for the road, required for footway, required for public utilities (servitude; what is out of the road construction intervention), remainder, note (e.g. which stage, which public utility).

D.14 Details

D.15 Land surveying plan (dated and stamped by the authorized responsible designer – surveyor), in the 1st copy only.

Notes:

- The authorization to acquire cadastral information and information on location shall be issued by the investor on the basis of a due request by the design company.
- After the design audit the following shall be submitted in a digital form on a CD: a layout at the prescribed scale on a land surveying plan recorded in accordance with the national system of coordinates, in a format DXF or DWG.
- (**) Tables for the abovementioned information shall be submitted to the design company by the investor or engineer upon a due request.

6.4 ANNEX 4 – Contents of a Road Construction Building Permit Design/Project Execution Design

An example of contents of **a Road Construction Building Permit Design/project execution design** is indicated below:

G	**GENERAL PART**
G.1	Information on design/scheme
G.2	Information on design companies
G.2.1	Written approval for participation in design (when the responsible designer is not employed by the design company that has worked out the design/scheme)
G.3.1	Table of contents of the complete design (when the latter is composed of more schemes)
G.3.2	Scheme contents
G.4.1	**Terms of reference**
G.5	Statements, opinions, approvals, reports by experts, studies
G.5.1	**Statements**
G.5.1.1	Statement of consideration of technical regulations and standards
G.5.1.2	Statement of consideration of regulations dealing with safety and health at work
G.5.1.3	Statement of consideration of regulations dealing with fire protection
G.5.1.4	Statement of consideration of regulations dealing with maximum admissible noise levels
G.5.1.5	Statement of mutual conformity of design documents related to this design/scheme
G.5.2	**Opinions, approvals, protocols**
G.5.2.1	List of authorities competent to issue approvals or design conditions
G.5.2.2	Conditions and approvals in compliance with paragraph ..... of the Construction Act
G.5.2.3	Brief abstract from design conditions or approvals issued by relevant authorities to the location plan and to the design, and a description of how those documents have been considered in the design/scheme
G.5.2.4	Evidence of handing over a written request to relevant authorities to issue design conditions or approvals, in case that they have not replied – to be inserted to the 1st copy only
G.5.3	**Information on the location**
G.5.4	**Reports by experts**
G.5.4.1	Geological – soil mechanical report
G.5.4.2	Expert's report on road pavement
G.5.4.3	Hydraulic guidelines
G.5.4.4	Report on present condition of structures
G.5.5	**Studies**
G.6	**Documents dealing with the design audit**
G.6.1	Record of design audit discussion
G.6.2	Reports by auditors
G.6.3	Answers to the record of design audit discussion and to the reports by auditors
G.7.1	**Administrative permits prior to construction commencement (e.g. acquired at precedent stages – a Decree of the location plan)**
T	**TECHNICAL PART**
T.1	Technical descriptions and calculations
T.1.1	**Technical report**
T.1.1.1	**General**
T.1.1.2	**Bases for design**
T.1.1.2.1	Conditions indicated by the location plan
T.1.1.2.2	Preliminary design and spatial planning documents
T.1.1.2.3	Water economy conditions and arrangements
T.1.1.2.4	Geology and soil mechanics (abstract from appropriate experts' reports)
T.1.1.4	**Road pavement design (summary of the expert's report)**
T.1.1.5	**Technical data**

T.1.1.5.1 Alignment elements (design speed, minimum horizontal radius, minimum transition curve length, maximum slopes and vertical curvatures, sight distance, relevant vehicle, connecting radii, characteristic cross section, serpentines, etc.)

T.1.1.5.2 Description of structural elements (preliminary works, earth works, pavement, drainage, structures, walls, slopes, traffic equipment and signals, ground water protection, noise protection, horticulture, etc.)

T.1.1.6 Description of technical solutions

T.1.1.6.1 Description and argumentation of the horizontal course

T.1.1.6.2 Description and argumentation of the vertical course

T.1.1.6.3 Description of rearrangement of crossroads, points of access, deviations of roads, railway, water stream improvements, adjacent structures, etc.)

T.1.1.7 Protection and rearrangement of public utilities (telecommunications, high-voltage and low-voltage electrical cables, public lighting, traffic lights, water supply, hot water supply, gas conduit, sewage system, etc.)

T.1.1.8 Intervention in ground, displacement and removal of structures

T.1.1.9 Conditions and technology of construction (depositing, borrow pits, protection of structures, etc.)

T.1.1.9.1 Traffic arrangement during construction, construction stages

T.1.1.10 Traffic equipment and signs

T.1.1.10.1 Report

T.1.1.10.2 Description of traffic signs and road marking

T.1.1.10.3 Description of traffic equipment

T.1.1.10.4 Informational signs

T.1.1.10.5 Traffic lights

T.1.1.10.6 Crossroads lighting

T.1.1.10.7 Tabular presentation of road signs and equipment (km, cipher, dimension, sketch, height, note (e.g. height of the post, type of reflecting foil))

T.1.2 Static and dynamical structural analysis

T.2. Bill of quantities and cost estimation

T.2.0 Report (permanent and provisional deposit areas, ...)

T.2.1 Bill of quantities (to indicate PRICES PER DAY…, separately for stages, extra for road, footway, bus stop construction, ...)

T.2.2 Cost estimation

T.2.2.1. Recapitulation of investment costs

T.2.2.2 (**) Presentation of entire investment

T.2.3 (**) Tabular presentation of investment costs per unit m^1 and m^2, e.g. for road, footway, ..., drainage, ..., and in total

T.2.4 (**) Tabular presentation of contributory area, e.g. carriageway, footway, bus stops

T.2.5 Presentation of soil works cubature

D DRAWINGS

D.1 Layout from the location plan

D.2 Influence area (in compliance with the paragraph ..... of the Construction Act)

D.3 Cadastral layout 1: 500 (1,000) (including road kilometers in compliance with the Road Data Base, construction stages, ...)

D.4 Longitudinal section 1 : 5,000/500

D.5 Characteristic sections 1 : 50

D.6 Construction layout 1 : 500 (1 : 1,000)

D.7 Longitudinal section, 1 : 1,000/100

D.8 Cross sections, 1 : 100

D.9 Traffic arrangement layout, 1 : 1,000)

D.10 Layout of public utilities, and drainage, 1 : 500 (1,000)

D.11 Additional solutions

D.11.1 Supporting and retaining walls

D.11.1.1.1 Supporting wall longitudinal section, 1:50

D.11.1.2.1 Retaining wall longitudinal section, 1:50

D.11.1.1.2 Supporting wall cross section, 1:50

D.11.1.2.2 Retaining wall cross section, 1:50

D.11.1.1.3 Supporting wall formwork drawing, 1:50

D.11.1.2.3 Retaining wall formwork drawing, 1:50

D.11.1.1.4 Supporting wall reinforcement drawing, 1:50

D.11.1.2.4 Retaining wall reinforcement drawing, 1:50

D.11.1.3.1 Annexes to reinforcement drawings (reinforcement list for supporting or retaining walls)

D.11.2 Culverts

D.11.2.1 Culvert plan view, 1:50

D.11.2.2 Culvert longitudinal and cross section, 1:50

D.11.2.3.1 Culvert reinforcement drawing, 1:25

E.11.2.3.2 Annexes to reinforcement drawings (reinforcement list for culverts)

D.11.3 Points of access

D.11.4 Bus stops

D.12 Execution details (harmonized with the bill of quantities)

D.13 Cadastral report

D.13.1 Cadastral layout 1: 500 (1,000) (including road kilometers in compliance with the Road Data Base, public utilities – if they are out of the intervention due to rivers, roads, etc., construction stages; each concerned/affected parcel number shall be suitably marked by 1, 2, 3, and shall be in accordance with the consecutive number in the table of concerned/affected parcels)

E.13.1 Annexes to cadastral layout

E.13.1 1Report

E.13.1.2 Table of concerned/affected parcels (consecutive numbers 1.2.3), parcel number, owner (name, surname, address), cadastral municipality, cadastral register entries, type of use, class, areas (in ha, a, m^2): common, required for the road, required for footway and bus, required for public utilities (servitude; what is out of the road construction intervention), remainder, note (e.g. which stage, which public utility).

D.13.1.3 Cadastral register entries (to be submitted separately as originals in their own folder; consecutive numbers shall be entered right and above: 1, 2, 3, ...; they shall match the consecutive numbers in the table!)

D.14 Land surveying plan

D.14.1 Staking out layout, 1 : 1,000 (1 : 500, 1 : 250)

E.14.2 Annexes to the staking out layout

E.14.2.1 Report

E.14.2.2 Staking out data (a list of cross section coordinates, a list of coordinates of the axis main points, a list of coordinates of polygonal, reference, and trigonometric points)

E.14.2.3 Topography of polygonal points (table: point, positional sketch of the point, designation, coordinates)

Notes:

The authorization to acquire water economy approval, cadastral information, cadastral register entries, and information on location shall be issued by the investor on the basis of a due request by the design company.

(**) Tables for the abovementioned information shall be submitted by e-mail to the design company by the investor or engineer upon a due request.

After the design audit the following shall be submitted:

- the cost estimation on a floppy disc
- the layout at the prescribed scale on a land surveying plan recorded in accordance with the national system of coordinates, in a format DXF or DWG, on a CD
- the cadastral report including original cadastral register entries in a separate folder.

WARNING: A road construction design shall also comprise all other designs, which are required due to the construction technology, and specified by the location plan (or by the approvals issued by the relevant authorities).

6.5 ANNEX 5 – Contents of as Crossroads Construction Building Permit Design/Project Execution Design

An example of contents of **A Crossroads Construction Building Permit Design/Project Execution Design** is indicated below:

(only those constituent parts are indicated, which are typical of this case – other documents are the same)

T TECHNICAL PART

T.1 Technical descriptions and calculations

- Crossroads dimensioning
  - Planned period and design speed
  - Capacity
  - Lane lengths
- Alignment elements (alignment, connecting radius, falls, lane widths and lengths, sight distance; for a roundabout: diameter of the central island, external diameter, width of entry and exit radius, width of entry and exit part, cross fall of carriageway and paved zone, radius of horticultural arrangement)
- Arrangement of pedestrian and cycle traffic, bus stops, etc.
- Lighting of crossroads, traffic lights
- Arrangement of traffic during construction
- Construction conditions and technology

T.2. Bill of quantities and cost estimation

- Tabular presentation of contributory area of carriageway and footway as well as bus stops
- Tabular presentation of individual and total length of approach roads (measured from the crossroads edge outwards.

D DRAWINGS

- Construction layout of crossroads, 1 : 500 (1 : 250)
- Road longitudinal section, 1 : 1,000/100 (1 : 500/50)
- Approach road longitudinal section
- Layout – elements, 1 : 250
- Layout – drainage, 1 : 250
- Layout of public utilities, 1 : 500
- Characteristic cross sections, 1 :50
- Cross profiles, 1:100
- Traffic arrangement layout, 1 : 1,000 (1 : 500)
- Layout of traffic arrangement and traffic signs, 1 : 250
- Layout of arrangement of edge staking out, 1 : 250
- Horticultural arrangement of the island (applies to roundabouts)
- Additional solutions in crossroads area

6.6 ANNEX 6 – Format and Contents of Design Documents

TITLE PAGE OF THE DESIGN LEADING FOLDER

LEADING FOLDER

INVESTOR:

.....

(investor's name and surname, company, headquarters' address)

STRUCTURE:

.....

(denomination of the structure to be constructed)

TYPE OF DESIGN DOCUMENTS

(conceptual design, preliminary design, building permit design, tender design, project execution design)

.....

TYPE OF CONSTRUCTION:

.....

(new construction, horizontal or vertical extension, reconstruction, removal, change of intended use, substitutive construction)

DESIGN COMPANY:

.....

(title, address, name and signature of responsible person, stamp)

RESPONSIBLE DESIGN PROJECT MANAGER:

.....

(name of responsible design project manager, professional education, identification number, personal stamp, signature)

NUMBER OF DESIGN AND COPY, PLACE AND DATE OF DESIGN ACCOMPLISHMENT:

.....

(number of design recorded by design company, place and date of design accomplishment)

Note: after the title page, a list of persons that have participated in working out the leading folder can be inserted.

TABLE OF CONTENTS OF DESIGN No. .....

Leading folder

0.1 Leading folder title page
(to be completed and inserted as the first form)

0.2 Table of contents of the design
(to be completed and inserted as the second form)

0.3 General information on the construction intended
(to be completed and inserted as the third form)

0.4 Information on design companies and responsible designers
(to be completed and inserted as the fourth form, except in the tender design)

0.5 Statement of conformity of schemes and implementing essential properties
(in the building permit design only; the attached form to be completed and inserted)

0.6 Statement by the responsible construction project manager
(in the project execution design only; the attached form to be completed and inserted)

0.7 Summary of the report on the design audit
(in the building permit design only, when the design audit is obligatory; the attached form to be completed and inserted)

0.8 Resumed design report
(in the preliminary design and the building permit design only)

0.9 Graphical presentation of conformity with spatial planning documents
(in the building permit design only)

0.10 Graphical presentation of the intended construction influence area
(in the building permit design only)

0.11 Information on location
(information prescribed for an individual design shall be inserted)

0.12 Information on acquiring design conditions and approvals
(in the building permit design only; the attached form to be completed and inserted)

0.13 Verification documents
(verification documents prescribed for an individual design shall be inserted)

Schemes

1 Architectural scheme No. .....

1.1 Title page
(the first attached form to be completed and inserted)

1.2 Table of contents of the scheme
(the second attached form to be completed and inserted)

1.3 Table of contents of the design
(the second attached form to be completed and inserted)

1.4 Statement by the responsible designer
(the third attached form to be completed and inserted)

1.5 Technical report

1.6 Drawings

2 Landscape architecture scheme No. .....

2.1 Title page
2.2 Table of contents of the scheme
2.3 Table of contents of the design
2.4 Statement by the responsible designer
2.5 Technical report
2.6 Drawings

3 Structural scheme No. .....

3.1 Title page
3.2 Table of contents of the scheme
3.3 Table of contents of the design
3.4 Statement by the responsible designer
3.5 Technical report
3.6 Drawings

4 Scheme of electrical installations and equipment No. .....

4.1 Title page
4.2 Table of contents of the scheme
4.3 Table of contents of the design
4.4 Statement by the responsible designer
4.5 Technical report
4.6 Drawings

5 Scheme of mechanical installations and equipment No. .....

5.1 Title page
5.2 Table of contents of the scheme
5.3 Table of contents of the design
5.4 Statement by the responsible designer
5.5 Technical report
5.6 Drawings

6 Scheme of telecommunication installations No. .....

6.1 Title page
6.2 Table of contents of the scheme
6.3 Table of contents of the design
6.4 Statement by the responsible designer
6.5 Technical report
6.6 Drawings

7 Technological scheme No. .....

7.1 Title page
7.2 Table of contents of the scheme
7.3 Table of contents of the design
7.4 Statement by the responsible designer
7.5 Technical report
7.6 Drawings

8 Scheme of excavation, blasting, and geotechnical structures No. .....

8.1 Title page

8.2 Table of contents of the scheme
8.3 Table of contents of the design
8.4 Statement by the responsible designer
8.5 Technical report
8.6 Drawings

9 Other constructional schemes No. .....

9.1 Title page
9.2 Table of contents of the scheme
9.3 Table of contents of the design
9.4 Statement by the responsible designer
9.5 Technical report
9.6 Drawings

10 Expert's report on ..... No. .....

10.1. Title page
10.2. Table of contents of the expert's report
10.3. Contents
10.4. Statement by the responsible expert
(if this is provided by a special regulation)

Note:
(rubrics, which are not applicable, shall remain uncompleted; if a design consists of several schemes or expert's reports, the rubrics shall be repeated accordingly; if a scheme consists of several constituent parts, they shall be named and suitably denoted using sub-items)

GENERAL INFORMATION ON THE INTENDED CONSTRUCTION

Type of works:

.....

(description of the type of construction or works: new structure, horizontal or vertical extension, reconstruction, removal, change of intended use, substitutive construction)

Name of the structure, which the intended construction relates to: .....

(indication of the name of the structure, which this evidence relates to)

Structure classification:

.....

(indication of the classification designation in accordance with the relevant regulation if any; if a multipurpose structure is intended, portions of serviceable surfaces occupied by individual structural parts of the same purpose shall also be indicated)

Other classifications.....

(indication of classifications in compliance with other regulations)

Works complexity:

.....

(indication of structure complexity: simple, less complex, complex)

Location:

.....

(indication of location, parcel numbers, and cadastral municipality of the intended construction, as well as identification numbers from the cadastre of buildings and cadastre of public infrastructure)

Building dimensions or dimensions/capacity of civil engineering structure

(dimensions of a building or dimensions/capacity of a civil engineering structure)

Presentation of construction value

(indication of estimation of construction costs taken from the design documents, and calculation of actual construction costs taken from the technical documents, i.e. as-built design, respectively)

.....

(leave out or add as appropriate)

Notes:

a. When a design relates to several intended constructions, the information shall be entered for all of them.

b. The design data on dimensions and capacity of a structure shall be:

- calculated, assessed or measured for buildings in compliance with the standard, and shall comprise at least the area of the building in plan, gross area in plan, net area in plan, gross volume, and net volume.
- indicated for civil engineering structures; in addition, other features of such structures shall be mentioned as well.

c. Both conceptual design and preliminary design need not comprise any calculated/assessed net area in plan and net volume.

d. For residential buildings the number of flats, the area of an individual flat, and the number of foreseen beds in a flat shall be indicated.

e. of cost estimations of all the schemes, including a presentation of total values by the types of works, e.g. construction works, craftsman's works, installations, etc., and finally a presentation of the complete construction value.

INFORMATION ON DESIGN COMPANY AND RESPONSIBLE DESIGNERS

Graphical presentation of placing in space:	Design company:	(title, address, telephone, e-mail)
	Responsible designer:	(name and surname, professional education, identification number, personal stamp, signature)
Architectural scheme:	Design company:	(title, address, telephone, e-mail)
	Responsible designer:	(name and surname, professional education, identification number, personal stamp, signature)
Landscape architecture scheme:	Design company:	(title, address, telephone, e-mail)
	Responsible designer:	(name and surname, professional education, identification number, personal stamp, signature)
Structural scheme:	Design company:	(title, address, telephone, e-mail)
	Responsible designer:	(name and surname, professional education, identification number, personal stamp, signature)
Scheme of electrical installations and equipment:	Design company:	(title, address, telephone, e-mail)
	Responsible designer:	(name and surname, professional education, identification number, personal stamp, signature)
Scheme of mechanical installations and equipment:	Design company:	(title, address, telephone, e-mail)
	Responsible designer:	(name and surname, professional education, identification number, personal stamp, signature)
Scheme of telecommunication installations:	Design company:	(title, address, telephone, e-mail)
	Responsible designer:	(name and surname, professional education, identification number, personal stamp, signature)
Technological scheme:	Design company:	(title, address, telephone, e-mail)
	Responsible designer:	(name and surname, professional education, identification number, personal stamp, signature)
Scheme of excavations, blasting, and geotechnical structures:	Design company:	(title, address, telephone, e-mail)
	Responsible designer:	(name and surname, professional education, identification number, personal stamp, signature)
Other constructional schemes	Design company:	(title, address, telephone, e-mail)
	Responsible designer:	

		(name and surname, professional education, identification number, personal stamp, signature)
Expert's report	Expert(s):	(name and surname, professional education, identification number, personal stamp, signature, if available for the particular expert)
Other technical document:	Expert(s):	(name and surname, address of the expert and/or title and address of the company)
Land surveying scheme:	Survey company:	(title, address, telephone, e-mail)
	Responsible surveyor:	(name and surname, professional education, identification number, personal stamp, signature)
Responsible design project manager:	Design company:	(title, address, telephone, e-mail)
	Responsible design project manager:	(name and surname, professional education, identification number, personal stamp, signature)

Design documents for the reconstruction and removal of the works have to include also the documentation concerning the measures for the prevention of emissions of dust and other hazardous substances, and the building waste treatment.

The design documents for the reconstruction of works have to show that the bearing capacity of the ground floor is relevant, and that the built-in building products, which will be preserved are useful, and that the works are suitable for reconstruction.

The design documents for a change in use have to show the change in impact of the works to the environment resulting from the change in use of the works or a part of the works, or specific rooms in the works.

6.7 ANNEX 7 – Title Page with Basic Information on the Scheme

TITLE PAGE WITH BASIC INFORMATION ON THE SCHEME

SCHEME AND No. OF THE SCHEME :

.....

(architectural scheme; landscape architecture scheme; structural scheme; scheme of electrical installations and equipment; scheme of mechanical installations and equipment; scheme of telecommunications; technological schemes; schemes of excavations, blasting, and geotechnical structures; other constructional schemes)

INVESTOR:

.....

(investor's name and surname, company, headquarters' address)

STRUCTURE:

.....

(denomination of the structure to be constructed)

TYPE OF DESIGN DOCUMENTS

(conceptual design, preliminary design, building permit design, tender design, project execution design)

.....

TYPE OF WORKS:

.....

(new construction, horizontal or vertical extension, reconstruction, removal, change of intended use, substitutive construction)

DESIGN COMPANY:

.....

(title, address, name and signature of responsible person, stamp)

RESPONSIBLE DESIGNER:

.....

(name of responsible designer, professional education, identification number, personal stamp, signature)

RESPONSIBLE DESIGN PROJECT MANAGER:

.....

(name of responsible design project manager, professional education, identification number, personal stamp, signature)

NUMBER, PLACE AND DATE OF SCHEME ACCOMPLISHMENT:

.....

(number of design recorded by design company, place and date of design accomplishment)

Note: after the title page, a list of persons that have participated in working out the scheme can be inserted.

6.7a ANNEX 7a – Table Of Contents of a Scheme

TABLE OF CONTENTS OF A SCHEME

..... No. .....

1. Scheme title page
2. Table of contents of the scheme
3. Table of contents of the design
4. Statement by the responsible designer of the scheme
   (in the building permit design only)
5. Technical report
6. Drawings

6.8 ANNEX 8 – Summary of Report on Design Audit

Form:

SUMMARY OF REPORT ON DESIGN AUDIT

Structure: .....

No. of design: .....

Audit order by: .....
(name and surname, company, headquarters' address)

No., date, and place of working out the joint report on the design audit:

.....
(number, date, and place of working out)

Responsible auditor: .....
(title, headquarters' address)

Audit coordinator: .....
(name and surname, signature, stamp)

Audit performed for:

- ❑ Design documents for complex structures
- ❑ Design documents worked out abroad
- ❑ Design documents to be audited as directed by special regulations

Responsible auditors for:

Architectural scheme: .....
(name and surname, professional education, identification number, personal stamp, signature)

Landscape architecture scheme: .....
(name and surname, professional education, identification number, personal stamp, signature)

Structural scheme: .....
(name and surname, professional education, identification number, personal stamp, signature)

Scheme of electrical installations and equipment: .....
(name and surname, professional education, identification number, personal stamp, signature)

Scheme of mechanical installations and equipment: .....
(name and surname, professional education, identification number, personal stamp, signature)

Scheme of telecommunication installations: .....

(name and surname, professional education, identification number, personal stamp, signature)

Technological scheme: .....

(name and surname, professional education, identification number, personal stamp, signature)

Scheme of excavations, blasting, and geotechnical structures .....

(name and surname, professional education, identification number, personal stamp, signature)

Other constructional schemes: .....

(name and surname, professional education, identification number, personal stamp, signature)

Reports by experts: .....

(name and surname, professional education, identification number, personal stamp, signature)

(leave out or add as appropriate)

The responsible auditor .....(name and surname)

of the scheme .....(scheme type/scheme constituent part)

hereby confirms that an audit of the individual scheme of the stated design documents has been carried out; the scheme fulfils the essential requirements, all the prescribed approvals of the scheme have been acquired, and the scheme complies with the spatial planning documents as directed by the paragraph ..... of the Construction Act (Official Gazette ..... No. .....).

For the scheme .....
(scheme type)

No. ..... (No. of the scheme) the following has been verified:

1. Fulfillment of the following essential requirements:

.....

.....

(a brief abstract of the essential elements from the report on the audit, and a description of fulfilling the conditions for each essential requirement separately)

2. Conformity with conditions resulting from the spatial planning acts

.....

.....

(a brief abstract of the essential elements from the report on the audit for each condition, on condition that the scheme contents relate to it)

3. Suitability of presentation of the influence area

.....

.....

(a brief abstract of the essential elements from the report on the audit, on condition that a presentation of the influence area is prescribed)

Essential requirements, audited in the scheme, will be implemented upon construction, provided that the following conditions are implemented by the project execution design, which shall be worked out in compliance with the building permit:

.....

.....

(indication of conditions with regard to the design and construction)

.....

(personal stamp and signature by the responsible auditor)

(for each responsible auditor indicated in the introduction of the summary of the report on the design audit, the document shall be repeated)

Responsible audit coordinator .....(name and surname) confirms the following: from the individual audits and the joint report on the design audit it can be derived that the design fulfils all the essential requirements, that the schemes are mutually harmonized, that all the prescribed approvals have been acquired, and that the design as a whole complies with conditions provided by the spatial planning acts.

.....

(personal stamp and signature of the responsible audit coordinator)

6.9 ANNEX 9 – Statement of Conformity of Schemes

STATEMENT OF CONFORMITY OF SCHEMES AND FULFILLING ESSENTIAL REQUIREMENTS

Responsible building permit design project manager

.....

(name and surname)

HEREBY

I D E C L A R E ,

1. that the schemes of the building permit design comply with the requirements of the current space planning acts,

2. that the building permit design complies with other regulations, valid in the area where the intended structure will be executed,

3. that the building permit design takes account of all the design conditions and that all the approvals have been acquired,

4. that the solutions in building permit design schemes are mutually harmonized,

5. that the building permit design takes account of all the essential requirements and that the BPD has been so prepared as to ensure structural reliability,

6. that the building permit design complies with the experts' reports being a constituent part of the design (if mandatory),

7. that the fulfillment of the essential requirements is proven by the following schemes being constituent parts of this BPD:

.....

.....

.....

(to indicate the required schemes)

.....

(No. of design) (name and surname, professional education, identification number)

.....

(place and date) (personal stamp, signature)

6.10 ANNEX 10 – Information on Acquiring Design Conditions and Approvals

INFORMATION ON ACQUIRING DESIGN CONDITIONS AND APPROVALS

A

LIST OF RELEVANT AUTHORITIES PROVIDING APPROVALS, AND GENERAL INFORMATION ON ACQUIRING APPROVALS

1. Public infrastructure administrations:

Public utility infrastructure:

Traffic infrastructure:

Power infrastructure:

Telecommunication infrastructure:

Other public infrastructure:

2. Authorities in protected and restricted domains:

Water protection:

Environment protection:

Cultural heritage protection:

Protected zone of the public infrastructure:

(e.g. protected zones of roads, railways, airports, power cables, gas mains, public utilities)

Protection from natural and other disasters:

(e.g. earthquake, flood, fire, shelters, etc.)

Taking account of needs related to defense:

3. Other authorities:

(leave out or add as appropriate)

This annex shall be reasonably completed as follows:

- in the area regulated by the spatial order, design conditions provided by the relevant authorities to the conceptual design, and a conformity with the design conditions in the BPD, shall be described;
- in the area regulated by the location plan, opinions expressed by the holders of the spatial arrangement in connection with the location plan shall be indicated.

Where a description of the opinions expressed in connection with the location plan is entered, the sheets C and D can be omitted.

B

INFORMATION ON INDIVIDUAL AUTHORITY AND APPROVAL

Authority to provide approval:

Application for determination of design conditions dated: …….. No.:……..

Issued Date……. No.: ……
No answer Receipt: …….
Rejected Date:……. No.: ……

Regulation that has been a base to issue opinions/approvals:
(title of the act, place and date of issuing publication and eventual modifications)
……
……

Design conditions, opinions, design guidelines:
(transcript of requirements from the design conditions, opinions or design guidelines by the relevant authority)
……
……

Description of conformity of design solutions with design conditions/opinions/design guidelines:
(indication of harmonization in a sequence as above, appealing to the parts of the schemes or experts' reports, and the leading folder)
……
……
……

Description of conformity of design solutions with conditions/opinions:
(in case when an approval had not been issued, which led to a correction of the design solutions)
……
……
……

Application for issuing an approval dated: …….. No.:……..

Issued Date……. No.: ……
No answer Receipt: …….
Rejected Date:……. No.: .....

(leave out or add as appropriate)

When structures of a national importance or structures having an impact on the environment are in question, or when the investor, due to conflicting design conditions, requires an issue of design guidelines, the relevant administrative body shall be entered instead of the authority competent to issue an approval.

C

INFORMATION ON HARMONIZING THE APPROVALS

Information on non-harmonized authorities competent to issue approvals:

……
……
……

Invitation to authorities, competent to issue approvals, to harmonize the conditions:

Authority: Date:…… No.: ……
Authority: Datum:…… No.: ……

Harmonized design conditions:
(indication of design conditions determined upon reconciliation)

……
……
……

Date of reconciliation: ……

Signature of the responsible representative of the authority: ……

Signature of the responsible representative of the authority: ……

Application for issuing the approval dated: …… No.:……..

Issued Date…… No.: ……
No answer Receipt: ……
Rejected Date:…… No.: ……

Description of modifications and supplements of design solutions after harmonization:

Application for issuing the approval dated: …… No.:……..

Issued Date…… No.: ……
No answer Receipt: ……
Rejected Date:…… No.: ……

(leave out or add as appropriate)

D

INFORMATION ON LEGAL MEASURES AGAINST DESIGN CONDITIONS AND APPROVALS

Information on the authority against whom a complaint has been lodged:

……

……

Date:…… No.: ……

Decision on complaint dated: …… No.: ……

Description of modifications and supplements of design solutions after the decision on complaint has been issued:

……

……

……

……

New application for issuing the approval dated:…… No.: ……

Issued Date…… No.: ……

No answer Receipt: ……

Rejected Date:…… No.: ……

(leave out or add as appropriate)

6.11 ANNEX 11 – Statement by the Responsible Designer of As-Built Design (for example: the responsible construction project (site) manager)

STATEMENT BY THE RESPONSIBLE CONSTRUCTION PROJECT (SITE) MANAGER

I, the responsible construction project manager,

.....
(name and surname)

hereby

D E C L A R E ,

1. that the PED schemes comply with the BPD, on the basis of which the building permit No. ..... has been acquired (all the permits),

2. that the PED complies with the current regulations, applicable in the area, where the intended construction will be carried out,

3. that the solutions indicated in the schemes of the PED are mutually harmonized,

4. that all the essential requirements have been considered, and that the PED has been so worked out as to ensure a reliable execution of the intended construction.

.....
(No. of design) (name and surname, professional education, identification number)

.....
(place and date) (personal stamp, signature)

6.12 ANNEX 12 – Decree on Appointing Auditors

On the basis of the paragraph ……. of the Rules of Procedure on the design ..... audit, in connection with the provisions of the paragraph ……. of the Construction Act (Official Gazette ……, No. ……), according to the contract between the Client…….. and Contractor, I am **issuing** the following

D E C R E E

XY, B.Sc.C.E., No. of exam for responsible auditor, date, passed at ……/….., **is nominated** for the **AUDIT COORDINATOR** for ……;

a) **XX, B.Sc.C.E.,** No. of exam for responsible auditor, date, passed at ……/….., **is nominated** for **RESPONSIBLE AUDITOR** for……and for preparation of an interim report (remarks, requirements of annexes and explanations by the design company), as well as a report on design audit and a summary of the report on design audit and a summary of the report on design audit (2nd page of the form);

b) **XX, B.Sc.C.E.,** No. of exam for responsible auditor, date, passed at ……/….., **is nominated** for **RESPONSIBLE AUDITOR** for……and for preparation of an interim report (remarks, requirements of annexes and explanations by the design company), as well as a report on design audit and a summary of the report on design audit (2nd page of the form);

..)

..)

e**) YY, B.Sc.C.E, is nominated** for **ORGANIZING HEAD OF DESIGN AUDIT** for ……..

f) **YY, B.Sc.C.E. is nominated** for **ASSISTANT OF ORGANIZING HEAD OF DESIGN AUDIT** for ……

for design documents ……. ,

worked out by ……,

under design No. ……,

dated ……

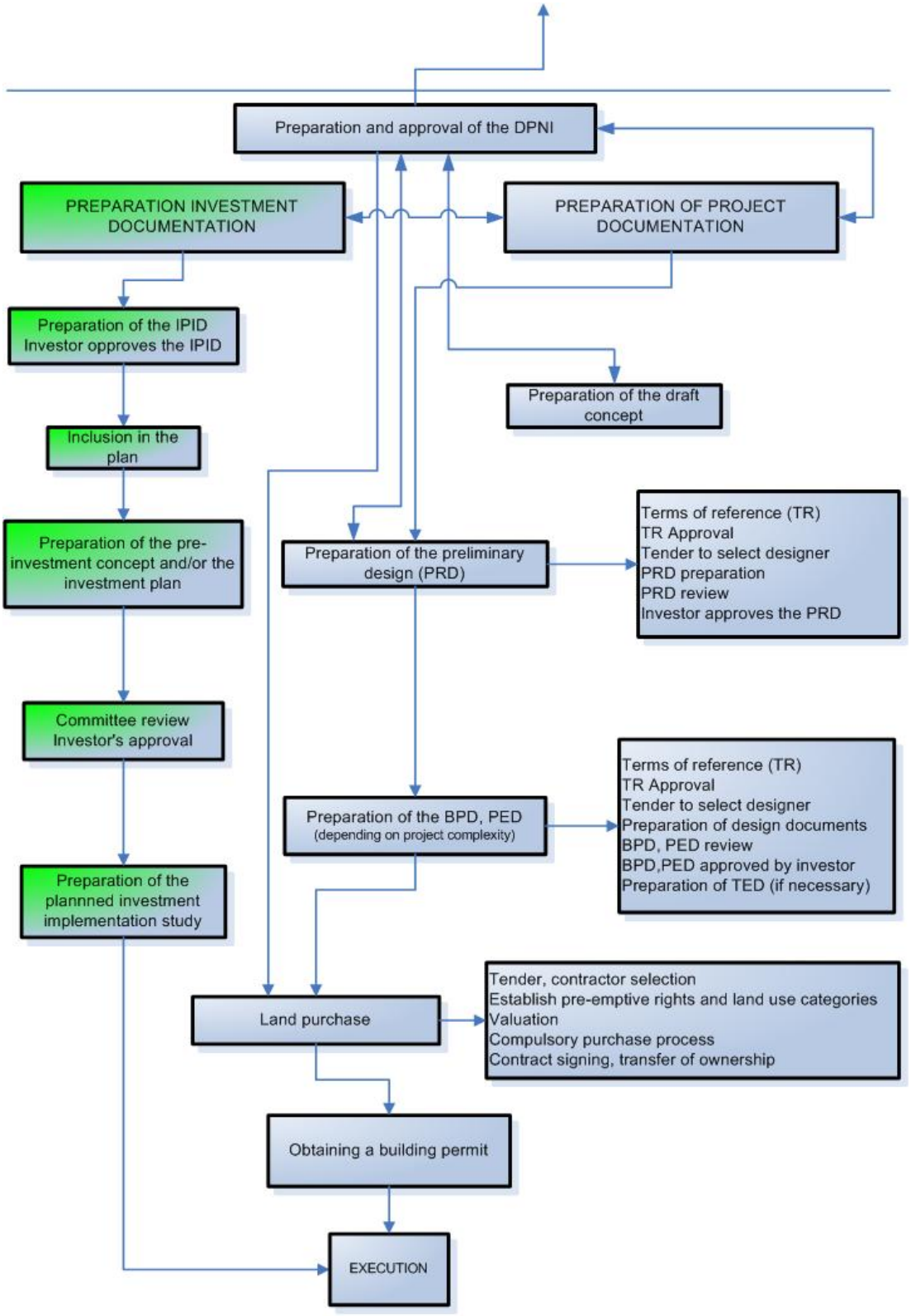
a) The nomination is in force during the design audit and preparation of the final report on the design audit.
b) The nomination applies to the domain of architecture, static and dynamical analysis and dimensioning, electrical installations, mechanical installations, geotechnical assessment, ……., from the date of issuing this decree up to ..... .

Date: Auditor:
(signature)

To be handed over to:

1.
2.
3.

6.13 ANNEX 13 – Procedure on Preparation of Documents and Permit



6.14 ANNEX 14 – Procedure of Investment Execution