



# Municipal Infrastructure Support Programme

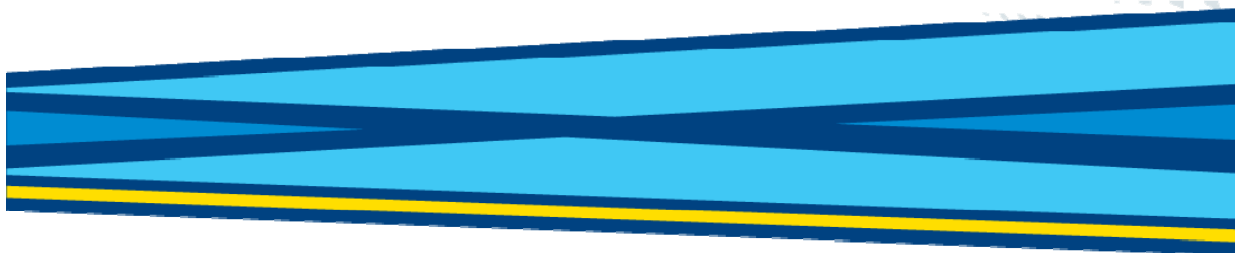
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## Industrial zone "Jug" in Vladicin Han

VOLUME 1 : EXECUTIVE SUMMARY



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Municipality Vladicin Han

December 2011

Final version

CRIS 223 – 292 (08/SER01/13/21)

P2011 - 2



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## List of Acronyms and Abbreviations

Acronyms & Abbreviation	Description
IFI	International Finance Institution
MDG	Millenium Development Goals
MISP	Municipal Infrastructure Support Programme
NES	National Environment Strategy
NTS	Non Technical Summary
PUC	Public Utility Company
RDA	Regional Development Agency
SCTM	Standing Conference for Towns and Municipalities
AIFC	Average Incremental Financial Cost
CBA	Cost Benefit Analysis
CRR	Cost Recovery Ratio
CSR	Cost Service Ratio
DIC	Discounted Investment Cost
DNR	Discounted Net Revenue
DSR	Debit Service Ratio
EBT	Earnings Before Taxes
EBIT	Earnings Before Interests and Taxes
EBITDA	Earnings Before Interest, Taxes, Depreciation and Amortization
EBRD	European Bank for Reconstruction and Development
EC	European Community
EE	Eligible Expenditure
EIB	European Investment Bank
E&M	Equipment and Machinery
ENPV	Economic Net Present Value
ERR	Economic Rate of Return
EU	European Union
FCR	Full Cost Recovery
FIDIC	Fédération Internationale Des Ingénieurs-Conseils (i.e. French for the International Federation of Consulting Engineers)
FOPIP	Financial and Operational Performance Improvement Programme
FNPV	Financial Net Present Value
FRR	Financial Rate of Return
FW	Financial (market) Wage
HH	Household
IAS	International Accounting Standards
IFI	International Financial Institute
IFRS	International Finance Reporting Standard
IPA	Instrument for Pre-accession Assistance
IRR	Internal Rate of Return
K	Capital Invested
KfW	Kreditanstalt für Wiederaufbau
Lcd	Liters per capita per day
LRCD	Land and Road Construction Directorate





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NBS	National Bank of Serbia
NCF	Net Current Fund
NIP	National Investment Plan
NPV	Net Present Value
NRW	Non Revenue Water
O&M.ADM	Operation, Maintenance and Administration
PIU	Project Implementation Unit
PUC	Public Utility Company
RBWC	Regional Bulk Water Company
RSD	Republic of Serbia Dinar
SCF	Standard Conversion Factor
SDR	Social Discount Rate
SFR	Self Financing Ratio
SME	Small and Medium Enterprises
SOP	Sectorial Operational Programme
SPI	Number of Staff per 1000 Connections
SW	Shadow Wage
SWCF	Standard Wage Conversion Factor
TA	Technical Assistance
VAT	Value Added Tax







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## 1 EXECUTIVE SUMMARY

### 1.1 Background

The main purpose of this feasibility study is to determine the feasibility for the extension of the existing Suva Morava Industrial Zone in the Municipality of Vladicin Han in southern Serbia.

Harvard Business School Professor Michael Porter's research, as summarized in his book, The Competitive Advantage of Nations, has identified four broad determinants that work together as a system to improve national advantage as follows:

- Positive factor conditions such as infrastructure (transport, communication etc), human resources and raw material are directly linked to the nation's wealth;
- Demand condition, where sophisticated local customers continuous demand for improvements increases the ability of firms to meet foreign customer needs;
- Clustering of related industry which supplies raw materials and components as well as business services which supports the sector, are key elements of the supply chain;
- Institutional context for firm strategy and rivalry, which can influence creation of firms, investment policies,

The feasibility study for Vladicin Han will therefore examine what is required to put in place these 4 determinants and propose a project which will encourage entrepreneurship to install itself in Vladicin Han.

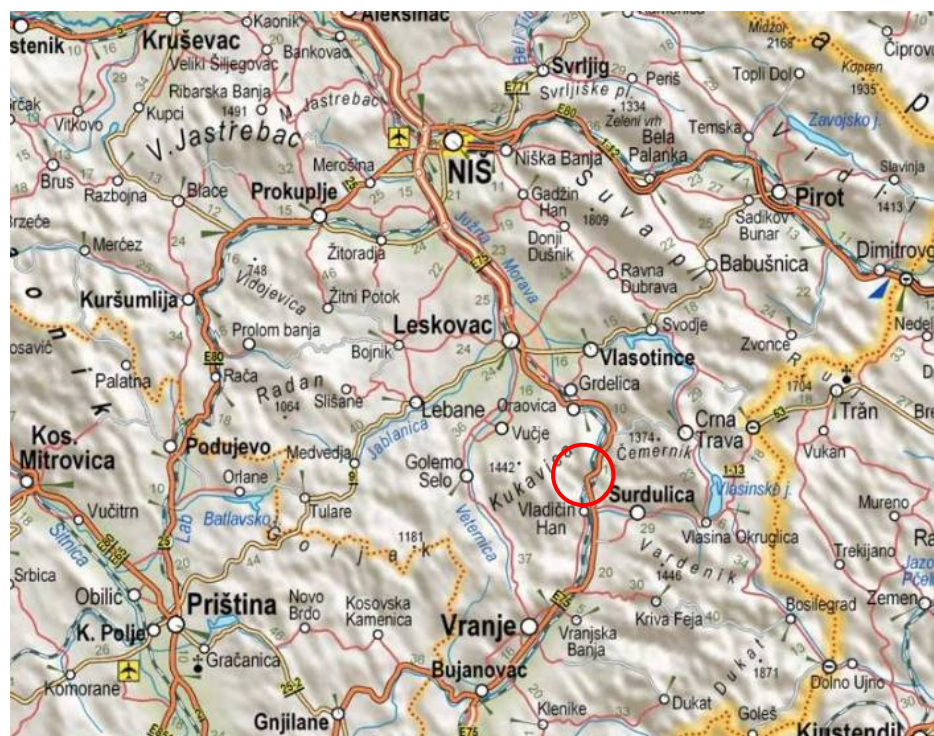
This study has been prepared under the Municipal Infrastructure Support Programme (MISP), an initiative funded through the European Union's Instrument for Pre-Accession (IPA) 2008 to assist the Republic of Serbia in achieving the national objectives.

The existing industrial zone is almost fully occupied and the Municipality is turning down requests from potential investors investigating the possibility of setting up business in Vladicin Han because of a lack of good quality fully services industrial locations.

This project is therefore intended to resolve this issue through making available in phases good quality industrial land.

Figure 1.1-1

Location of the Project





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## 1.2 Legal and Institutional Framework and Management Options

The project of Industrial zone development in VH fits into national and local legal and policy framework. A set of strategies and legal documents recognize industrial park development as important instrument for socio economic development of the country.

Some of the most important strategies in this context are The Strategy on Free Zones Development in Serbia for the period 2011 to 2016 , The National Employment Strategy (2011 to 2020), as well as the Strategy on Encouraging and Developing Foreign Investment.

At regional and local level development of industrial zone in VH is in line with Regional Development Strategy for the Jablanica and Pcinja Districts and Regional Programming Document (2008-2012) and is also one of the main development forces recognised in Development Strategy of the Vladicin Han Municipality.

Furthermore legal background for establishment and operation of free and industrial zones endow with set of the laws as are: Law on Free Tax Zones, Customs Law, Law on Value Added Tax, Law on Planning and Construction and Law on Regional Development. In addition, there are several Decrees pertinent to industrial zone development in Vladicin Han. These are: Decree on determination of the uniform list of the local self-governments based on level of development for the year 2011, Decree on terms and conditions for attracting direct investment, Decree on the Conditions and Manner under which local self-government Units may sell or lease the building land at a Price Below the Market Price or Lease Fee or without Compensation (Official Gazette of the Republic of Serbia, no. 13/2010).

Equally important at the municipal level is Municipal ordinances on construction land, on land development charge and land use charge and on communal fees.

Observed from the general socio economic point of view, development of industrial zone is justified for the community with strong industrial background as Vladicin Han is, which for a years, has been facing serious socio economic stagnation and/or regression.

In this municipality Industrial zone has been recognized as potential and/or opportunity to mitigate negative economic and social trends originating from long term industrial stagnation and resulting in high unemployment rate and consequent depopulation trend.

From the establishment of Industrial zone is expected to have positive impact on the employment trends (both direct and indirect) and not only in Vladicin Han but also in Surdulica and Vranje. However, the scope of the employment will depend on the size and type of industries which will be installed inside the zone.

From the perspective of potential investor it is important to note that Serbia in general, and Vladicin Han in particular, have several strengths as a destination for investors, but one of the biggest is their workforce, which offers the added advantages of low labour costs and relatively high productivity.

On the other hand, concerning current situation at local labor market, human resources in Vladicin Han may not be sufficient neither per their number nor per their structure (skills required for the certain type of industry). Therefore, future companies will probably have to look for additional, skilled workforce outside Vladicin Han, i.e. from Surdulica and Vranje.

Furthermore, even if the structure of human resource is adequate, familiarizing of qualified employees to new technological trends may be requested. Therefore creation of different specialized trainings will be indispensable. These pre-qualification/vocational and other types of specialized trainings should be organized by enterprises itself (according to specific needs) or by Local Employment Bureaus.

As far as concern the institutional setup for the management of future industrial zone, after in depth analysis two major options are recognized.

The first option assumes direct and more participatory involvement of 3 municipalities located at the same territory (Vladicin Han, Vranje and Surdulica) and the management model which envisages the participation of all municipalities interested in the capital of the company joint





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together in the form of Limited Liability Company. This option assumes complex legal and procedural steps to be taken in order to establish joint company. In this case, political constellation in all three municipalities may have direct influence on establishment and business performance of the company. However, this option is generally considered to be less feasible than option 2.

In the Option 2 separate Company for the management of the industrial park is not foreseen because the management shall be done directly by the Municipality of Vladicin Han.

However participation of Surdulica and Vranje will be ensured through establishment of inter/municipal Commission called *Inter-municipal Commission for Promotion of Industrial Park and Support to Investors*.

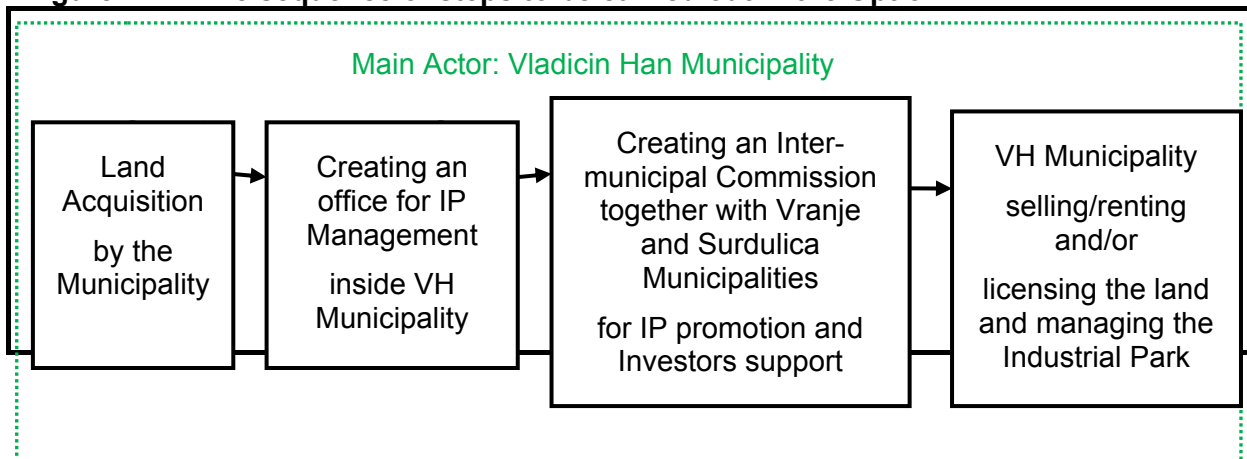
The members of the Commission will be appointed by the municipalities of Vladicin Han, Vranje, and Surdulica. The number of representatives per Municipality should be in accordance to their contributions defined in the agreement previously signed by all parties.

The establishments of the Commission as a separate inter/municipal body will provide the project with regional dimension and will contribute in obtaining adequate political support for the project. Alongside above mentioned, the Commission will have important tasks in promoting the industrial park to relevant national and international institutions (embassies, chambers of commerce, entrepreneurs associations / national and international.) in the way to successfully target potential investors to operate inside industrial park of Vladicin Han.

The Commission will also need to provide administrative, institutional, legal and any other kind of support to potential investors.

Participation of the municipalities of Vranje and Surdulica in the above mentioned Commission doesn't imply their direct involvement and responsibility over management of industrial park.

**Figure 1.2-1 The sequence of steps to be carried out in the Option 2**



As it can be seen from the table bellow, the greatest risk lies in the 1<sup>st</sup> position. If there is no land acquisition even this option will not be feasible.

**Table 1.2-1 Risks and assumptions in the Option 2**

No	ACTIONS	ASSUMPTIONS	RISKS
1	Land Acquisition by VH Municipality	Yes: project go ahead	If not applied : project is not feasible
2	Establishing of an office for IP Management inside VH Municipality	Yes: project go ahead	If not applied or delayed: project is stuck
3	Creating of an Inter-municipal. Commission for IP promotion and Investors support	Yes: project go ahead properly	If not applied or delayed: the project is hampered
4	VH Municipality sells, rents and/or licenses the land and manages the Industrial Park	Yes: Project successful	If not applied or delayed: the project is hampered







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## 1.3 Existing Situation for Resources and Infrastructure

The provision of industrial facilities is a complex issue which all nations have to face up to. It is usually the case that there is a national level analysis. In a market economy, the answers are not clear at all and depend on factors such as:

- Economic situation at various levels (local, regional, national, global) can be independent but yet interrelated and can thus impact on demand for industrial facilities.
- Complexity of legal and institutional framework which can be business hostile and discourage investors.
- Availability and cost of labor will attract certain sectors but other sectors are less affected.
- Availability of raw material will also attract some sectors and not others.
- Location of key sectors such as automobile which attract to the same location other support industries providing parts and sub-assemblies

### 1.3.1 Current Economic Situation

The current economic situation in Serbia reflects the generally negative economic situation prevalent in the United States and Europe since 2008. The attempts by the advanced economies to kickstart their economies through quantitative easing and other economic measures have initiated a modest recovery in 2010 which is reflected in the GDP growth for Serbia.

The modest GDP growth for 2010 and the good start in 2011 was very promising for Serbia but it is apparent in the advanced countries of Europe that economic situation has deteriorated compared to 2010 and is starting to show in the Serbian economy during 2011. The crisis has obviously not gone away and demand for manufactured goods have significantly slowed down. The impact of the current economic crisis in Europe on Serbia is still not known but a slow-down during 2012 can be expected.

### 1.3.2 Industrial Zones in the Spatial Plan for Serbia, 2010 -2020

The development of industrial facilities (zone, park, free zone, business park, science park etc) is entirely in the competence of local government as provided under the Law on Local Self Government. Although each municipality can exercise its prerogatives it is obvious that for economic reasons not all municipalities can build large scale sustainable industrial facilities. The purpose of the state including the municipality is to provide the appropriate framework and incentives whilst reducing the number of barriers. To this effect the Spatial Plan for Serbia as adopted by Parliament in November 2010 and a legal instrument as from 1st December 2010, proposes a strategy and plan for the spatial distribution and development of industry.

The first part of the strategy is being implemented by the government through many initiatives (fiscal, financial etc) prepared by different ministries and with the assistance of many international institutions such as the EU, USAID, SDC (Swiss agency for development and cooperation). However, many other institutional issues (such as setting up a business, construction permitting etc) are still very complex and as evidenced by the Global competitiveness indices and the comparative report prepared by the IFC on "Doing business in Serbia" seem to indicate that in some areas, Serbia is actually becoming more difficult with time.





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The construction of infrastructure is ongoing with support from EU and many financial institutions such as World Bank, EBRD, EIB.

The strategy and policy development for industry has been prepared and adopted by the Government in June 2011 and a summary is presented hereafter.

The last part being the strategy of territorial development of industrial zones and parks as well as brownfield has yet to be completed.

## 1.3.3 Strategy and Policy Development for Industry of Serbia from 2011 to 2020

The transition from a centrally managed industrial development to a market oriented development has not gone as smoothly as can be expected.

Structural changes in industry are slow and inefficient (as reported by European Bank for Reconstruction and Development – EBRD, 2001-2008), this apply in particular in privatization and restructuring of large economic systems and competitiveness policy. It is recognized that Serbian industry suffers from poor competitiveness as witnessed by the 95th position of Serbia in the 2011 World Economic Forum Global Competitiveness Index out of a total of 142. Although there are many positive indicators for competitiveness in Serbia, there are many areas which have to be addressed, in particular improved competition, protection of minority rights, labour- employer relations.

The degree of manufacturing within an economy is an indicator of industrialization within a nation and in Serbia manufacturing presently accounts for only about 16% of GDP growth, which is very low when compared to other transition economies

Another indicator of industrialization is the volume of export of commodities and manufactured goods from Serbia which is equivalent to about 21.5% of the GDP of Serbia or 45,600MUSD in 2010. The priority export industrial sectors appear to be:

- Agro industry and in particular corn production
- Manufacturing including machinery and some apparel

In order to address the issues identified above “**The Strategy and Policy development for industry of Serbia**” was adopted by the Serbian Government in June 2011. The new strategic approach involves the following:

1. Withdrawal from the old industries, manufacturing industries such as textile and leather processing and in particular raw material production including basic metals and chemical products which are nowadays mostly located in newly industrialized countries
2. Support activities which will encourage the production of sophisticated high technology products, especially in electronic components (semiconductors, electronic computers, communication equipment and devices) and the manufacture of chemical and pharmaceutical products (new materials, new drugs),
3. Develop service industries and in particular the creative arts

The strategy recognizes the abovementioned strength and weaknesses and has selected a certain number of targets as follows:

- Industrial production doubled in 2020 compared to the level from 2010,
- Increasing the productivity of labor in industry and construction by 2020 by at least 50%,
- Increasing the share of exports to 50% of GDP in 2020,
- Maintaining an average annual investment growth of 10%
- Increasing the average annual FDI inflow of 2.35 billion euros
- Increasing employment growth in manufacturing industry by 75,000 workers.



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## 1.3.4 European Context on Industrial Development

Manufacturing industry is the most important section of the EU economy (75% of all exports) since it drives growth and propels technological and innovation development. The three priorities of industrial development are:

- Modernize industrial structure through improved competition and sustainability
- Encouraging entrepreneurship by strengthening the market and reducing barriers
- Development of human resources with emphasis on innovation and R&D facilities

Through its new strategic framework for an integrated industrial policy adopted in December 2010, the EU is putting emphasis on some key sectors such as development of electronic, car and chemical industry, biotechnology, ICT, and space technology. The policy recognized the importance of value and supply chain management as well as the interaction between all sectors of industry within one state and across states highlighting the impact of globalization on the way business is carried out.

The EU has created special instruments which are intended to finance economic development. The current main instrument for member states of the EU is the European Regional Development Fund (ERDF). For potential candidate and candidate countries, the instrument for pre-accession (IPA) funds have been created to assist these countries to gain experience in accessing the funds which will be available as future member states. The disbursement of IPA funds have been modeled on the same objectives and principles adopted for the ERDF funds and follows the same financing agreement.

## 1.3.5 Analysis of Existing Production Factors

### Road Network

The industrial zone “Jug” in Vladicin Han is settled between river Juzna Morava from the east and main railway corridor from the west side. At the very near distance to the railway track is the existing national road R-214 which connected Vladicin Han city and Vranje city. National road R-214 is intersected with two approaching roads which lead to the industrial zone “Jug”. The two accesses to the industrial zone “Jug” crossing the existing railway line at grade without any barrier. Such access can be dangerous for lorries going to and from the industrial zone.

Along east side of the industrial zone “Jug” passes part of the European road E-75 (national road M-1), Belgrade-Nis-Skoplje-Thessalonika. The E75 is part of the International Road network starting from Vardø, Norway in the Barents Sea and runs south through Finland, Poland, Czech Republic, Slovakia, Hungary, Serbia and Republic of Macedonia to Sitia, Greece on the island of Crete in the Mediterranean Sea. Access to the industrial zone “Jug” from the E-75 road is via national road R-214a and R-214.

Although the E75 is very close to the existing industrial zone, access is via the national road system which are not designed for modern industrial transport. The roads are relatively narrow and the geometric design will limit the access of large modern trucks which are normally used for long distance transport of raw material and finished goods.

### Existing Railway Network

The existing railway line Belgrade – Skopje – Thessaloniki runs through the industrial zone. However, this railway system is the oldest in Serbia and although maintenance is average, the modernization and replacement programme has been lacking and maintenance costs are escalating. The Belgrade – Nis section was constructed in 1884 and extended to Vranje in



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1885 eventually connecting to the Skopje – Thessaloniki section completed 10 years earlier. Investment in railways carried on until the Second World War when most investments were directed to road transport.

There is a passenger as well as a fret station at the town of Vladicin Han and at the industrial zone Suva Morava and over a distance of about 1,200m the railway is a dual line with a station allowing loading and unloading of fret. The paper factory has a private line entering its premises.

The rolling stock is relatively old and unreliable. The average age of railway cars is over 30 years and the degree of availability, depending on the type, varies between 26% and 61%.

### Existing water supply in the municipality of Vladicin Han

The existing water supply network provides water for some 17,000 inhabitants. Out of the total number of consumers, approximately 50% is located in the town, and 50% in villages.

For the purpose of continuous water supply of Vladicin Han, water is abstracted from two sources - from the reservoir on the Vlasina river and from the wells near the South Morava. At least for ten months a year water is abstracted from the reservoir, treated in the Polom drinking water treatment plant and transported via the main pipeline to the reservoir on the Kalimance hill, near the center of Vladicin Han. Overhaul of the hydroelectric power plant is conducted during July and August and therefore water must be pumped from wells. Thus abstracted water is chlorinated and then pushed to distribution network, and surplus water is accumulated in the reservoir. The hydroelectric power plant overhaul usually takes about a month, but there are indications that in the future it will take 2-4 months. During the regular summer overhaul of the hydroelectric power plant Vrla IV, usually in July and August, it is impossible to use water from the reservoir, and the raw water is abstracted from wells along the Lepenica, off the coast of the Juzna Morava. Raw water is pumped from a total of seven exploitation wells and one collection-exploitation well. The wells provide a total of about 50 l/s. Raw well water is collected in a collection-exploitation well, where chlorination with gas chlorine is done, and then disinfected water is pumped into the town's distribution network. Lepenica pumping operates in this way only during the HP overhaul.

### Water supply and water source in the area of Suva Morava

The "Suva Morava" source is located on the left bank of the Juzna Morava River, at about 500m downstream from the mouth of the Lepenica river. The water generally meets the requirements of the Guidelines for drinking water quality, except for occasionally increased turbidity and increased concentration of manganese. Also, the Juzna Morava embankment is not so safe to ensure adequate sanitary protection of sources against the Juzna Morava flood waters. In terms of sanitary protection the source is currently in a very poor condition, because waste material (slag, ash and other waste) is deposited in the source area, as well as exploitation of gravel. The maximum amount of water to be expected from the Suva Morava source in the current and future state is about 60 l/s.

Immediately prior to including this source in water supply during hydroelectric power plant overhaul, the Juzna Morava damming is done and backwater is created in order to achieve the expected flow.

However, this source tends to reduce amount of water during operation period as it comes to depletion of aquifer, and the situation becomes worse as the overhaul period becomes longer each year.

In addition to the wells in the industrial area, there are wells that used to supply water to the industrial facilities "FOP-a", "Sloga", "Metal Industry Juzna Morava". The capacity and characteristics of these wells are not known.





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## Existing wastewater collection in the municipality of Vladicin Han

Only 40% of the population discharge waste water into the sewage. Total length of the wastewater sewage in Vladicin Han is 6.5 km, and the storm sewer is 4.5 km long. Not all the facilities are connected to the sewerage system, which applies to large commercial complexes "Nektar" and "Delišes". In addition, there are difficulties in the functioning of certain parts of the existing sewerage network due to small diameter of the main sewer and secondary sewer network. There are no data on the total quantity and quality of wastewater discharged by the industry. There is no pre-treatment of wastewater. There are 4 discharge points of wastewater into the Juzna Morava. Wastewater is discharged without treatment.

## Existing wastewater collection and treatment in the area of Suva Morava

There are no valid data on the quality and quantity of the waste water from industrial and other pollutants. The available measurements come from the period when the industry in Vladicin Han worked at full capacity and are not valid because at present the fate of all industrial companies is uncertain and it is unclear for what quantity and quality of waste water and in which period the treatment will be required.

The industrial zone contains several lakes, a channel and a pumping station. The lakes used to serve as lagoons to store waste water, and the pumping station used to pump waste water from lagoons into the Juzna Morava. Such waste water storing was used by the paper industry, which is no longer in operation.

## Telecommunication

The telephone exchange is connected with Vranje and Nis by an optical cable. In the area of Vladicin Han all three mobile phone operators are represented (vip, Telenor, Telekom). Basic characteristics of telecommunications systems in the municipality are reflected in insufficient capacity of the transmission system, transmission system stability, large capacity and sufficient number of telephone exchanges in the municipality. The existing telephone exchanges on the municipal territory are digital (Alcatel) and with sufficient capacity.

## Gas

There are no gas facilities and pipelines in the project area.

## Electric power supply

Power supply on Vladicin Han IZ site is provided through 110kV National Grid, operated by PU Elektromreza Srbije. It supplies transformer substation TS 110/35/10kV Vladicin Han, operated by Power Distribution Company ED "Jugoistok" d.o.o. Niš, section "Elektro distribucija Vranje". The installed capacity of TS 110/35/10kV Vladicin Han is 2x31.5MVA; today it operates with one installed transformer unit rated 1x20MVA. Medium voltage (35kV) side of the transformer substation Vladicin Han is fed from the low voltage side of the 110/35kV transformer by 35kV cable 3xXHP48 1x240mm<sup>2</sup>. Also, there is direct feeding 35kV line from hydropower plant HE Vrla 4, which justified usage of only one transformer unit 110/35kV, as outage of main transformer can be backed up by 35kV line supply. The overall installed capacity of TS 35/10kV in Vladicin Han transformer substation 2x8MVA, today it operates with two transformer units rated 4MVA. All planned IZ consumers will be supplied with electrical power from this 35/10kV substation, from 10kV side.

Based on estimated power demand, calculated in the plan of detailed regulation as:







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	Production Lines and Industrial Zone	Waste Water Treatment Facility	Back up Waterintake – pumping station	Public Lighting	TOTAL
Maximum Peak Load	6.200kW	200kW	500kW	50kW	With usage factor 0.8 $P_{max.simul.} = 5.560kW$

The technical solution for power supply provision on Vladicin Han Industrial zone is conceptualized, for the purpose of this Study as follows:

- the basic power supply unit is prefabricated concrete power substation 10/0.4kVA, 1000kVA capacity. Dimensions in the base are 5.5 x 4.5m.
- Standard transformer unit is chosen to be 630kVA
- Number of transformer substations is 15 – 13 for technological consumers (IZ industries, i.e. future tenants) and 2 for communal purposes (waste water and back up supply water treatment). However, as the phase approach is employed, in the first phase it will be built 9 TSSs (7 for industries – one per each block and 2 for communal purposes)
- Power is to be provided for public lighting system evenly distributed to the transformer substations. Preliminary design shows it is necessary to build roughly 145 public lights luminaries, each mounted on the 8m height pole. Power demand for public light is 35kW.
- All substations 10/0.4kV will be supplied from 35/10kV transformer substation Vladicin Han with planned capacity of 2x8MVA (today 2x4MVA).
- Cabling is to be realized with underground cables 3x(1x150mm<sup>2</sup>), type XHE 49A.
- Distribution network 10kV will be realized in ring topology, in a way that each set of transformers supplied from one outgoing feeding compartment in the 10kV substation with 10kV cable which goes to the first transformer substation on the “entry / exit” principle and continues to the next substation. From the last substation exit cable will be run back to the transformer substation 35/10kV to the different feeder compartment. That return cable will be, even separately laid down in the cable row on the other side of the street, increasing the system resistance to the mechanical damaging.
- Maximum number of transformer substations 10/0.4kV per one cable is limited on four per required cable.
- For underground cabling it should be envisaged all necessary cable canalization, which consists of proper number of protective PVC or PHE pipes on the road crossing and other obstacles and necessary evenly distributed number of cable manholes, purposed for providing places for connection of the eventual additional substations. In addition, cable manholes should be planned on both ends of the cable protection pipes.

Suggested concept, together with proper high voltage 110kV/35kV supply system (which will soon be even improved with 400kV network interconnection with Macedonia / Greece and additional 400/110kV transformations) will provide reliable and sufficient power supply for all planned industries. Due to two direction supply on TS 110/35/10kV, maximum outage can be estimated at 20 – 30 min/year. In addition, the direct connection with hydropower plant Vrla 4, realized on 35kV level, can provide additional possibility of “island” supply, which is not often encountered in the similar developments. Power Capacity Reserve is enough for full site development, and practically can accommodate high energy consumption industries which may want to populate IZ.

## Human Resources

The statistics shows that the numbers of people in employment is about 55% of the labour pool. It is also clear that unemployment is not linked to a lack of skill since only about half of the unemployed is unskilled. There is also no apparent gender discrimination since about half of the unemployed are women. Most of the employment in the region is related to





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manufacturing. The labor pool available in the three municipalities can be summarized in the following table.

**Table 1.3-1 Labor Pool available in Vladicin Han and the neighbouring municipalities in 2008**

	Pčinja	Project Area	Vladičin Han	Vranje City	Surdulica
Labour pool	61,680	39,049	7,428	25,477	6,144
Employed	33,816	24,596	3,362	18,125	3,109
Unemployed	27,864	14,453	4,066	7,352	3,035
Unskilled Unemployed	14,139	5,788	2,033	2,673	1,082
Women Unemployed	15,201	8,234	2,383	4,213	1,638

## Natural Resources

Another important factor of production is raw material and it used to be the case that industries are located close to the source of raw material. This is still the case for primary processing where raw material is converted to semi-processed material which can be transported for secondary processing. However with the advent of good transportation systems the location of factories close to factors of production has become less important. What is therefore important for modern industries is to secure a reliable supply chain of all the subcomponents required to complete the manufactured goods.

The region around Vladicin Han is quite rich in primary resources such as agriculture and forestry with the result that in Vladicin Han there is a predominance of enterprises serving those two sectors.

Population relying on agriculture for a living has been reducing and between 1991 and 2002 the number of active agricultural households reduced from 816,200 to 454,732, a reduction of 44%. This trend has continued resulting in a serious rural depopulation of the region.

Although agro industry is one of the pillars of the Serbian economy this rural depopulation will have a serious consequence on the economy. This negative trend in the region needs to be reversed if the agro industry is to have a future.

One of the natural resource and factor of production is land and Municipalities have the responsibility to provide facilities i.e. land where industries can operate. The existing industries in Vladicin Han are concentrated in the town centre and in the industrial zone to the south. There are about 7 large enterprises in the town centre and located on either side of the Morava river. The existence of industries within the centre of the town is not ideal and their presence should be reviewed. However, given the current economic climate and the financial position of most of these enterprises this situation has to be accepted and managed during the short term. The rest of the larger companies, 5 enterprises are located in the industrial zone "Jug", location Suva Morava, occupying most of the developed site.

Vranje is an important industrial town only 20km to the south of Vladicin Han and is the location for many large companies which operates in the region as well as internationally. The town is therefore an important competitor for the location of any new industrial facilities. However, there is also a lack of quality greenfield industrial area in Vranje just as in Vladicin Han and the city is considering the creation of new industrial park. However, the town is surrounded by steep hills which are not suitable for industrial development.

Surdulica is a small municipality similar to Vladicin Han and its main centre is only about 10km to the east of Vladicin Han. The town is therefore also an important competitor for the location of any new industrial facilities. Being mostly mountainous, much of the land available is not suitable for industrial development.





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## 1.3.6 Main Findings

The demand for industrial land cannot at present be satisfied by the existing supply situation which includes the following constraints;

- Brownfields which are blocked by failed privatization
- Poor quality of many brownfield premises (poor working condition, poor access etc)
- Lack of quality serviced greenfield sites
- Lack of suitable land in Vranje and Surdulica

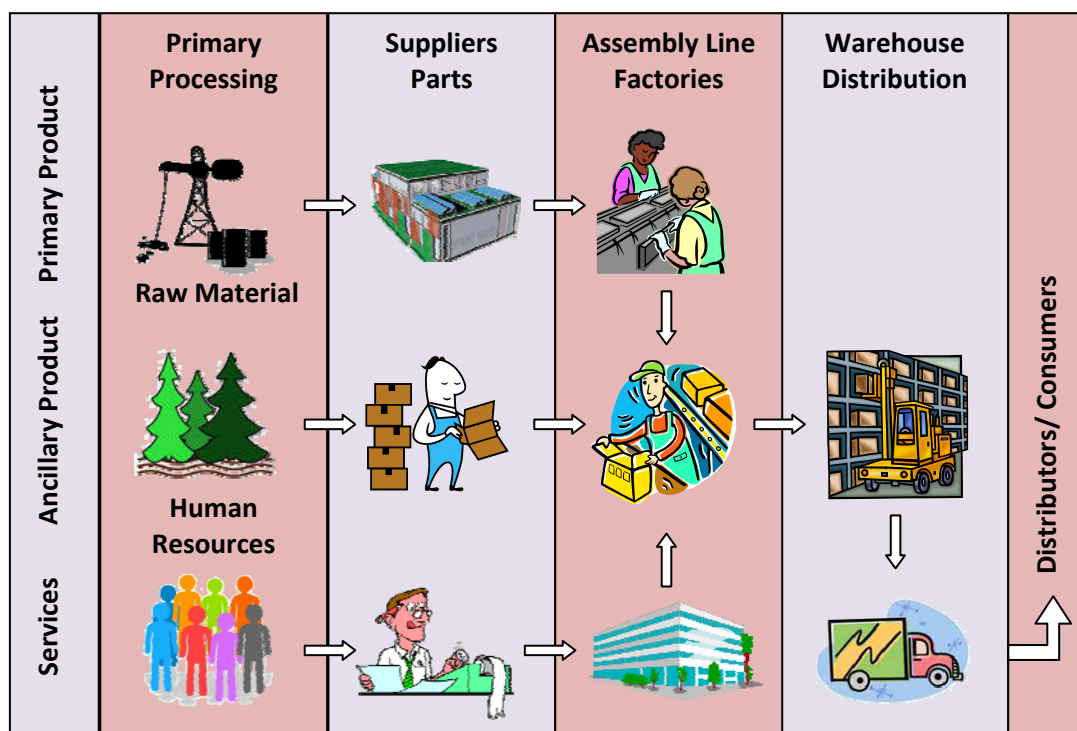
## 1.4 Market Analysis

The pace of economic development in certain regions and cities is dependent on the economic structure of the region or city which needs to continuously adapt to the demand of investors and the economic outlook.

An understanding of these changes and how these changes impact on the provision of land for industrial development whilst taking advantage of spatial economic dynamics is needed. The necessary analysis is carried out at various geographical level, starting from a European perspective and down to the level of Vladicin Han.

### 1.4.1 Supply Chain Evaluation

To understand the necessity for industrial land, it is important to understand the efficient production and distribution chains which are adopted by businesses in the different industrial sectors and segments.



The other factors which are important for any potential investor and which have to be considered by any municipality offering industrial facilities are as follows:





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- Distance and time to market
- Type and size of Industrial facilities

Serbia is particularly well located for getting goods to the West European market within 3 - 4 days compared to 4 - 5 weeks from the Far East.

Industrial facilities can be categorized into five main types as follows:

- Medium to large factories for processing raw materials into semi-finished goods requiring specific design and arrangement
- Medium to large factories for large products like cars or machine tools
- Small to medium factories for production of small sub-assemblies
- Medium to large distribution facilities requiring specific layout
- Medium to large facilities for back office operations

The economic and employment structure of the Serbian economy shows that about 50% of people are employed in the services sector and generate more than 60% of the economic production whilst about 25% of employed people are in the manufacturing sector and contribute about 20% to the national income. Agriculture on the other hand employs more than 25% of the working population but only contributes about 15% of GDP.

The major exports for Serbia are metal products, agricultural products, rubber tyres, clothing and pharmaceutical.

### 1.4.2 Food Industry

The region around Vladicin Han continues to have a high potential for agriculture with a few important companies already operating in the region. Some of these companies dealing with fruit processing are looking to increase their production. Nectar DOO, one of the largest fruit juice producers in the Balkans is already established in Vladicin Han. Coca-Cola HBC Serbia, one of the largest non-alcoholic drinks producer in Serbia bottles a natural spring water called Rosa, which originates from a natural spring located at 1.550 m elevation in the pristine natural landscape of Vlasina within the neighboring municipality of Surdulica. Both of these companies serve the local market and export a large proportion of their production.

### 1.4.3 Wood Sector

The Wood sector is attracting attention from international companies with Ikea having invested 1.5M€ to improve the production line of Simpo in Vranje and the company has indicated a willingness to invest in additional production facilities subject to obtaining the correct conditions and location.

The production capacity of the forests of Pčinja is about only about 220,000m<sup>3</sup>. Such a production will barely justify the installation of a primary processing plant. On the other hand much of the broadleaved timber can be used directly with the minimal processing in traditionally made timber furniture. These enterprises tend to be small and do not require large premises. The existing wood industry company Sloga is under bankruptcy proceedings at present and cannot be saved most probably because the company furniture product line is old as is the equipment.

### 1.4.4 Manufacturing Sector

Most industries do not manufacture from raw materials all the components of a consumer goods for reasons of costs and usually it buys in standard industrial components or outsource to specialist factories the manufacture of special components to its own specifications (original equipment manufacturer). It is expected that this market segment will





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continue to develop as producers continue to seek efficiencies in the supply chain. The proximity of Serbia to the main European manufacturing bases in Germany will improve the likelihood that Serbia will increase its market share as consumer goods manufacturers refine their supply chain.

An important segment of the manufacturing sector is home appliances which include leading and prominent national consumer market products. The largest white goods enterprise in Serbia is the Gorenje group with factories in Stara Pazova producing thermal and heating appliances whilst the Valjevo factory have been manufacturing refrigerators, freezers and cooling equipment since 2006 on a greenfield site. The company is acquiring the brownfield site of ceramic factory, Porcelan in Zaječar with the intention of converting existing buildings into production lines for washing machines and dryers. The company also has plans to extend its Stara Pazova factory. Most of the production of Gorenje are exported. In the region of Vladicin Han a Serbian enterprise (Alphapham) specializing in manufacturing of gas cookers is considering expanding its product line with electrical cookers. The proposed expansion of production by those two companies reflect the buoyant nature of this segment of manufactured goods despite the current depressed growth in the European market for home appliances. The increased production in Serbia provides a good indication of the competitiveness of Serbian labor cost in relation to Asian companies.

## 1.4.5 Clothing and Footwear Sector

The region has a history of production in the clothing and shoe industry with factories located in most cities and towns such as Nis, Leskovac, Vranje and Vladicin Han, Although many smaller factories have closed following introduction of the market economy, there are still many quite successful companies (Jumko) in the sector. New companies (Yenice jeans, Benetton) are entering both the clothing and the footwear market.

## 1.4.6 Electronic Industry

The electronics market in Serbia is also quite buoyant with new investors seeking facilities closer to the European market or benefits from the low labour cost base. In 2010, the Embassy Group of India announced the opening of an IT park with 2.5ha of prebuilt in Indijja to attract Indian and other technology companies seeking entry to the European market. In 2011, the German company "Muehlbauer Holding AG & Co.. KGaA" plans to open a technology centre in Stara Pazova for the development of advanced wireless network devices. The Mayor of Vranje has signed a memorandum of understanding with a Chinese company for the installation of photovoltaic panels to generate electricity within the territory of the municipality.

## 1.4.7 Services and Construction

Services and construction are important sectors which are critical to an industrial nation. Services are required to support the production activities and construction sector is essential to implement the industrial infrastructure.

The Organization for Economic Cooperation and Development, OECD has segmented the service industry as follows:

- Distribution services (commerce, transport, information)
- Business services (financial services, leasing, design, engineering)
- Personal services (hospitality, culture, sport, households)
- Social services (state, health, education, religion)







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Both the construction industry and all the segments of the services industry requires land to execute their activities, Some of the services can and need to be carried out within city centers but others can be located in industrial or business parks.

The construction industry is already represented in Vladicin Han with the presence of 2 factories, one for making blocks and the other one producing concrete components.

Given the location, it is not expected that large primary processors will look for premises in the region. The existing smaller enterprises in Vladicin Han and Vranje may increase their production when construction activities pick up. Other business in the supply chain such as specialists merchants and plant hire are also potential tenants.

All business requires administrative support and other services such as marketing and advertising, design, engineering, consulting, legal services, human resources and staffing, leasing, security and facility management. For many companies these activities are carried out within the company but for the larger companies, the business services industry can provide an efficient alternative. For Vladicin Han, although large corporation are unlikely to set up their offices in the industrial park since the area around the southern industrial zone is already of an industrial nature. However, it is important not to exclude the possibility that business may wish to establish small offices in the industrial park.

## 1.4.8 Foreign Direct Investment

The analysis of the industrial sectors highlighted the global significance of most industrial development and investments therefore a good indicator of the demand for industrial land is the level of foreign direct investment. In recent years, the service sectors have shown to be the most attractive to international investors with banking and insurance providing the largest FDI inflow followed by manufacturing industries. These indicators confirms the importance of manufacturing in the development of the Serbian economy as already identified in the earlier part of this section.

The creation of free zone will serve to attract foreign direct investments to benefit from convenient location and low labor cost base.

## 1.4.9 Supply Side Factors

The demand for industrial premises collapsed during 2009 in Europe with the rapid decline in manufacturing output and the decrease in consumption as consumers reduce their spending to counteract the economic downturn. Although the market in Eastern and Central Europe remained relatively flat during 2010, it is expected that the positive outlook in Western Europe will gradually translate into better confidence in the region and an improved share of the market. Of course the stability of the market will also depend on resolution of the ongoing turmoil in financial sector in Greece or Portugal and generally across the Europe.

However, investors are mainly interested in established good quality property with long term potential, low quality properties were not attracting any attention. Most new build are completed to client's specifications and there has been very little speculative ready built units except for logistic centers. The demand for third party logistics is expected to increase as the recovery progresses and companies seeks cost reduction in their supply chain.

The spatial organization of Serbia's industry is a reflection of the previous development policy of distributing industry as widely as possible over the whole territory. This approach meant that there is no coherent national prioritization plan which can be used to locate industrial zone. This issue is partly resolved with the adoption of the National Strategy for industrial development. With the transition from a centrally organized economy to a market economy and the general trend for the transfer of manufacturing facilities towards Asia has resulted in the reduction in the number of the dispersed manufacturing facilities and the





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polarization of surviving industries to the larger and more accessible centers of population such as Belgrade, Novi Sad and Nis. This process has resulted in the relocation of industries to more adapted production locations and accelerating the depopulation of rural areas. The polarization of industries has impacted on land prices and the result is evident in the analysis of underlying land prices for a serviced plot being asked in Serbia is as provided in the following table.

**Table 1.4-1 Land Market Estimate in Serbia**

Municipality	Lowest Range of Land prices €/m <sup>2</sup>	Average Land prices €/m <sup>2</sup>	Highest Range of Land prices €/m <sup>2</sup>
Belgrade		30	
Subotica		10	
Sombor		9.5	
Indija	11		30
Loznica		5	
Šabac	6.6		7.83
Lajkovac		5	
Batočina		7	
Kragujevac city	60		100
Kragujevac city		1 (with employment conditions)	
Jagodina		Free with employment conditions	
Leskovac	4.5		5.8

Source: MISP 2011 Excludes land development fee

The analysis shows a wide ranging difference of prices for industrial land depending on location. The prime areas around Belgrade are attracting quite high prices of 30€/m<sup>2</sup> whilst in the Vojvodina region prices range from 8 to 10€/m<sup>2</sup> and in the south of Serbia prices are of the order of 5€/m<sup>2</sup>. However with the recent installation of Fiat in Kragulevac, land prices in the region have displayed abnormal overheating which the Municipality is trying to contain by creation of new industrial zone.

The earlier part of this section concluded with positive indicators for the productive capacity of the Serbian economy and demand for industrial land. However, it is now generally accepted by most governments that in order to achieve the optimal level of demand and supply, improved supply-side policies are necessary for sustained and balanced economic development.

Supply side policies are designed to serve two broad objectives:

- Improving the labour market
- Encouraging competition and innovation in the product market

In Serbia where unemployment is high, increasing employment is of high priority and therefore the State is proposing different programmes which are designed to improve the labour situation. The areas in which incentives are provided can be grouped in four programmes as follows;

- Incentives for investments of special importance in manufacturing
- Foreign direct investment incentives
- National Employment Service Incentives
- Municipal incentives

The programme for investments of special importance provide Government grants for very large investments in sectors of special importance to the Serbian economy. This programme has been used for instance in attracting Fiat to take over the Zastava automobile factory in Kragujevac.

State Grants are also provided to attract general investments in some key sectors such as manufacturing, tourism and, export oriented investments.





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The Employment Subsidies Programme is designed to encourage creation of employment in the disadvantaged regions of Serbia as defined in the Law on Regional Development. The programme is a grant scheme where creation of employment in the most disadvantaged regions are for obvious reasons provided with higher grants.

There is also competition between municipalities to create jobs within their respective municipalities and many municipalities are also providing job related incentives to encourage investors to locate on their territory.

One of the pillar of the European Union since its creation by the Treaty of Rome is increased competitiveness. For this reason the importance of supply-side policies in product markets has to be highlighted since they are intended to increase competition and efficiency.

Serbia like every other country in the world is competing to attract investors and it has designed a fiscal package which can benefit investors in providing competitive products for the international market. In mature markets, competition will gradually become stifled as the major players gain market share and start to dominate the market. In order to avoid this situation the trend is to encourage new entrants in the different existing product markets and to create new product markets. This approach can also be extrapolated to states and municipalities who wish to break into any particular market dominated by companies from developed nations. The types of measures which could be offered are wide ranging and can be grouped as follows;

- Fiscal incentives
- Improved business environment
- Support to SME
- Creation of free zones

Fiscal measures are intended to provide support to enterprises through a package of tax relief to encourage certain activities. Serbia like every other country in the world is competing to attract investors and it has designed a fiscal package which can benefit investors in providing competitive products for the international market.

Although the fiscal environment may encourage investors, entrepreneurship requires an business friendly environment to flourish and can be easily stifled by many factors such as;

- Ambiguous laws and regulations
- Overtly complex and lengthy procedures

Ambiguous laws and regulations as well as complex and lengthy procedures may lead to petty corruption in order to simplify and accelerate the process. Corruption obviously has a direct impact on fair competition necessary for development of the economy. The International Finance Corporation, a World Bank company regularly prepares benchmarks on the procedures for carrying out a certain number of business activities in all countries of the world. The benchmarking exercise shows that Serbia has still to do quite a lot of improvement to provide a business friendly environment to start a business and to carry out the normal activities of doing business.

This evaluation highlights the following facts:

- The creation of one-stop shop in FYR Macedonia simplified the procedures for setting up a business. Serbia is one of the worst country in the region except for Kosovo in the ease of starting a business.
- The costs of starting a business in the 22 cities in 7 countries , although very different in monetary term, are very similar in percentage of the total cost of setting up a business.
- In general, doing business in Belgrade is more difficult than in the other 4 Serbian cities evaluated.
- The cost of obtaining a building permit is highest in Serbia with an average of 76% of the overall cost or the equivalent of US\$ 83,278 of the whole process. However the





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average cost is still less than the amount necessary in Podgorica where it costs the equivalent of US\$ 100,221.

- Serbia is the most difficult country to obtain a building permit and within Serbia the situation is worst in Belgrade compared to the other 4 cities.

The World Bank report on “Doing Business in South East Europe” of 2011 proposed the following institutional reforms:

- Consolidate government approvals at a single access point (one stop shop)
- Simplify registrations with municipal authorities
- Introduce a single tax and business identification number
- Introduce modern building codes
- Introduce risk based approvals of building permits

The position of Serbia in the Doing Business benchmarking exercise shows that there are many areas which require attention and these weaknesses can easily put off potential investors even though they were attracted by the FDI, employment and fiscal incentives.

The necessity to ensure that the Laws and regulation are simplified and clarified, is evident and this study is not intended to identify all the weaknesses or to propose amendments. This exercise has to be properly carried out by a proper survey of businesses in conjunction with the relevant technical experts and experienced jurists.

Supply side policies to encourage business start ups and entrepreneurship include:

- Loan guarantees for new businesses;
- Advisory services for new firms
- Business incubators

The National strategy on industrial development is putting a strong emphasis on export to boost the economy and has set an objective of increasing the share of exports to 50% of GDP in 2020 from the current 31% as can be seen in the following figure which shows the export trend in Serbia compared to large exporting countries. As part of this export oriented drive the Government of Serbia has adopted in 2011 a strategy to create and promote free zones.

Free trade zones are areas fully enclosed (by a fence or wall, with a controlled entry and exit), within which are granted certain economic and financial incentives in order to facilitate trading, such as:

- Exemption from import duties and taxes, and other trade restrictions and formalities;
- Tax exemption, such as VAT, excise taxes, property taxes, income taxes, etc;
- Exemption from regulation, which relates to minimum wages, social payments, working conditions, etc;

## 1.5 Long Term Development Plan

All the issues which investors consider in selecting a location for their projects have been evaluated earlier and it has been demonstrated that Vladicin Han has the necessary advantages to attract potential investors.

This section therefore considers the long term development of industrial zones, parks and free zones in Vladicin Han and is effectively a strategic development plan for industrial development in the municipality and the region mentioned as a requirement within the Spatial Plan for Serbia 2010 – 2020.

### 1.5.1 Demand Factors

Demand for industrial land is determined and influenced by many factors such as.

- Economic situation
- Fiscal and other incentives





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- Quality of location
- Availability and cost of finance
- Cost of land
- Ease of doing business

The European Economic and Monetary Affairs Commission has recently revised downward its 2012 growth forecast in the Euro zone from 1.8% to 0.5%.

This is likely to have a direct impact on Serbia with potential investors less likely to embark on any expansion plan in the short term.

Many companies in the Pcinja district have expressed the intention to expand production but are still seeking appropriate land to initiate the expansion plan. Although the latent demand exists, the present economic uncertainties are causing investors to rethink and delay their expansion plan.

As a result the demand in the short term is expected to be restrained but expected to recover in the medium to long term.

The Municipality of Vladicin Han has received enquiries on availability of land from the potential investors as described earlier.

Although Vladicin Han is not close to large metropolitan conurbations, the location of Vladicin Han on E75 road linking Greece to the main centres of Western Europe is beneficial for imports of raw materials and exports. Improvements of the E75 road which is part of the transport Corridor X will make Vladicin Han even more integrated into the European transport network and increase the demand.

The proximity of Vranje with a population of about 90,000 ensures a relatively large pool of potential labour despite the limited population of about 20,000 in Vladicin Han.

The convenient location of Vladicin Han will increase the demand in the medium term and continue in the long term.

The short term forecast on availability and cost of finance is pretty negative as bankers are becoming very pessimistic and very stringent on the quality of their investments. This pessimism will take a long time to disappear and the optimism of the recent years is not expected to return fully in the medium to long term.

The report on Doing business in Serbia highlighted many areas which require improvements in order to increase entrepreneurship in Serbia. These hindrances are not expected to disappear in the short term but it is expected that as Serbia moves forward in its transition to membership of the European Union, many of these hindrances will disappear as Serbian Laws and regulations become aligned with those of the EU.

A summary of the trends in the demand for industrial land for each of the above demand factors is presented in the following figure.

**Figure 1.5-1 Summary of Demand Side Trends**

Forecasts	Economic Outlook	Location	Availability /Cost - Finance	Fiscal/ Other Incentives	Cost of Land	Doing Business
Short Term 1-3 years	↓	↑	↓	↑	↑	↓
Medium Term 1-3 years	↔	↑	↔	↑	↔	↔
Short Term 1-3 years	↑	↑	↔	↔	↔	↑

### 1.5.2 Job Creation

The structure of new jobs in Vladicin Han can be assumed to be the same as that at national level as presented in the strategy and policies for industrial development and as a result the percentage of jobs can be split in the following proportion.

- Manufacturing 21%
- Construction 24%







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- Wholesale and Retail 42%
- Transport and Storage 13%

The projection shows the highest growth in jobs will be in the environment with recycling, in the automotive and transport related goods. It is unlikely that Vladicin Han will benefit from the clustering effect of the automobile industry because of its location in relation to Kragulevac.

The next group of industry segments with important job projections are in the electrical and pharmaceutical industries. The largest Serbian manufacturer Hemofarm (large holding by Glaxo Smith Kline) is already installed in Vrsac and the number two Zdravlje-Actavis is locating in Leskovac, It is therefore unlikely that Vladicin Han, which does not have a history of pharmaceutical industry will attract a pharmaceutical company.

The electrical industry is more interesting for the region where there is already an electrical goods manufacturer, Alfaplam of Vranje who is already considering the acquisition of about 20 hectares of land for starting production of electrical cookers, a strategic investment in order to diversify its product line.

The clothing and leather segment is not the focus of the strategy on industrial development but nevertheless still expected to provide about 10% of all the jobs in Serbia. It can be expected that as the more technology jobs are created in the more affluent northern part of the country the more labour intensive jobs will become available for the southern part of Serbia.

The same can be said of the furniture industry which is expected to provide 8% of all jobs in Serbia by 2020. The Pcinja region was an important furniture manufacturing area but the present bankrupt status of many existing privatized furniture enterprises is cause for concern. However, there are new startup enterprises in this segment which provide a positive outlook. Although food industry was important in the region the new job projection in this sector is not promising considering the agricultural production of the region is not very important.

The Serbia Industrial Development Strategy has targeted the creation of 500,000 new jobs in the whole country by 2020 or the equivalent of 14 new jobs per inhabitant. With the current population within the project area of about 130,000, there is a need to create about 9,400 new jobs by 2020 to be in agreement with the strategy. This will leave about 4,600 or about 12% of the workforce which is acceptable long term unemployed.

**Table 1.5-1 Job Creation Forecasts and Structure**

Sector	Structure	New Jobs Pessimistic Scenario	New Jobs Base Scenario	New Jobs Optimistic Scenario
Manufacturing	21%	1,930	2,100	2,270
Construction	24%	2,210	2,400	2,590
Wholesale and Retail	42%	3,860	4,200	4,540
Transport and Storage	13%	1,200	1,300	1,400
<b>Total Jobs</b>	<b>100%</b>	<b>9,200</b>	<b>10,000</b>	<b>10,800</b>
Structural Unemployment		4,800 (12%)	4,000 (10%)	3,200 (8%)

The above forecasts are for all jobs which will have to be created and not all of the jobs will be created in the proposed industrial zone. Most of the construction jobs (90%) will be on construction sites with 10% on the industrial zone and for the wholesale and retail segment it can be expected that about 30% of the jobs could be in the industrial zone.

### 1.5.3 Land Requirements Forecast

Based on the Strategy and Policy Development of Industries in Serbia the structure of the jobs to be created in Vladicin Han was estimated earlier and the mix of industries which can achieve the jobs target and the land requirements, excluding areas which investors may wish





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to reserve for future extension, have been calculated. The land requirement for the base scenario is presented on the following table.

**Table 1.5-2 Land Requirements for Base Scenario between 2010 and 2020**

Sectors	Segments	Structure %	New Jobs in Project Area	% in Industrial Zone	Jobs in Industrial Zone	Jobs by Segment	Jobs/ha	Land Required ha
Manufacturing		21%	2,110	100%	2,100			
	Wood & furniture					110	50	3
	Components Manufacturing					500	100	5
	Home Appliances					500	100	5
	Clothing					500	1,000	1
	Electronics					500	300	2
Construction		24%	2,400	10%	240		30	8
Wholesale & Retail		42%	4,200	30%	1,260		200	7
Logistics		13%	1,320	100%	1,300		100	13
<b>Total</b>		<b>100%</b>	<b>10,000</b>		<b>4,900</b>			<b>44</b>

It can be observed that the land requirement is between 40 and 50 hectares depending on the scenario and for the mix of industries expected in the industrial zone and the average jobs created per hectare is 110 jobs.

Demand can also be complicated by speculation, i.e. investors who buy land for the purpose of selling later at a higher price and the long term planning needs of the investor who buy land for possible extension of the production facility at a later stage. These two demand factors cannot be estimated and their impact will only be estimated through different demand and jobs creation scenarios. Obviously if land is sold and factories are not built the number of jobs per hectare of land sold will be lower.

## 1.5.4 Land Supply Factors

Demand on its own does not lead to successful completion of any transaction, there has to be an equivalent supply to satisfy the demand. This section will look at the supply side objectives and constraints.

There are a number of important industries located in various parts of the town centre which developed on an ad hoc basis. The present approach to urban development is to propose zoning regulations to control such ad hoc development and protect the living environment of the citizens.

It is expected that future industrial development within the town centre will be restricted to small business related enterprises. In the longer term the relocation of the existing factories to a regulated industrial zone can be considered. No new industry should therefore be allowed in the town centre.

The Spatial Plan for Vladicin Han has already identified three new areas for industrial development and a regulation plan has been prepared for the extension of the existing industrial zone about 4 km to the south of the town.

However, the area is only partly developed to service the existing industries which were mostly State enterprises which were privatized or is still in the process of privatization. Many of the privatized companies were not successful for many different reasons but the results are similar in that the land occupied by these enterprises were blocked for years. It has





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therefore become urgent to provide additional green field site to satisfy the demand which has been building over the years.

The table below provides a summary of the availability of land in Vladicin Han as identified in the Spatial Plan and the level of readiness for occupation.

**Table 1.5-3 Land Availability for Industrial Zones in Vladicin Han in Hectares**

Location	ha	Land status
A - Suva Morava	145	Detailed regulation in place; land acquisition plan in place; land not procured
B - Stubal	106	Detailed regulation in place and land acquisition plan not in place; land not procured
C - Priboj	108	Detailed regulation in place and land acquisition plan not in place; land not procured

## 1.5.5 Development Scenarios

Demand analysis shows that there is a need for about 50 hectares of land to satisfy the projected creation of about 5,000 new jobs by 2020 and a need for an extra 50 hectares to ensure flexible development and extension.

The existing regulation plan which covers about 139 hectares of brownfield and greenfield development shows that for greenfield development about 47 hectares net is available for industrial plots. An additional 47 ha of brownfield factories can also be available but the uptake will depend on investor's assessment.

The area covered by the existing regulation plan is not sufficient to cover the long term needs for industrial land of 100 hectares by 2020 and therefore additional land has to be identified, acquisition of which has to start immediately at the same time as acquisition of the land covered by the regulation plan.

Three concepts have been developed to satisfy the potential demand for 2020 and beyond:

Concept 1 – location A - Suva Morava

Concept 2 – locations A - Suva Morava and B - Stubal

Concept 3 – locations A - Suva Morava, B - Stubal and C - Priboj

For all three concepts were made analysis of existing and required infrastructure in order to meet the demand of future customers after completion of phase 1 and phase 2. Details of infrastructure improvements are presented into chapter 8.7 *Design criteria and proposed infrastructure development*. All three concepts are proposed according to the Spatial plan for the municipality Vladicin Han and Detailed regulation plan. As the objective is to mobilize as much as available land, concepts have to present locations where industrial zone could be developed. As Spatial plan contains three locations for industrial development, Suva Morava, Stubal and Priboj and Detailed regulation plan is adopted for the location Suva Morava, first phase of zone development in all three concepts is the same location - Suva Morava and difference between the concepts is the location and size of the second phase.

At present, brownfield occupies 47 ha on the left bank of the river Juzna Morava. On the left bank is the land owned by Republic of Serbia with water source Suva Morava and for flood protection dikes is 34 ha.

Greenfield activated in two phases results in infrastructure improvement and construction in two phases. Access from the zone to the Corridor X is the same for the phase 1 as well as for the phase 2 and has to be constructed into phase 1. Other infrastructure, such as water supply, wastewater collection and treatment, electro power supply and telecommunication has to be constructed in two phases. Details of all infrastructure improvements are presented into chapter 8.7 *Design criteria and proposed infrastructure development*.

According to the concept I, industrial development is planned in one location A - Suva Morava, on the both banks of the river Juzna Morava. Greenfield could be developed on 64 ha on the left bank of the river Juzna Morava and 127 ha on the right bank of the river Juzna Morava. Land for the industrial development in the phase 1 is bounded by the railway





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corridor and regional road and rivers Lepenica and Juzna Morava. Land in the phase 2 is between river Juzna Morava and Corridor X.

Concept II proposes industrial development in two locations - Suva Morava and Stubal, on the left bank of the river Juzna Morava. Greenfield could be developed in location A - Suva Morava on 64 ha on the left bank and 47 ha on the right bank of the river Juzna Morava and 106 ha in location B - Stubal. Land for the industrial development in the phase 1 is in location A - Suva Morava, on the left bank of the river Juzna Morava, bounded by the railway corridor and regional road and rivers Lepenica and Juzna Morava. Land in the phase 2 is in location A - Suva Morava, on the right bank of the river Juzna Morava and in the location B - Stubal.

Concept III proposes industrial development in three locations - Suva Morava, Stubal and Priboj, on the left bank of the river Juzna Morava. Greenfield could be developed on 64 ha in location A - Suva Morava, 106 ha in location B - Stubal and 108 ha in location C - Priboj .

Land for the industrial development in the phase 1 is in location A - Suva Morava, bounded by the railway corridor and regional road and rivers Lepenica and Juzna Morava. Land in the phase 2 is in location B - Stubal and C - Priboj.

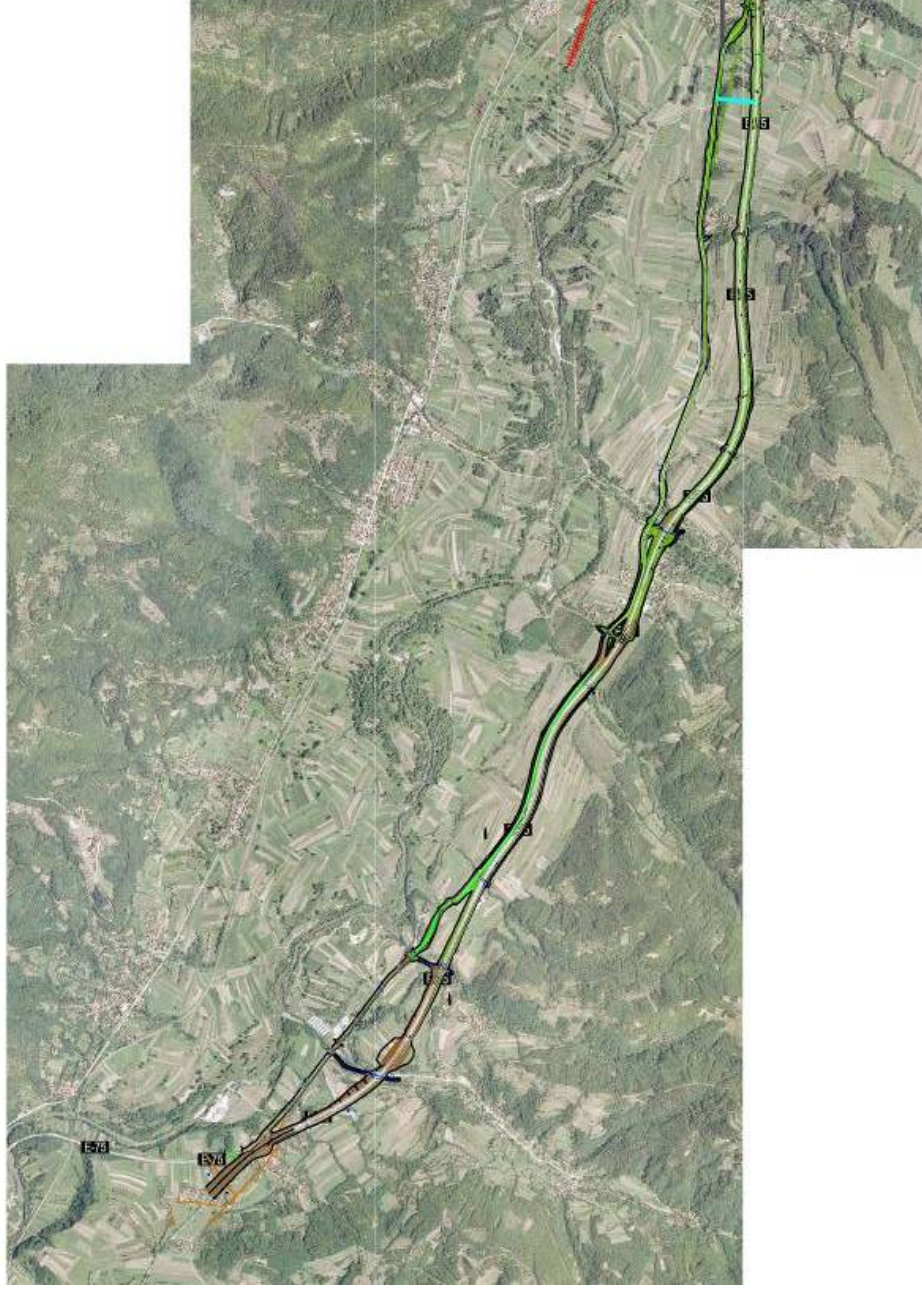
Drawings with concepts I, II and III, as well as land acquisition plan are presented bellow.





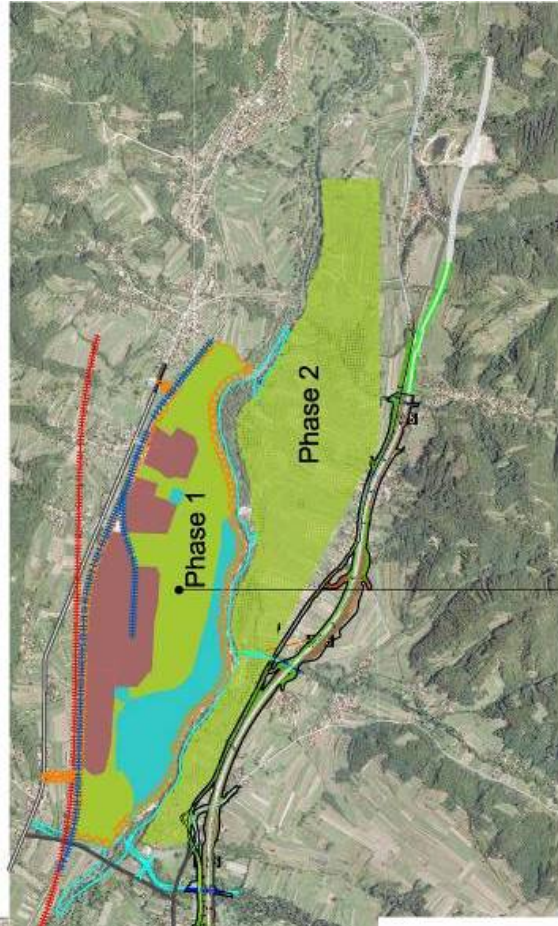
# Industrial zone "Jug" in Vladicin Han

## Concept I - location A - Suva Morava









Location A "Suva Morava"

land owned by R. Serbia & other	34.43ha
brownfield	47.06ha
greenfield phase 1	64.10ha
greenfield phase 2	126.89ha



Location A "Suva Morava"

### LEGEND:

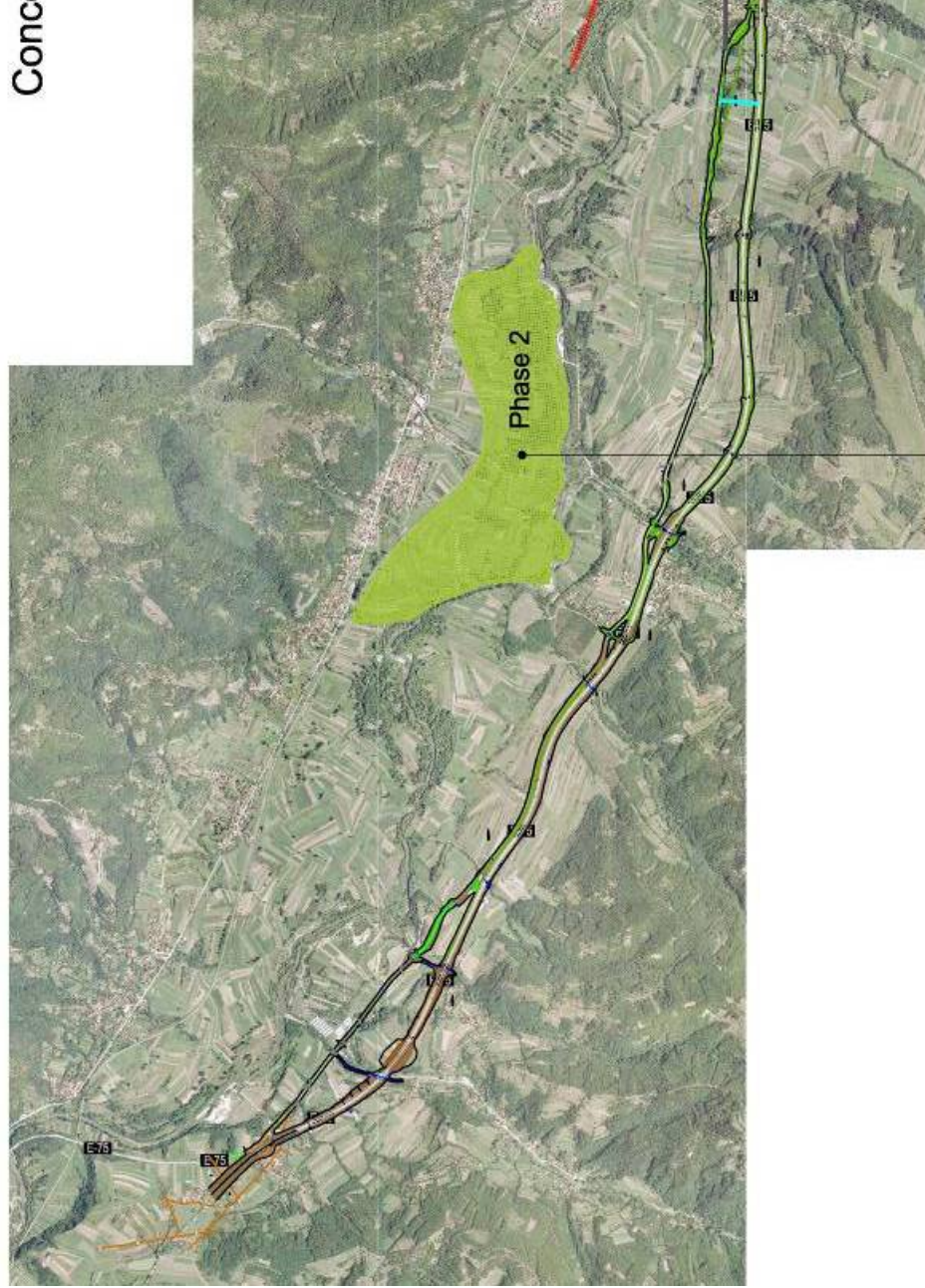
-  existing road
-  corridor X
-  existing railway
-  future railway
-  boarder of the ind. zone in phase 1
-  boarder of the ind. zone in phase 2





# Industrial zone "Jug" in Vladicin Han

## Concept II - locations A - Suva Morava and B - Stubal



Location A "Suva Morava"

land owned by R. Serbia & other	34.43ha
brownfield	47.06ha
greenfield phase 1	64.10ha
greenfield phase 2	47.20ha

Location B "Stubal"

greenfield phase 2	106.30ha
--------------------	----------

### LEGEND:

- existing road
- corridor X
- existing railway
- future railway
- boarder of the ind. zone in phase 1
- boarder of the ind. zone in phase 2



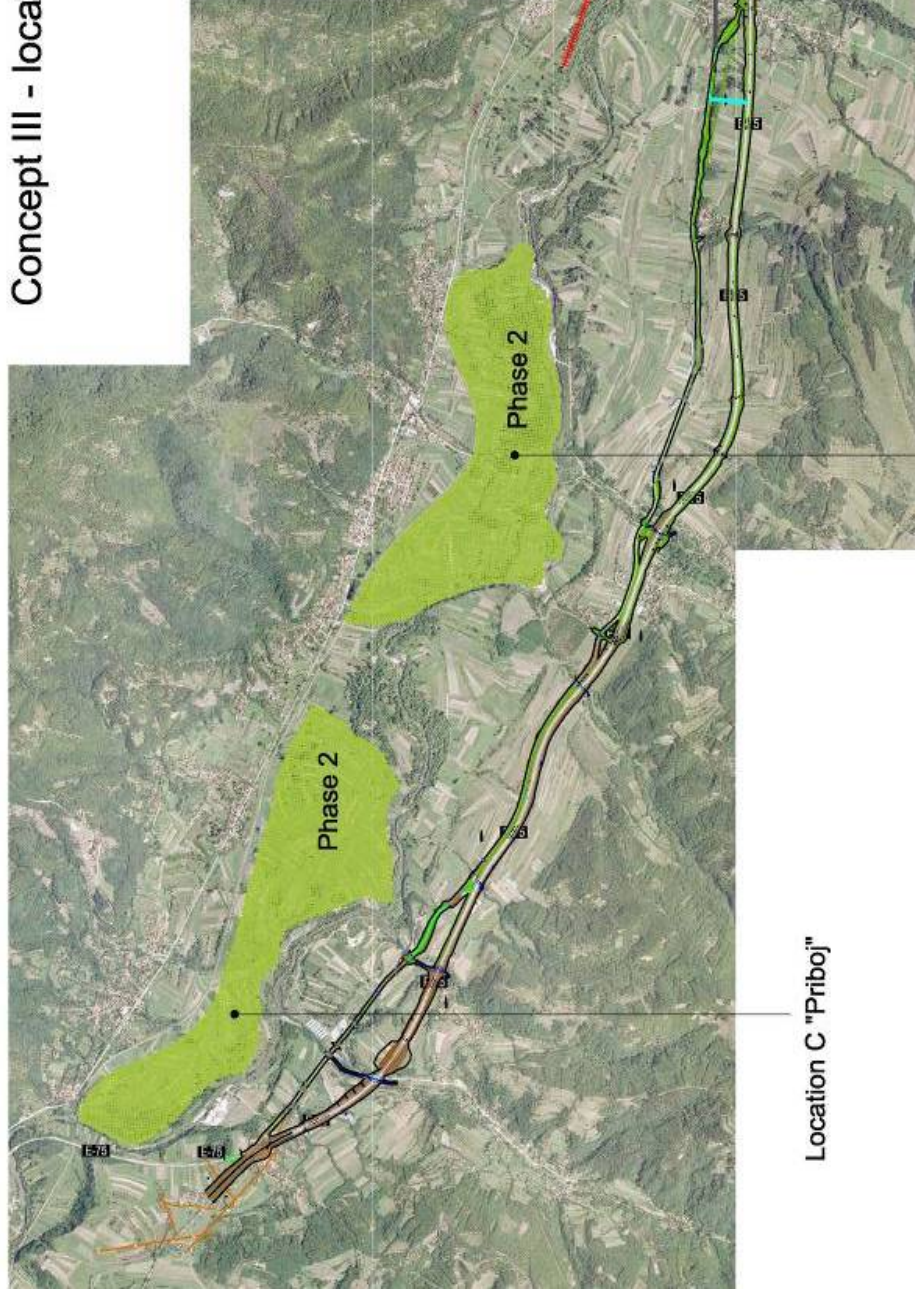
Location A "Suva Morava"

Location B "Stubal"



# Industrial zone "Jug" in Vladicin Han

## Concept III - locations A - Suva Morava, B - Stubal and C - Priboj



### Location A "Suva Morava"

land owned by R. Serbia & other	34.43ha
brownfield	47.06ha
greenfield phase 1	64.10ha

### Location B "Stubal"







greenfield phase 2	106.30ha
--------------------	----------

### Location C "Priboj"

greenfield phase 2	108.10ha
--------------------	----------

### Location C "Priboj"

### LEGEND:

-  existing road
-  corridor X
-  existing railway
-  future railway
-  boarder of the ind. zone in phase 1
-  boarder of the ind. zone in phase 2

### Location B "Stubal"

### Location A "Suva Morava"





# Industrial zone "Jug" in Vladicin Han

## Concept I, phase 1 - Land occupation



### LEGEND:

- existing road
- new road
- corridor X
- main entrance to Industrial zone
- emergency exit
- existing railway
- future railway
- existing dike
- future dike
- sanitary protection zone for the wells
- future WWTP
- lagoons
- regulation line
- future lot
- 1-water pumping station, 2-transformer station
- greenfield
- boarder of the ind. zone in phase 1

	future lots - total	47.00 ha
	greenfield phase 1	64.10 ha
	Traffic	4.00 ha
	location A	145.60 ha



# Industrial zone "Jug" in Vladicin Han

## Concept I, phase 1 - Land acquisition plan



### LEGEND:

- existing road
- new road
- corridor X
- main entrance to Industrial zone
- emergency exit
- existing railway
- future railway
- future WWTP
- lagoons
- regulation line
- future lot
- 1-water pumping station, 2-transformer station
- boarder of the ind. zone in phase 1

### Land acquisition:

	Roads	4.00 ha
	3 WWTP	1.00 ha
	Lot 1	4.80 ha
	Lot 2	4.40 ha
	Lot 3	6.35 ha
	Lot 4	4.45 ha
	Total area	25.00 ha







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## 1.5.6 Other Services to Provide Added Value

Vladicin Han is in competition with other municipalities offering similar or better advantages or facilities. The attractiveness of the Vladicin Han industrial zone can be enhanced by offering prospective investors additional facilities and services which may tilt the balance in favour of Vladicin Han in preference to other locations. The possible services which can be considered are as follows:

- Marketing and communications
- One Stop Shop
- Business incubators and ready built factories
- Clusters
- Free zones

The creation of the one stop shop unit must be started immediately if only to start communicating to potential investors the information on the progress being achieved on the completion of the industrial zone.

The municipality can seek assistance from special funds which are available for such facilities. For ready built factories the Municipality may seek the partnership of a developer who has the capital to invest in such a speculative venture.

There are special funds available for hosting business clusters and as new business starts to set up within the industrial zone, the Municipality is recommended to seek assistance for such a service.

It is recommended that the existing free zone company is reactivated when new investors seeking free zone status become active on the industrial zone.

## 1.5.7 Proposed Infrastructure Development

This Study concerns all technical aspect that are required to construct and connect basic infrastructure services in Industrial zone „Jug“ of the Vladicin Han (145.6 ha – total industrial zone area; total useful area of 92.71 ha – greenfield+brownfield). Proposed infrastructure development is :

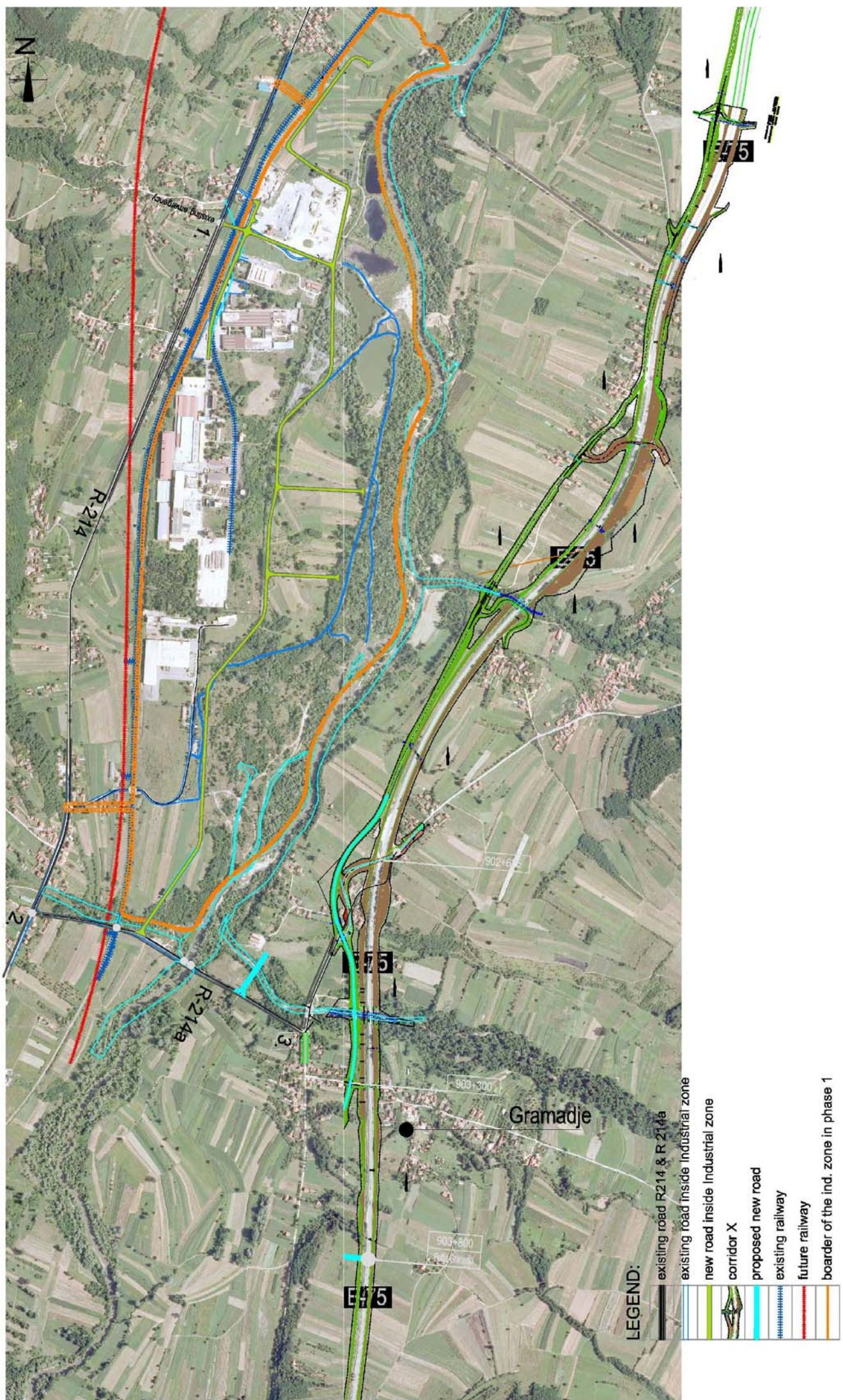
- Improvement of 1 km of existing road access to the industrial zone
- Construction of about 5km of internal roads with street lighting
- Construction of flood protection
- Development of about 50 hectares of farmland into disposable plots
- Construction of 5km of new underground 35kV and 110kV electricity cable
- Construction of 9 new transformer stations 10/0.4kV, 630kVA and 16.200km of 10kV underground cable network
- Construction of street light lightning with 150 pole mounted luminaries supplied by 5.6km of 0.4kV underground cable
- Installation of 3km of ducts for telecommunication system
- Construction of new wellfield with initial capacity of 50l/s
- Construction of about 5km of water supply pipelines
- Construction of about 6km of surfacewater drainage network
- Construction of about 4 km of wastewater network with a 3000 population equivalent WWTP

Proposed infrastructure development is presented on the drawings bellow.



# Industrial zone "Jug" in Vladicin Han

## Concept I, phase 1 - Traffic infrastructure





# Industrial zone "Jug" in Vladicin Han Concept I, phase 1 - Traffic facilities



### LEGEND:

- existing road
- new road
- corridor X
- main entrance to Industrial zone
- emergency exit
- existing railway
- future railway
- Gramadja junction
- greenfield
- boarder of the ind. zone in phase 1

	greenfield phase 1	64.10 ha
	Traffic	4.00 ha
	location A	145.60 ha



# Regional industrial zone "Jug" in Vladicin Han

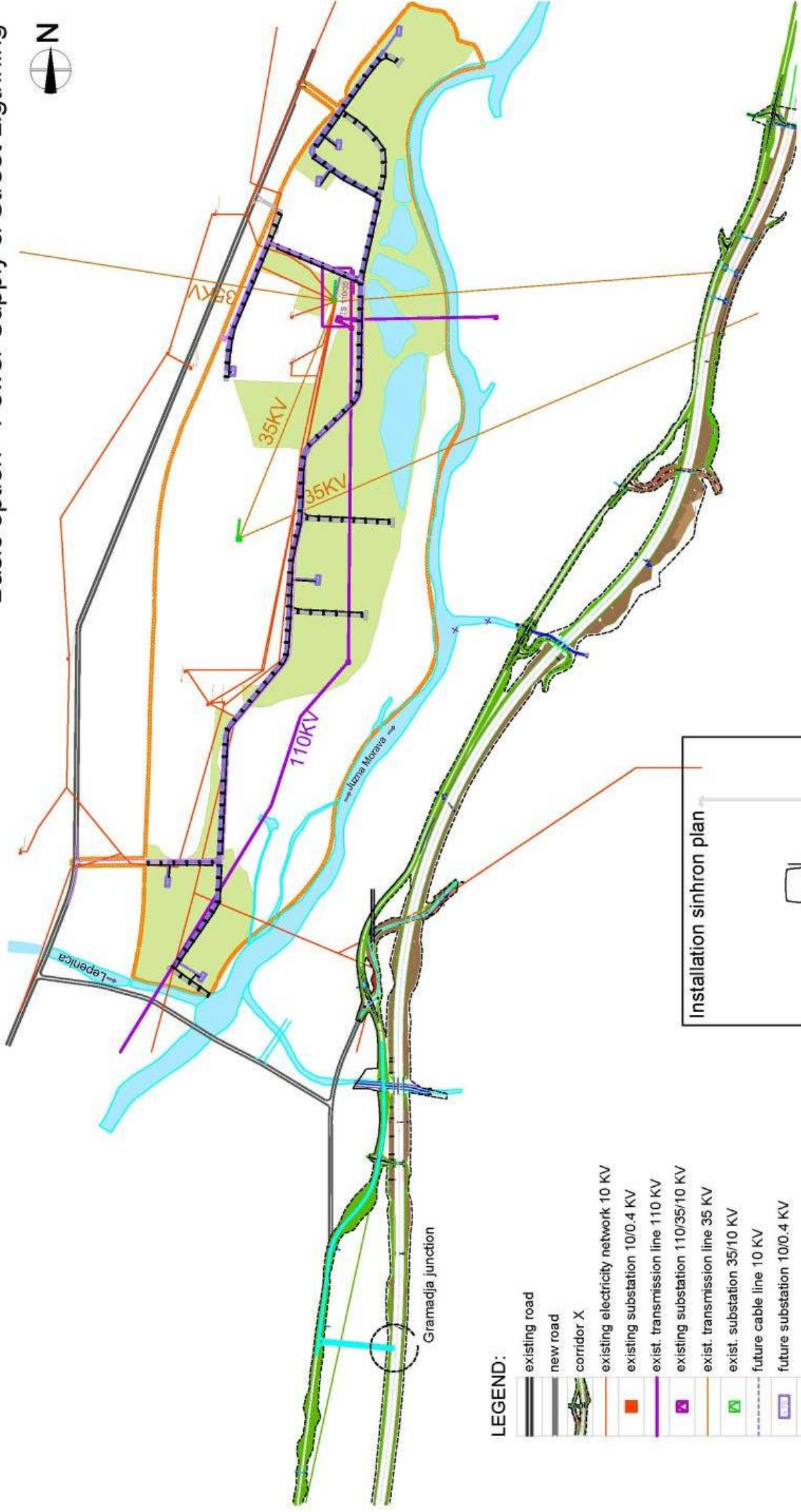
## Concept I, phase 1 -Water supply, sewerage, stormwater drainage and flood protection





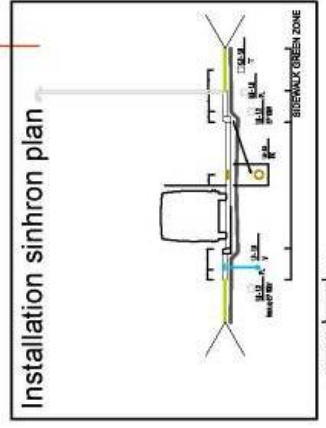
# Regional industrial zone "Jug" in Vladašcin Han

## Basic option - Power Supply & Street Lighning



### LEGEND:

- existing road
- new road
- corridor X
- existing electricity network 10 KV
- existing substation 10/0.4 KV
- exist. transmission line 110 KV
- existing substation 110/35/10 KV
- exist. transmission line 35 KV
- exist. substation 35/10 KV
- future cable line 10 KV
- future substation 10/0.4 KV
- future street lighting cable line 0.4 KV
- future street luminaries on 9m high poles
- telecommunication - cable network
- greenfield
- boarder of the ind. zone in phase 1





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Proposed electrical supply development is as following:

- a. the basic power supply unit is prefabricated concrete power substation 10/0.4kVA, 1000kVA capacity. Dimensions in the base are 5.5 x 4.5m.
- b. Standard transformer unit is chosen to be 630kVA
- c. Number of transformer substations is 15 – 13 for technological consumers (IZ industries, i.e. future tenants) and 2 for communal purposes (waste water and back up supply water treatment. However, as the phase approach is employed, in the first phase it will be built 9 TSSs (7 for industries – one per each block and 2 for communal purposes)
- d. Power is to be provided for public lighting system evenly distributed to the transformer substations. Preliminary design shows it is necessary to build roughly 145 public lights luminaries, each mounted on the 8m height pole. Power demand for public light is 35kW.
- e. All substations 10/0.4kV will be supplied from 35/10kV transformer substation Vladicin Han with planned capacity of 2x8MVA (today 2x4MVA).
- f. Cabling is to be realized with underground cables 3x(1x150mm<sup>2</sup>), type XHE 49A.
- g. Distribution network 10kV will be realized in ring topology, in a way that each set of transformers supplied from one outgoing feeding compartment in the 10kV substation with 10kV cable which goes to the first transformer substation on the “entry / exit” principle and continues to the next substation. From the last substation exit cable will be run back to the transformer substation 35/10kV to the different feeder compartment. That return cable will be, even separately laid down in the cable row on the other side of the street, increasing the system resistance to the mechanical damaging.
- h. Maximum number of transformer substations 10/0.4kV per one cable is limited on four per required cable.
- i. For underground cabling it should be envisaged all necessary cable canalization, which consists of proper number of protective PVC or PHE pipes on the road crossing and other obstacles and necessary evenly distributed number of cable manholes, purposed for providing places for connection of the eventual additional substations. In addition, cable manholes should be planned on both ends of the cable protection pipes.

Proposed water supply, waste and stormwater collection and treatment is as following:

*Water supply:* Construction of internal water supply network and connection to public water supply system. The system will include a full fire hydrant network.

*Waste Water Discharge:* Construction of internal sewage network as well as main pipeline leading to collector pipeline leading to the Waste Water Treatment Plant (WWTP), after treatment is going to be discharged into the lake in the zone area, and finally to the end recipient river J.Morava.

*Storm Water Discharge:* Construction of internal storm water drainage network and main pipeline leading to the final discharge point at the lake in the area of the zone, and after it going to be pumped to the J.Morava

The Industrial zone is subdivided into plots. The regulation width between parcels is defined and it will be appropriate for all expected vehicular access. However given the limitations of this dimension it will be necessary to construct and install water supply, sewage and stormwater drainage systems directly under the road, with other services to be constructed under paved areas. Connection to potable water, sewerage and stormwater drainage system for all parcels will be provided.







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All future tenants of the industrial zone shall be supplied with water from the town water supply system. The designed network will be connected to the network at two points (one on the location of the emergency exit, and second at the location of the pumping station in the period of supplying from the suva morava water source).

The water supply network shall provide potable water for all tenants in the zone and for a network of fire fighting hydrants of adequate diameter and pressure. Since there are no adequate stormwater drainage or sewer system in the zone both of these systems will be new constructions including the collectors, WWTP and discharge into the J.Morava river from the lagoons.

The Industrial zone is intended to become the main focus for the Municipal local economy development. From technical perspective the zone represents a classic infrastructure project with a technical summary of the works being:

- Water supply network, total length around 4300m; Ø150, Ø250;
- Sewage network with WWTP, total length around 4200m; Ø250, Ø300; wwtp capacity: 2x3.000PE
- Stormwater drainage network, total length around 5600m; Ø300, Ø500, Ø600;
- Flood protection – construction of the dikes; total length around 2100m

All infrastructure installations should be properly designed according to the design requirements issued from responsible public utilities.

From the technical perspective all planned works being well known, standard works which are daily performed by number of international and local construction companies.

## 1.5.8 Cost Estimates

A summary of the cost estimates on a nominal basis for year 2011 is provided hereafter and exclude all taxes and duties.

**Table 1.5-4 Summary of Cost Estimates**

		Total per Phase	2012	2013	2014	2023	2024	2025
		M EUR	M EUR	M EUR	M EUR	M EUR	M EUR	M EUR
	<b>Total Investment Costs</b>		<b>Phase 1</b>	<b>Phase 1</b>	<b>Phase 1</b>	<b>Phase 2</b>	<b>Phase 2</b>	<b>Phase 2</b>
1	Land	1.66	0.83	0.83		0.83	0.83	
2	Planning / design (4% of main works)	0.36	0.18	0.18		0.18	0.18	
3	Capital Works	9.07		4.57	4.50		4.57	4.50
4	TA & Training (5% of main works)	0.44		0.22	0.22		0.22	0.22
5	Supervision (7% of main works)	0.62		0.31	0.31		0.31	0.31
6	Public Relation	0.04		0.02	0.02		0.02	0.02
7	Contingencies (10% on 2 to 6)	1.06	0.02	0.53	0.51	0.02	0.53	0.51
	<b>Total Investment Costs</b>	<b>13.25 Per phase</b>	<b>1.03</b>	<b>6.66</b>	<b>5.56</b>	<b>1.03</b>	<b>6.66</b>	<b>5.56</b>

Note: All costs are constant Euro 2011 excluding duties and taxes





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## 1.6 Environmental and social impact assessment

Environmental and Social Impact Assessment (ESIA) Report was undertaken by MISP environmental team as a part of this Feasibility Study (FS)

Redevelopment of the existing industrial zone is regarded as an important prerequisite for economic recovery of the municipality. On one hand, the redevelopment is expected to provide the conditions for increase of industrial activity. On the other hand, although the environmental sensitivity of the project site can be assessed as moderate to low (given that it is located out of settlements and sensitive receptors), it is still related to certain environmental concerns, necessary to be identified and assessed. The main purpose of the ESIA has been to identify those concerns and to propose measures to prevent their potential further degradation as a result of the future industrial zone operation.

The major environmental concern is related to the water supplying source “Lepenica”, comprising 6 groundwater wells for water supplying of the Vladicin Han town, usually operated only for 35-40 days in the summer season as an alternative solution when the major source is out of operation. “Lepenica” is located inside the boundaries of the proposed industrial zone. Located in its southern part it is generally upstream of the major industrial activities but still close to the potential pollution sources. Current management of the “Lepenica” water supplying source is not sustainable, not in compliance with regulation and the sanitary protection standards and has to be improved.

The second important issue is the water quality of the river Južna Morava running in the vicinity of the proposed industrial zone’s eastern boundary. Besides the diversity of pollution sources upstream of Vladicin Han, the river’s seasonal flow rate is highly fluctuating, resulting the water quality of the South Morava to be heavily degraded and non-suitable for any purpose (“out of class”). It is necessary that development of the industrial zone involves the measures to prevent the further river pollution by the future occupants.

Given that “Suva Morava” industrial zone has incorporated several industrial facilities that have operated for decades and have been involved in metal processing and paper and wood production, the potential presence of historical contamination of soil and groundwater in the area cannot be fully excluded. Long term storage and usage of hazardous substances in the facilities (e.g. oil for heating, solvents) and discharge of wastewater into the nearby lagoons presents a reasonable concern for the risk of soil and groundwater contamination that need to be investigated and followed by an appropriate remedial action.

It is certain that redevelopment of the industrial zone is primarily oriented towards the economic aspect of the Vladicin Han development. It is likely, as well, that once the economic activity in the industrial zone is started, diverse positive social changes may be expected, such as increase of employment, increase of local incomes, development of commercial facilities, increased value of properties, development of retail properties, etc.

But equally important benefit of the redevelopment project is that it will result in improvement of environmental conditions in the area. In order to develop a competitive industrial zone which might attract the potential investors, the existing infrastructure will have to be improved. This will result in improvement of the sanitation of the area: (1) protection of water supply source will be improved, (2) uncontrolled discharge of untreated domestic and industrial wastewater into the South Morava will be ceased, (3) waste management will be improved, (4) hazardous substances management will be improved, (5) potential historical contamination in the “Suva Morava” area will be identified and removed.



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## 1.7 Municipality Vladicin Han Creditworthiness Assessment

According to the current Budget System Law, Municipalities could borrow up to 50% of current revenues from the budget revenues realized in previous years. The Ministry of Finance regularly publishes these limits and they are applied very strictly. According to the last official release from the Ministry of Finance, valid for the year 2011, the Municipalities can borrow up to the following limits:

**Table 1.7-1 Borrowing limits for the Municipality Vladicin Han (2011 /€ 1 = RSD 100)**

Municipality	Realized revenues 2010 RSD million	Borrowing limit 2011 RSD million	Borrowing limit 2011 (€ 000) based on revenue 2010	Realized revenues 2010 (€ 000)	Outstanding principal amount of current debts (€ 000) 2010	Max borrowing capacity 2011 50% (€ 000)	Max borrowing capacity 2011 (RSD m)
1	2	3	4	5	6	7 (4-6)	8
<b>VLADICIN HAN</b>	<b>303</b>	<b>151</b>	<b>1,514</b>	<b>3,028</b>	<b>200</b>	<b>1,314</b>	<b>131</b>

Source: Ministry of Finance Serbia

Because of the loans already taken during previous years, the remaining total borrowing limit of the Municipality Vladicin Han as of 2011 is limited to **RSD 131 million** or **€ 1,314,274**.

## 1.8 Cost Benefit Analysis

### 1.8.1 Investment Costs

#### 1.8.1.1 Physical Investment Components of the Project

The table 1.8-1 provides the spread of the investment of the project for which EC support is being sought, in constant prices and in million EUR.

**Table 1.8-1 Project Investment Costs (M EUR, Constant Prices, 2011)**

Project Investment Cost	eligible	life-time	Total 2012-2014	2012	2013	2014
Main works	yes	50	8,413	0,000	4,239	4,174
Equipment & machinery & commissioning	yes	15	0,646	0,000	0,323	0,323
Sub-total 1 (w/out land)			9,059	0	4,562	4,497
thereof Administration Buildings	no		0,000	0,000	0,000	0,000
Land acquisition	no	-	1,964	0,982	0,982	0,000
Sub-total 2 (including land)			11,023	0,982	5,544	4,497
TA: Support for Project Mgmt., Design & Publicity	yes		0,854	0,180	0,427	0,247
TA: Supervision of Construction	yes		0,630	0,000	0,315	0,315
Sub-total 3 (w/out contingencies)			12,507	1,162	6,286	5,059
Technical Contingencies (10% of Sub-total 1)	yes		1,054	0,018	0,530	0,506
Sub-total 4 (with contingencies)			13,561	1,180	6,816	5,565
Total eligible cost including contingencies			11,597	0,198	5,834	5,565
% of contingencies contained in eligible project cost			9,09%	9,10%	9,08%	9,09%
ineligible cost including contingencies			1,964	0,982	0,982	0,000



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The total eligible project investment cost (including contingencies) in constant 2011 prices amounts to 11,597 million EUR. Ineligible cost for support from the EU is the land acquisition which will have to be acquired from own resources or a bank loan to be contracted by the Municipality of Vladicin Han within the legal boundary for such loan.

The specific per capita project investment cost amounts to around 464 EUR/ municipal population or 4.217 EUR/ Expected job created within a 5 years period in the realistic scenario.

The table 1.8-2 shows the eligible and ineligible cost breakdown in current prices (including price adjustments), according to the structure required by the EC Service for IPA funding.

**Table 1.8-2 Project Investment Costs (Current Price, M EUR)**

Item	Total Project Costs (A)	Ineligible Costs* (B)	Eligible Costs (C)=(A)-(B)
1. Planning/design fees	0,379	0,000	0,379
2. Land purchase	2,076	2,076	0,000
3. Building and construction	9,206	0,000	9,206
4. Plant and machinery	0,692	0,000	0,692
5. Contingencies	1,339	0,000	1,339
6. Price adjustment (if applicable)	0,000	0,000	0,000
7. Technical assistance	0,488	0,000	0,488
8. Support to PIU and publicity	0,049	0,000	0,049
9. Supervision during construction implementation	0,677	0,000	0,677
10. Sub-TOTAL	14,906	2,076	12,830
11. VAT (here: eligible local taxes, permits, fees)**	0,000	0,000	0,000
12. TOTAL	14,906	2,076	12,830

\* Ineligible costs comprise (i) expenditure outside the eligibility period, (ii) expenditure ineligible under national rules (Article 56 (4) of Council Regulation 1083/2006), (iii) other expenditure not presented for co-financing. \*\* VAT is not included under this item; item consists only of eligible local legal taxes, fees and permits (for more details see explanation on previous page)

Ineligible cost under EU rules would be land acquisition and the rehabilitation or development of a management buildings and workshops for the management of developed industrial zone by the Company "Slobodna Zona Vladicin Han".

All cost are expressed in current prices, i.e. price adjustments are already included (therefore, item 6 is shown as "0" in the table 1.8-2).

The estimated cost breakdown of eligible cost **by currency** results in 73,22% of total cost in local currency (RSD) and 12,89 % in foreign currency (EUR), as shown in the table 1.8-3.

**Table 1.8-3 Eligible Cost Breakdown in Local & Foreign Currency, Current Prices**

Cost Item	Unit	Total	2012	2013	2014
Eligible Cost	M EUR	14,906	1,323	7,405	6,178
Local Currency	M EUR equivalent	11,327	1,272	5,630	4,425
Local Currency	% of Total	75,99%	96,15%	76,03%	71,63%
Local Currency	M RSD	1.155,383	129,772	574,268	451,344
Foreign Currency	M EUR	3,578	0,051	1,775	1,753

## 1.8.1.2 Technical assistance

The Technical Assistance Support proposed to be deployed for the implementation of the project is spread into two packages, for which separate Consultants will be contracted:

- Support for Project Management, Design & Publicity
- Construction Supervision





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The Support for Project Management, Design & Publicity will aim at strengthening the institutional capacities of the Company “Slobodna Zona Vladicin Han” in the design, marketing and development of the industrial zone to become a model modern industrial zone in the region.

The Construction Supervision will be responsible for managing and supervising the works and supply contracts and in general will fulfill all duties of the Engineer as defined in the FIDIC Yellow and/or Red Book Conditions of Contract for Construction.

The cost breakdown and phasing of the Technical Assistance Services are as reflected in the table 1.8-4.

**Table 1.8-4 Cost Breakdown of Technical Assistance Services (Current Prices, M EUR)**

Technical Assistance	Total 2012-14	2012	2013	2014
Support for Project Management, Design & Publicity	0,916	0,186	0,457	0,273
Supervision of Construction	0,677	0,000	0,334	0,343
<b>Total</b>	<b>1,593</b>	<b>0,186</b>	<b>0,791</b>	<b>0,616</b>

### 1.8.1.3 Funding Sources for the Capital Investment

The Table 5 summarizes the financial sources assumed to be needed in first approximation for the capital investment of the project as a basis for discussion with the ministries and the international donor community. The municipality will need to mobilize own resources for the acquisition of the land. According to the assessment of the finance of the municipality of Vladicin Han presented in Chapter 10.2, its current financing capacity includes 1,314.000 Euro for a loan (legal borrowing limit) and 970.000 Euro from the local budget.

**Table 1.8-5 Project Tentative Financial Sources**

Financing Source	Investment Values (current price, x1000€)	Percentage %
Grant (potential EU IPA)	11,551	77%
Central / Regional Government grant	1,071	7%
Loan for land acquisition	1,314	9%
Local Budget for land acquisition	970	7%
Others	0	0%
<b>Total</b>	<b>14.906</b>	<b>100%</b>

For the loan component, conditions corresponding to lending conditions applied by EBRD for other infrastructural investment in Serbia were retained. They are summarized in the table below.

**Table 1.8-6 Tentative Loan Conditions**

Loan interest	%, EUR real	5
Loan duration	years	12
Grace period	years	3
Upfront fee	%	1
Commitment fee	%	0,5

The table 1.8-7 provides an overview of the resulting loan repayment schedule for the municipality.







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**Table 1.8-7 Loan Repayment Schedule (M EUR)**

	Total	2012	2013	2014	2015	...	2020	2021	2022	2023
Interest	0,468	0,049	0,057	0,066	0,062	...	0,026	0,018	0,011	0,004
Principal Repayment	1,314	0,000	0,000	0,000	0,146	...	0,146	0,146	0,146	0,146
<b>Total</b>	<b>1,782</b>	<b>0,049</b>	<b>0,057</b>	<b>0,066</b>	<b>0,208</b>	<b>...</b>	<b>0,172</b>	<b>0,164</b>	<b>0,157</b>	<b>0,150</b>

## 1.8.2 Revenues from the sell/long term lease of industrial plots

The plot of land developed in the industrial zone will be sold/ or leased long term to industrial companies. To attract industrialists the municipality is interested to sell/ lease at the lowest possible price to provide some incentive to companies considering settling into the industrial zone.

Based on the current country legal fiscal framework and flows of funds the following assumptions were made regarding the income taxes that can be expected to flow back to the municipality:

- 1) Income tax is 12% of gross earning of jobs created in average
- 2) 80% of income taxes is expected to be transferred back to the Municipality
- 3) Approximately 30% of jobs created will be for workers living in Vladicin Han. The other workers are expected to come from neighbouring municipalities and therefore their tax are expected to benefit those municipalities not Vladicin Han.

The table 8 below summarizes the resulting possible discount that the municipality can offer on the land market price and which are compatible with the decree 13/2010, based on the expected jobs created for the different 3 scenarios. The data indicated in the table 8 aggregate expected public income of new jobs generated for the period 2015-2019, i.e. a period of 5 years after expected industrial investment completion.

**Table 1.8-8: Calculation of Discount of Sale/lease Price of land Depending on Scenarios**

Item	Optimistic Scenario (cumulated public revenues 2015-2019)	Realistic Scenario (cumulated public revenues 2015-2019)	Pessimistic Scenario (cumulated public revenues 2015-2019)
Jobs created (#)	2.145	1.650	693
Tax Income transferred back to Municipality (Mill Euro)	0,578	0,445	0,187
Fees from industrial construction sites <sup>(1)</sup> (Mill Euro)	0,000	0,000	0,000
Fees from building sites arrangement <sup>(1)</sup> (Mill Euro)	0,000	0,000	0,000
Advertising charges <sup>(1)</sup> (Mill Euro)	0,000	0,000	0,000
Total Revenues over 5 years (Mill Euro)	0,578	0,445	0,187
Surfaces of plot sold/leased (m <sup>2</sup> )	250.000	250.000	150.000
Revenues/m <sup>2</sup> of land sold/leased (EUR/m <sup>2</sup> )	2,31	1,78	1,25
Market price of land (EUR/m <sup>2</sup> )	5	5	6
Sale/Lease price after Discount/m <sup>2</sup> (EUR/m <sup>2</sup> )	2,69	3,22	4,75
Discount factor (%) against market price	46,2%	35,6%	20,8%

<sup>(1)</sup> These fees and charges are estimated to be 0 for first 5 years because the municipality has expressed the intention to waive those fees and charges for the first 5 years of operation for all companies joining the industrial zone.



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## 1.8.3 Economic Analysis

### 1.8.3.1 CBA Model

The Model consists of a series of linked worksheets. It develops year on year projections of investment costs, operating costs and revenues in real and nominal terms. It is followed by financial statements incorporating project capital costs, funding sources and investment plan. The worksheets in the Model are summarized below in table 9. While the spreadsheets are listed below in a particular order, this may not necessarily represent the sequence in which calculation is done.

**Table 1.8-9 Description of CBA Model Worksheets**

Number	Worksheet Title	Description
1.	Inputs	Contains the major input variables and assumptions of the model
2.	Macro	Contains projections of the major macroeconomic variables
3.	Total Costs	Projections of total costs
4.	Investment	Contains projections of total investment costs in real and nominal terms and breakdown in foreign and local currency
5.	Revenues	Contains projections of municipality revenues in real and nominal terms and calculation of possible discount for land selling
6.	Loan	Loan calculation in real and nominal terms
7.	FNPV	Contains output report financial analysis for all components together
8.	Economic elements	Contains calculations of economic elements (conversion factors)
9.	Economic analysis	Contains economic analysis
10.	Sensitivity	Contains sensitivity analysis of main financial and economic output variables
11.	Risk analysis	Contains risk analysis of main financial and economic output variables
12.	Graphs	Contains graphs and charts of main project output variables

The model use a forecast period of 20 years with 2015 the 1<sup>st</sup> year after the completion of the investment.

### 1.8.3.2 Economic Benefits

The most significant positive economic impacts considered in the study are additional income for the municipality and the wider region. These income can be conceptualized as coming from three different sources:

- (i) Direct Jobs Effect: These are documented essentially in terms of income from new jobs to be created by companies establishing a production facility in the planned industrial zone;
- (ii) Indirect Jobs Effect: these are new jobs expected to be created in and around Industrial zone "Jug" in Vladicin Han but outside the industrial zone. These indirect jobs are expected to be either in the production of goods (light equipment or raw material and goods used by companies inside the industrial zone) or in services industries to support the productive activities of the industrial zone (restaurants, hotels, supporting services etc.);
- (iii) Private Capital mobilized and invested by industrialists and shareholders of the companies which will settle in the industrial zone to establish production facilities and





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equipments to be used by workers and professionals to produce new industrial goods. These fixed assets will become based in the Vladicin Han industrial zone and represent tangible assets for the township and its surroundings. This capital is commonly expressed as “capital employed” per direct job created. Value may vary widely per industrial sector concerned. IT production for example may require higher and more sophisticated equipments than light industry or agro-processing and wood processing.

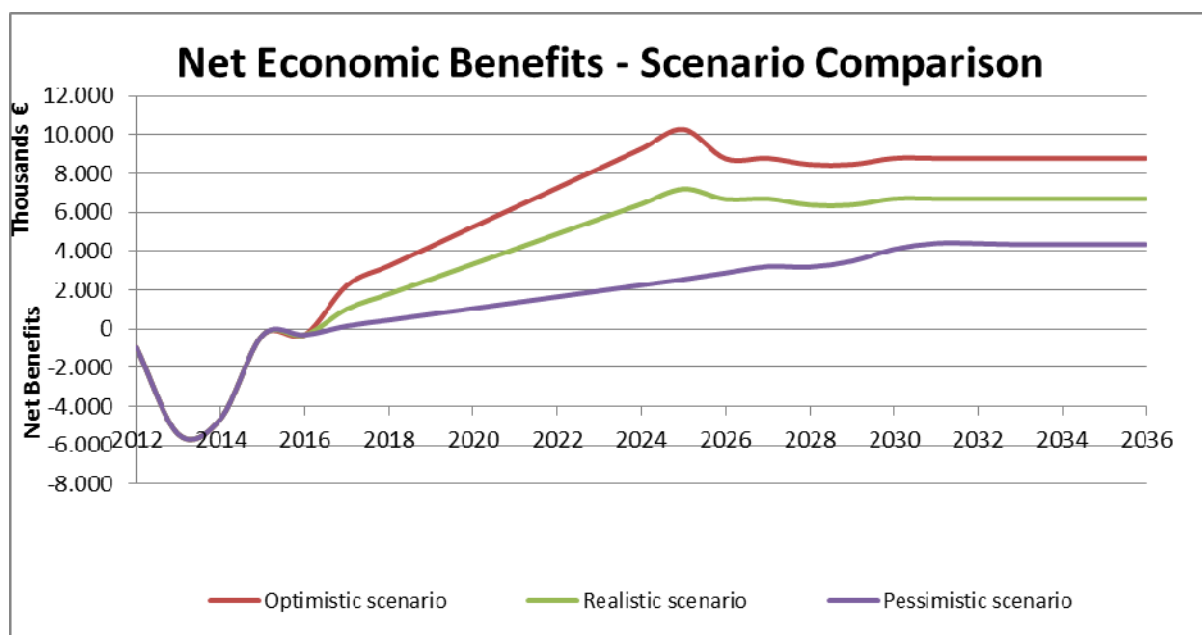
The total effects to the target area are then the sum of income from the three components indicated above.

The table 10 summarizes the economic benefits of the industrial zone for the municipality and the neighboring areas depending on the job creation scenarios contemplated.

**Table 1.8-10 Estimation of Economic Benefits of IZ in Vladicin Han (Eur)**

Source of Economic Benefits	Present value (2012-2036)	2015	2018	2020	2026	2036
<b>Optimistic Scenario</b>						
Direct Jobs Created	62.246.741	-	772.200	3.088.800	6.949.800	6.949.800
Indirect Jobs Created	18.674.022	-	231.660	926.640	2.084.940	2.084.940
Industrial Capital Invested	9.888.025	-	1.543.685	1.543.685	-	-
<b>Realistic Scenario</b>						
Direct Jobs Created	47.882.109	-	594.000	2.376.000	5.346.000	5.346.000
Indirect Jobs Created	14.364.633	-	178.200	712.800	1.603.800	1.603.800
Industrial Capital Invested	3.582.953	-	559.359	559.359	-	-
<b>Pessimistic Scenario</b>						
Direct Jobs Created	26.487.836	-	498.960	997.920	2.494.800	3.825.360
Indirect Jobs Created	5.297.567	-	99.792	199.584	498.960	765.072
Industrial Capital Invested	1.594.234	-	161.700	161.700	161.700	-

**Figure 1.8-1 Net Economic Benefits (K EUR, Constant Prices) – Scenario Comparison**





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## 1.8.3.3 Overall Economic Estimation and Recommendation

The table 1.8-11 summarizes the estimated economic benefits of the three investment scenarios considered.

**Table 1.8-11 Comparison of Investment Option in Economic Terms**

Indicators	Unit	Optimistic Scenario	Realistic Scenario	Pessimistic Scenario
EIRR	%	25,2%	19,9%	11,1%
PV Benefits	EUR	90.808.789	65.829.695	33.379.637
PV Costs	EUR	14.428.996	14.428.996	14.428.996
ENPV	EUR	76.379.793	51.400.699	18.950.641
B/C	#	6,29	4,56	2,31

The main findings are:

1. The economic return whatever the scenario (between 11 % and 25%) is robust which is common for well structured employment generating investments. The robustness of the returns justify the proposed investment in economic terms for the country.
2. The realistic scenario is considered the most responsive approach considering the current economic constraints of the area.

## 1.8.4 Sensitivity and Risk Analysis

### 1.8.4.1 Critical Variables for Financial Analysis

A “critical variable” is a parameter which with 1% change lead to more than 5% change in one or more of the above key outputs financial indicators. The applied methodology was to modify variables in the “with-project” scenario while leaving them in “without-project” scenario unchanged.

The following variables were assessed:

- 1) Investment Cost
- 2) Plot areas sold/leased to industry
- 3) Sale/Lease Price for Industrial Land

The limits within which the model variables were modified were set at -10% to +10% below and above their base case estimate while leaving all other model variables unchanged.

The sensitivity analysis was developed for the realistic job creation scenario only.

The figures 1.8-2 and 3 summarize the sensitivity of the above variables on the FNPV/C and FNPV/K of the project investment considering the period 2012-2036.



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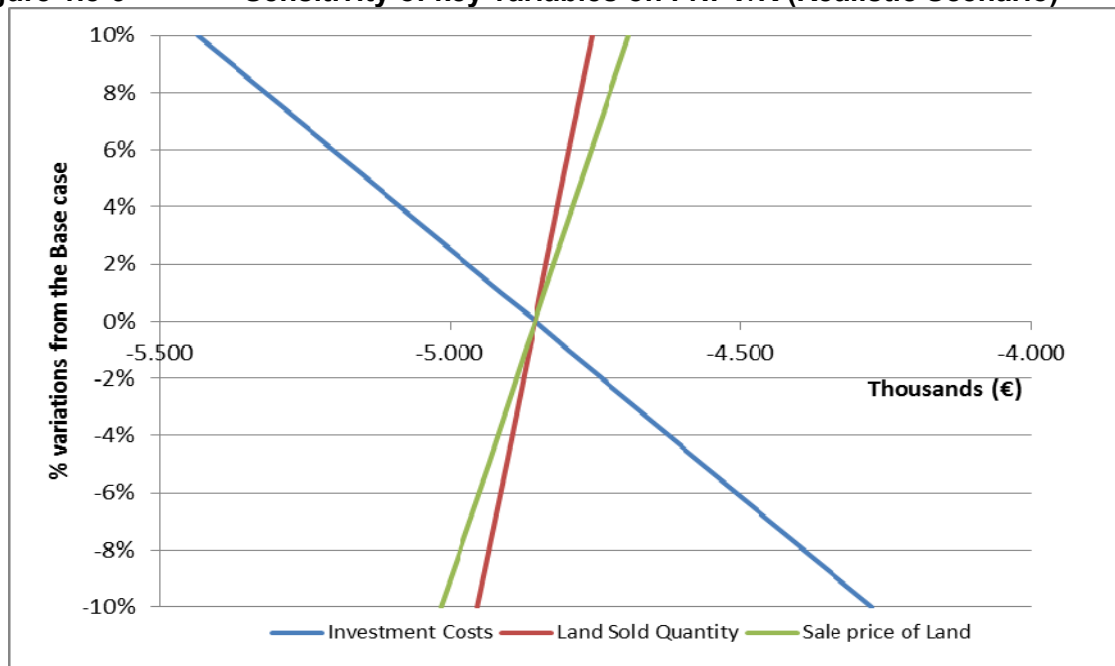


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Figure 1.8-2 Sensitivity of key variables on FNPV/C (Realistic Scenario)



Figure 1.8-3 Sensitivity of key variables on FNPV/K (Realistic Scenario)



The Table 1.8-12 documents the switching values which represent the change of value in percentage of key variables for which the FNPV turn to 0 and “switch” from positive to negative. It requires significant change of value to switch the FNPV, which proves the financial robustness of the proposed investment.







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**Table 1.8-12 Switching Values for Key Project Financial Variables**

Variable	%
Investment Costs	-93,6%
Plot Areas Sold/ Leased	+1.395,1%
Sale/Lease Price of Land	+849,8%

## 1.8.4.2 Risk Probability Analysis Financial Analysis

In this assessment, variations in the key variables investment costs, land sold quantity and sale/lease price have been used to conduct a risk probability analysis based on the FNPV/C and FNPV/K. This was done by assuming base scenarios. The tables 1.8-13 to 15 document the probability of occurrence of given variation.

**Table 1.8-13 Probability of Various Scenarios of Investment Cost Variations**

Scenario	Variation of Values	Probability in %
Optimistic Scenario	-10,0%	10,0%
Realistic Scenario	0,0%	80,0%
Pessimistic Scenario	10,0%	10,0%

**Table 1.8-14 Probability of Various Scenarios of Land Areas Sold / Leased Variations**

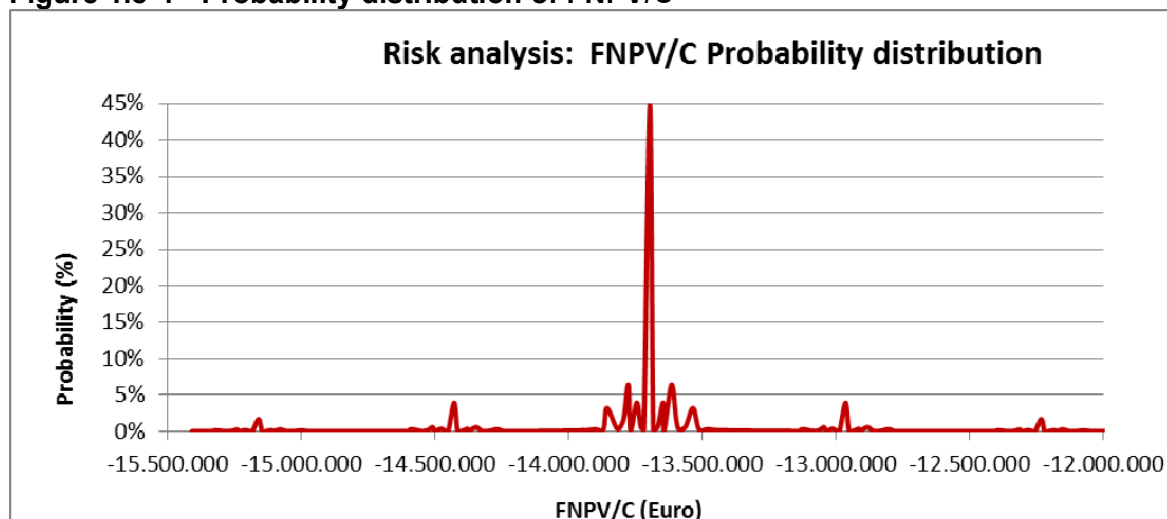
Scenario	Variation of Values	Probability in %
Optimistic Scenario	-10,0%	10,0%
Realistic Scenario	0,0%	80,0%
Pessimistic Scenario	10,0%	10,0%

**Table 1.8-15 Probability of Various Scenarios of Sale/ Lease Price of Land**

Scenario	Variation of Values	Probability in %
Optimistic Scenario	-10,0%	10,0%
Realistic Scenario	0,0%	80,0%
Pessimistic Scenario	10,0%	10,0%

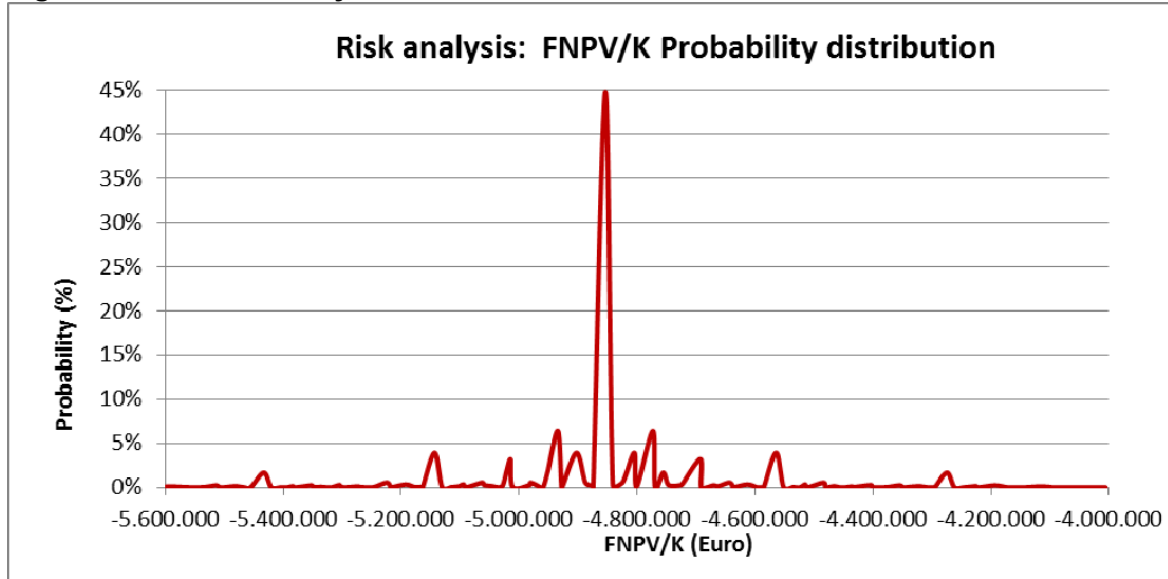
The Figures 4 and 5 reflect the probability distribution of occurrence of percentage change from base case for FNPV/C (figure 4) and FNPV/K (figure 5) as function of investment costs, land sold quantity and sale/lease price.

**Figure 1.8-4 Probability distribution of FNPV/C**





**Figure 1.8-5 Probability Distribution of FNPV/K**



### 1.8.4.3 Critical Values Economic Analysis

The applied methodology was to modify variables in the “with-project” scenario while leaving them in “without-project” scenario unchanged.

The following variables were assessed:

- 1) Investment Cost
- 2) Direct Jobs Created
- 3) Overall Economic Benefits

The Tables 1.8-16 to 18 documents the variation ratios of the project Key financial Indicators for a  $\pm 1\%$ ,  $\pm 5\%$  and  $\pm 10\%$  variation of the selected variables.

**Table 1.8-16 Sensitivity of Key Project Economic Indicators – Variation in Investment Costs**

Variation in Investment Costs		NPV	ERR	BCR
1	Realistic Scenario	<b>51.400.699</b>	<b>19,9%</b>	<b>4,56</b>
2	Sensitivity case 2 (-1%)	51.504.138	20,0%	4,60
3	Sensitivity case 3 (-5%)	51.917.896	20,5%	4,73
4	Sensitivity case 4 (-10%)	52.435.093	21,1%	4,91
5	Sensitivity case 5 (+1%)	51.297.259	19,8%	4,53
6	Sensitivity case 6 (+5%)	50.883.502	19,3%	4,40
7	Sensitivity case 7 (+10%)	50.366.304	18,8%	4,26



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**Table 1.8-17 Sensitivity of Key Project Economic Indicators – Variation in Jobs Created**

Variation in Jobs created		NPV	ERR	BCR
1	Realistic Scenario	<b>51.400.699</b>	<b>19,9%</b>	<b>4,56</b>
2	Sensitivity case 2 (-1%)	50.600.192	19,7%	4,51
3	Sensitivity case 3 (-5%)	47.426.894	19,1%	4,29
4	Sensitivity case 4 (-10%)	43.524.912	18,3%	4,02
5	Sensitivity case 5 (+1%)	52.204.078	20,0%	4,62
6	Sensitivity case 6 (+5%)	55.446.327	20,6%	4,84
7	Sensitivity case 7 (+10%)	59.563.778	21,4%	5,13

**Table 1.8-18 Sensitivity of Key Project Economic Indicators – Variation in Economic Benefits**

Variation in Economic Benefits		NPV	ERR	BCR
1	Realistic Scenario	<b>51.400.699</b>	<b>19,9%</b>	<b>4,56</b>
2	Sensitivity case 2 (-1%)	50.742.402	19,8%	4,52
3	Sensitivity case 3 (-5%)	48.109.214	19,2%	4,33
4	Sensitivity case 4 (-10%)	44.817.729	18,6%	4,11
5	Sensitivity case 5 (+1%)	52.058.996	20,0%	4,61
6	Sensitivity case 6 (+5%)	54.692.183	20,5%	4,79
7	Sensitivity case 7 (+10%)	57.983.668	21,1%	5,02

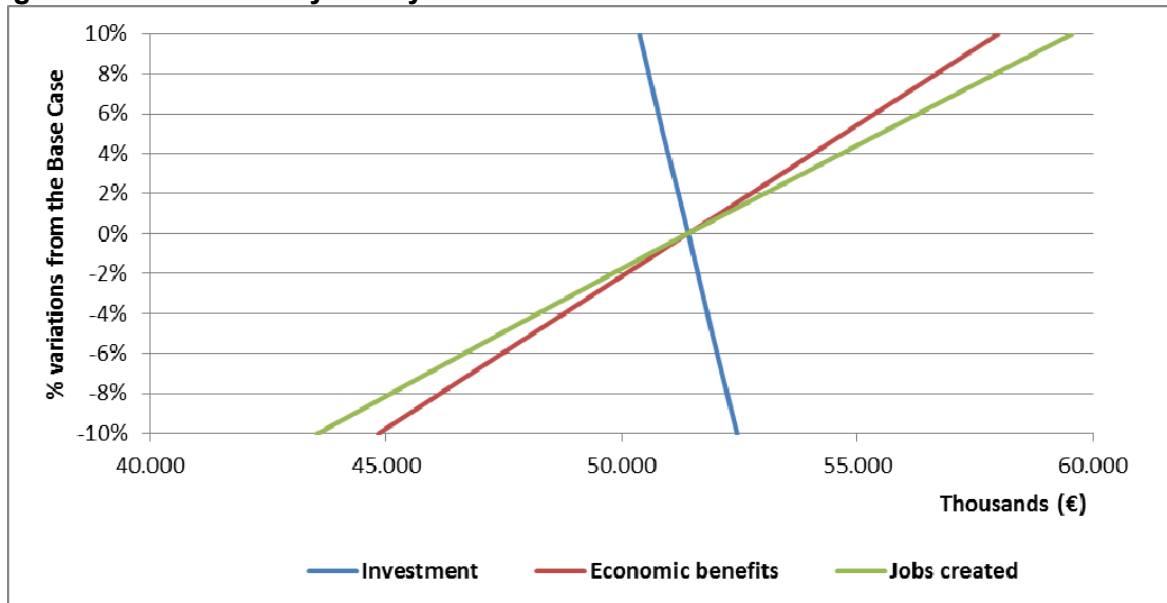
The Table 1.8-19 documents the variation ratios of the project Key financial Indicators for a  $\pm 1\%$  variation of the selected variable.

**Table 1.8-19 Sensitivity of Economic Indicators**

Variable Tested	ERR variation	ENPV variation
Investment costs (increase of 1%)	-0,55%	-0,20%
Investment costs (decrease of 1%)	0,56%	0,20%
Jobs Created (increase of 1%)	0,76%	1,56%
Jobs Created (decrease of 1%)	-0,76%	-1,56%
Economic benefits (increase of 1%)	0,63%	1,28%
Economic benefits(decrease of 1%)	-0,63%	-1,28%



**Figure 1.8-6 Sensitivity of Key Variables on ENPV**



The Table 1.8-20 documents the switching values expressed as percentage variation of the tested variable for which the ENPV turns to 0.

**Table 1.8-20 Switching Values for Economic NPV**

Critical Variable	Switching value	
Project investment cost	Maximum increase before ENPV equals 0 (%)	496,9%
Jobs created	Maximum increase before ENPV equals 0 (%)	-73,9%
Economic benefits	Maximum increase before ENPV equals 0 (%)	-78,1%

The assessment of economic risk was carried out by comparing the optimistic (O) and the pessimistic (P) scenario to the realistic base case. In a first step (variant "A" of the scenarios), all three key variables have been considered for the analysis. In the pessimistic scenario, the effect of unfavourable developments in all three key variables show less performance than in the base case, while in the optimistic scenario the opposite is assumed. In a second step (variant "B" of the scenarios), the analysis is limited to two of the three key variables leaving economic benefits unchanged. The rationale is there that the economic benefits will be difficult to document quantitatively in an ex-post evaluation because of the lack of data.

Three scenarios: Optimistic, Base, Pessimistic. The tables 1.8-21 to 22 summarize the assumptions for the scenarios.

**Table 1.8-21 Assumptions of Variation for the Scenarios**

Scenario	Key Variables Variation		
	Investment Cost (I)	Jobs Created (J)	Economic Benefits (E)
Optimistic (O)	-5,0%	5,0%	5,0%
Realistic Base Case (BC)	0,0%	0,0%	0,0%
Pessimistic (P)	5,0%	-5,0%	-5,0%



**Table 1.8-22 Probabilities of Variation for the Scenarios**

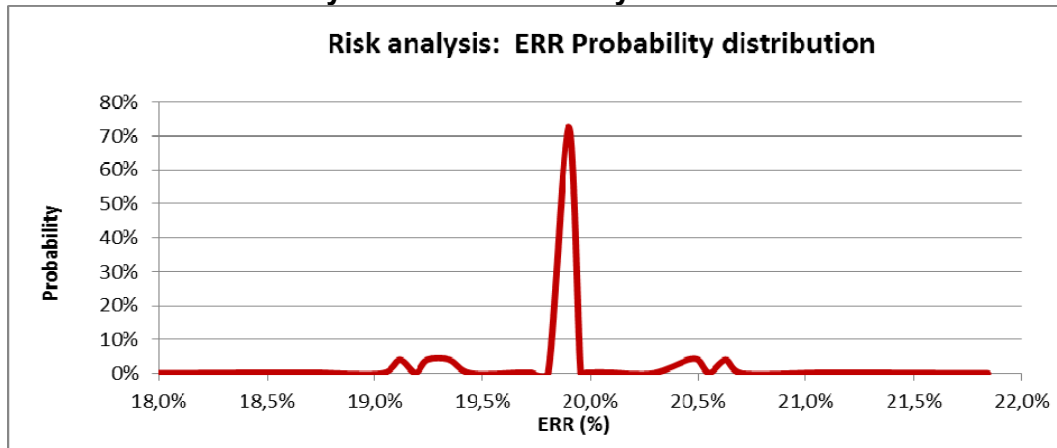
Scenario	Key Variables		
	Investment Cost (I)	Jobs Created (J)	Economic Benefits (E)
Optimistic Scenario (O)	5,0%	5,0%	5,0%
Realistic Base Case (BC)	90,0%	90,0%	90,0%
Pessimistic Scenario (P)	5,0%	5,0%	5,0%
<b>Total</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>

The results of the assessment yield the results are shown in the table 1.8-23 and figures 1.8-7 and 8.

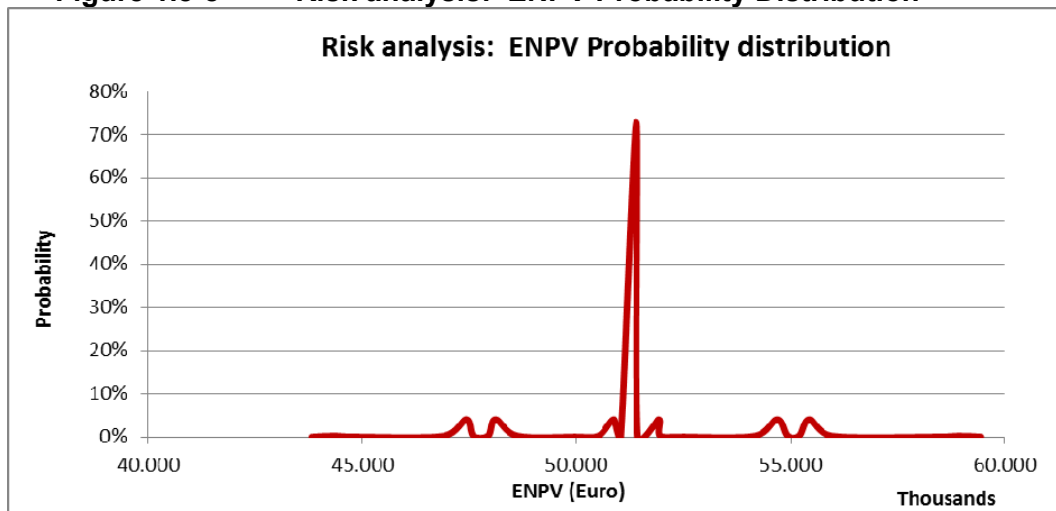
**Table 1.8-23 Results of Economic Risk Analysis**

Variable	Variation ENPV	Variation ERR
Realistic Scenario	0,00%	0,00%
Optimistic Scenario	+15,67%	+9,87%
Pessimistic Scenario	-14,75%	-9,6%

**Figure 1.8-7 Risk analysis: ERR Probability distribution**



**Figure 1.8-8 Risk analysis: ENPV Probability Distribution**







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## 1.9 Financial Assessment of the Company d.o.o. Slobodna zona Vladicin Han

The d.o.o “Slobodna zona” Vladicin Han records a symbolic budget surplus and budget deficit in observing years. The company at present time is purely formally established without any operational activities performed, amount of receives from different sources, actually current subsidies from municipal and republic budget in previous years are recorded also in a municipal final accounts and used for covering of cost of salaries and other services like: fines, penalties and other taxes. Summary of the budget execution presented in a table below does not reflect any significant operational activity of the company in a last two years.

**Table 1.9-1 Budget execution report: d.o.o “Slobodna zona” Vladicin Han (RSD ‘000)**

Budget execution summary Description / Source	Amount of realized revenues and receives					
	2009 (RSD 000)			2010 (RSD 000)		
	Total	Republic	Municipality	Total	Republic	Municipality
<b>I. Current revenues</b>						
1. Current transfers from other level of government		-	1,569		216	-
<b>A. TOTAL REVENUES &amp; RECEIVES</b>	<b>1,569</b>	<b>-</b>	<b>1,569</b>	<b>216</b>	<b>216</b>	<b>-</b>
<b>II. Current expense</b>						
1. Cost of Salaries		-	1,379	-	-	-
2. Use of services and goods		-	63		-	218
3. Other services		-	124		-	-
<b>B. TOTAL COST &amp; EXPENSE</b>	<b>1,566</b>	<b>-</b>	<b>1,566</b>	<b>218</b>	<b>-</b>	<b>218</b>
C. SURPLUS of revenues-budget surplus (A-B)	<b>3</b>	<b>-</b>	<b>3</b>		216	
D. DEFICIT of revenues-budget deficit (B-A)		<b>-</b>		<b>2</b>		218



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## 1.10 Conclusion

This feasibility showed that the extension of the Suva Morava industrial zone to provide an initial 50 hectares of serviced greenfield plots could generate about 4,000 jobs in the zone during the period up to 2020. This job creation initiative provides a significant contribution to the 400,000 jobs which are necessary for successful implementation of the Strategy and Policy Development of Industries in Serbia between 2010 and 2020.

The estimated economic internal rate of return for the investment varies between 11% and 25% depending on the rate of job creation and is well over the minimum social discount rate of 5.5% expected for projects of such nature.

The project consists of the following components:

- Improvement of 1 km of existing road access to the industrial zone
- Construction of about 5km of internal roads with street lighting
- Construction of flood protection
- Development of about 50 hectares of farmland into disposable plots
- Construction of 5km of new underground 35kV and 110kV electricity cable
- Construction of new 10kV transformer stations and 16km of 10kV network
- Installation of 3km of ducts for telecommunication system
- Construction of new wellfield with initial capacity of 50l/s
- Construction of about 5km of water supply pipelines
- Construction of about 6km of surfacewater drainage network
- Construction of about 4 km of wastewater network with a 3000 population equivalent WWTP

A tentative funding plan in current terms has been prepared and is presented in the following table.

**Table 1.10-1 Funding Plan**

Financing Source	Investment Values (current price, EUR)	Percentage %
Potential EU grant	10.314.610	69,20%
Central / Regional Government grant	982.700	6,59%
Loan for initial land purchase	1.314.000	8,82%
Local Budget for further land purchase	2.294.221	15,39%
Others	0	0 %
<b>Total</b>	<b>14.905.531</b>	<b>100 %</b>

Note: All costs in current terms, i.e. includes escalation

The project is presently being considered by the Serbian Government for funding under the European Union's Instrument for Pre-Accession and is in competition with other projects which are also seeking similar very advantageous grant finance. The final decision will depend on many factors which the Government may consider as part of the final selection criteria and of which the status of project preparation is probably the most important.

After successful preliminary negotiation on the funding arrangement there are still many other activities which have to be completed for successful implementation of the project. The status of these activities are evaluated hereafter:

- Land acquisition
- Preparation of project documentation
- Implementation arrangement
- Finalisation of funding agreements

Land acquisition has been a continuous source of delays in the implementation of many projects in Serbia. This project may suffer from the same potential risks because very little of





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the land which are planned to be developed into the industrial zone is actually in the ownership of the Municipality.

It is estimated that at least 25 hectares of land, all farm land have to be acquired by the Municipality and another 17 hectares of land will have to be obtained from the old paper factory in exchange for its liabilities towards the municipality prior to the preparation of the project documentation.

The Municipality has already completed a detailed regulation plan but the plan has to be updated to include new elements such as connection to the highway E75 which is part of Corridor X.

The preliminary design has to be completed on the basis of the design conditions and the preliminary design has then to be reviewed to confirm adherence with the design and technical conditions.

After completion of this feasibility study and in order that the momentum towards implementation is not lost, there is need for continuing management efforts which includes appointment of consultants for completion of the project documentation such as preliminary design, detailed design, preparation of the tender documents and supervision of construction.

In parallel to the completion of the project documentation, the administrative activities such as permitting and creation of operational structure have to be completed.

Implementation of the construction requires a preparation period during which the detailed design consultant has to be engaged and the tender documentation completed. The tender process as described by the PRAG procedures has to be adhered to and this process requires a minimum tender period during which proposals can be prepared and presented.

Analysis of the critical activities resulted in the implementation programme as presented hereafter. The minimum period thought possible and normally adopted by EU procurement rules has been allowed for each activity.

Using the above basis the draft implementation programme has been prepared and presented on the Figure 1.10-1.



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Figure 1.10-1 Implementation Plan

