



**„Preparation of Documentation to Obtaining Support from the Transport Operational Programme to #445 Main Road Northern Bypass around Kecskemét”**

**Feasibility Study  
Environmental Summary**

**Prepared on the order of the National Infrastructure Development Ltd.  
by:**

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## 1. Summary

### Summary of main project elements

The planned #445 Main Road Kecskemét Northern Bypass establishes direct link between main road no. 44, main road no. 441 and main road no. 5 and motorway M5 in the Northern sector of the town.

The planned #445 Main Road Kecskemét Northern Bypass is a secondary main road that was developed with 2x1 lane design.

Structures:

- **7 pcs** bridge structures (M5 motorway, main road no.5, Talfája köz., Hegedűs köz., Cegléd-Kecskemét railway line, main road no.441, and a game overpass between Kafka csp. and Ceglédi út)

Junctions:

- **3 pcs** separate level junctions (M5, main road no.5, main road no.441), 7pcs roundabouts (in M5 junction, Nyíri u., Ladánybenei u., on main road no.441, Békéscsabai u. (at Szolnoki mountain), and at no.44 (Southern bypass))
- **2pcs** bay level crossings (Vacsi köz, Kaffka Margit str.)
- **1pc** level railway crossing.

On M5 motorway the Hetényi lay-by shall be moved closer to the Lajosmizse junction because of the traffic intersection.

### The need for the project

Kecskemét is passed by several main roads belonging to the national and international road network. Main road no. 5 and secondary main roads no. 52 and no. 441 also pass the city center. Main road no. 44 and secondary main road no.54 pass on the Southern border of the city in the region of Kecskemét creating link with main road no. 5.

Today the **West – North-East transit traffic** resulting from the connection between the Dunaföldvár bridge and the central territories of the Great Plain **stresses the internal road network of Kecskemét. Two decisive traffic links have developed** between the mentioned main road network elements:

- One of them is the connection between main roads no.**52 – 441** which can only be implemented through the inner city today, producing by this significant environmental harm for the inhabitants of the inner city parts. If the bypass road is built the traffic of road no. 441 will get to main road no.52 via M5 motorway which could strongly reduce the traffic of Ceglédi út – Bethlen körút – Széchenyi körút – Mária körút – Izsáki út.
- The other main connection is between M5 motorway and no.5 main road, and main road no. 44, that is the **Budapest – Békéscsaba** axis. Even today part of the traffic is running outside the city, this however forces the vehicles to make significant extra travel. Part of the traffic is running on the inner city roads which provide more direct link.

According to the definition of the **New Széchenyi Plan** development document a transport system should be implemented in Hungary which „integrates into the European and regional integrated transport networks, takes into account the environmental and energetic aspects with a technological level close to the European frontline”. The main purpose of the plan is to develop the Hungarian economy and the Hungarian enterprises along seven breakout points, among them the transport transit economy. As to the transport sector „the main purpose is to maximize the transport profits with the minimization of the social strains”.

**The updating of the Transport policy concept of Kecskemét City with County Rank** formulates as main target, that

*The transport system developments shall contribute to the satisfaction of the transport demands resulting from the operation of the city and its region, to the maintaining of the livability of the city, to the improvement of the economic opportunities taking into account efficiency and financing issues.*

**The specific targets** are the following

- differentiated meeting of transport demands
- improvement of inter-regional accessibilities and links
- reduction of harmful traffic and environmental impacts
- economic use of assets and resources.

In order to improve the accessibility of the region the following special political aims are formulated as **operative targets**:

- To ensure the links between big regions and suburban areas in order to reduce the urban transit traffic and to develop the big regional logistics relations
- Development of suburban relations, increase of regional cohesion and of the integration of satellite settlements and settlement parts
- building out of network elements improving transport links, harmonizing the city’s spatial structure
- Development of public road network relieving the protected zones of the city
- Through the review of responsibilities and the sanctioning system support of the institutional background of public road management
- Proactive planning of network maintenance and development resources
- Efficient utilization of the existing infrastructure and contribution to safe traffic with the use of traffic regulation and intelligent technologies.

Accessibility plays a determining role in the competitiveness and growth of the economy. It has an important role in the attraction of working capital, in orienting the selection of site by the enterprises, in reducing the distance between the purchasing and distribution markets, makes possible manpower mobility, and by servicing the international cargo transport contributes to realization of extra revenues. A well-established transport infrastructure contributes to the closing up of the countryside regions, within this of the handicapped regions, to the mitigation of regional differences of economic development, to the improvement of employment.

The well developed important transport routes and the high level services stimulate other types of investments of the domestic and international capital (settling in Hungary of

manufacturing and service bases producing significant added value) and also improve the conditions for tourism.

The project contributes directly (during the construction and the operation) and also indirectly (by improving the capital attraction force) to the increase of employment, which is an especially important factor for the region with adverse employment data.

The project also contributes to the achievement of horizontal targets. As a result of the implementation of the project the traffic flow will be more efficient, the journey times will be shorter reducing by this the negative environmental impacts. The project will improve the competitiveness of the region leading to the increase of employment, improving the position of the handicapped people. During the construction works additional jobs can be created by the involvement of the local entrepreneurs, which will positively influence the position of the target groups of equal opportunity programmes. The project will contribute to the enforcement of the principle of regional cohesion, to the release of socio-economic inequalities.

#### *The purpose of the assignment*

Review of the feasibility study prepared on the order of NIF Zrt. in connection with the TOP Support and the summary of the project's environmental impacts. The main purpose of this study is to review and summarize the actual environmental status, the environmental impacts of the construction and operation, the impact mitigating measures, supplemented by the presentation of the valid legal background. Chapters 4-9 of this study summarize the available studies about environmental issues. The authors of this synthesis study acted with due care during the survey of the available and other documents prepared earlier. In the frame of the assignment the results, descriptions, map data of measuring, modeling works included in the documents were not reviewed in detail, their investigation and the studying of the methodological compliance and correctness of these data did not belong to the scope of duties of the authors of this study.

During the performance of the work physical tests were not made. In order to help the understanding of chapters 4-9 the legal and planning background (see Chapter 3) was summarized in the frame of this assignment. The comprehensive evaluation of environmental impacts based on the available documents was also completed according to this assignment.

#### *Current status*

The design area is located on a plain covered by loess and sand at 118,5-130 m above sea level. 60% of sediments close to the surface are typical, flood area infusion loess and sandy loess. Significant surface is covered by caustic mud, alkaline flats.

On the area ground water depth is between 2-4 m. The volume is not significant. Its typical chemicals are mostly calcium-magnesium-bicarbonate, with sodium on a large part around Kecskemét. Degree of hardness is 15-25 nk°.

It can be concluded from the geotechnical and ground water level data (which can mostly be found at 2-3 m depth under the surface) that the soil layers above the water level provide adequate natural protection against the external impacts.

The track does not affect operating or future water base protection area. The track has no impact on meliorated or watered land.

The investigated land site is an area with scarce rain and strong lack of water, crossed by several watercourses running to river Tisza. Among them of outstanding importance are the Alpár-Nyárlőrinci-canal, the Csukáséri-main canal and the Talfái-canal.

According to the calculation the present air pollution does not exceed the relevant limit values in case of any of the air pollution components.

The design area does not effect Natura 2000 or national nature conservation area, but in the environs of the track line in the direction of the airport runway grassland can be found with bordering forest belt (*in 2+700 – 5+300 km sections*) registered in the ecological network (**puffer zone**). The planned track line crosses the Csukáséri main canal once and the Alpár-Nyárlőrinci canal twice, which also compose part of the National Ecological Network as an **ecological corridor**.

The track does not affect special landscape values directly.

The planned investment is located in the South Great Plain region. Of the three counties of the region one, namely County Bács-Kiskun is affected on small regional level via the Kiskunsági-loess table-land small region. Administratively the design area has direct effect only on the city of Kecskemét.

The planned route – according to the historical monument list of Hungary – does not affect monument, monumental area. According to the heritage protection impact study the planned route influences several archeological deposits and is running close to some archeological sites. Therefore prior to the construction of the planned track line preventive excavations and test excavations shall be made.

In the environs of the planned bypass road the airport is also regarded as a noise source in addition to the existing road and railway lines.

The planned route does not affect waste deposit site directly and no such is planned to be established in the area.

#### Impacts during construction

During the construction works land occupation and removal of topsoil are the most important impacts on the geological layer and on the subsurface waters.

The track line of the planned road is running on surface mostly covered by sand and floury sand sediment, therefore rainwater drainage have to be solved with great care, excluding the possibility of contamination.

The road may change the catchment areas and can cut them into pieces. This impact can be neutralized by the careful design of culverts, bridges and trench system.

During the construction dust produced by the earthworks and transportation is the most significant air polluting material. Depending on the use of raw materials dust pollution can sometimes and in places be significant as a result of truck traffic, loading of the transported materials and landscaping.

During the earthworks the habitats and flora and fauna settled on the embankment route and in the barrow pits will be damaged irreversibly and to a significant degree. The route and the construction facilities require land occupation leading to direct loss of habitat for members of several flora and fauna species, or the reduction of the habitat. The reduction of the number and size of habitat may result the loss of richness of species in the concerned areas.



From landscape protection point of view the impact of construction will result temporary changes – for example the view of working machines – but the impact can also be final. It is mainly connected to the establishment of barrow pits and deposit sites.

Noise is produced by the movement of building, transport and loading machines. Working machine noise can create problem only for those buildings which are close to the road and only with temporary character.

#### Impacts during operation

The planned track line of the road is running in suburban area. The possible negative impacts can derive from the emissions of public road transport, from contaminants bound by the dust settled from the air and from dust grains contaminated by oil along the road. These are the wear materials, lubricants, petrol and Diesel drops, snow-water after winter salting, settling dust.

Ground water will be affected by salt contamination as a result of skidding prevention works during winter, it is prohibited to use salt in bigger than allowed volume.

During the operation surface waters are polluted by rainwater falling on the pavement and by the contaminated water getting into the water reservoir.

Based on the noise calculations the limit values set by regulations – with a safety margin – shall be met within 66 meter distance. Residential estate cannot be found on the air protection impact area thus there is no need for preventive actions.

During the operation the most important impact is made on the quality of habitat. The living world of the area is disturbed by polluting materials, noise and light effects of the transport traffic.

Habitat fragmentation produced by a lined facility will result hitting of animals during the operation. If the movement of games is not ensured properly during the operation, more serious game accidents may happen.

The operation has an impact on the landscape as a complex unit through the changing of the different environmental elements. The running of traffic on a safety, fast and shorter route makes possible the optimization of strains. The landscape structural change is the result of the total impacts both functionally and visually. Its extent depends on the stress bearing capacity of the landscape.

By building #445 Main road Northern Bypass around Kecskemét travel time, the number of accidents, traffic jams, congestions will reduce significantly and consequently the lower environmental harms will contribute to the economic development of the region, or to the improvement of the quality of life in the settlements.

The route of northern bypass road around Kecskemét avoids the densely built-in populated urban areas, the appropriate noise protection of the affected facilities can be ensured by the building of noise screening wall.

From the point of view of indirect impact area the construction of the bypass road has a positive impact since in the area of densely built-in zones of the settlements noise harms will be reduced as a result of traffic suction effect of the bypass road.

## **2. Background**

### ***2.1. The main purpose of the order***

In addition to the domestic sources the Republic of Hungary plans to involve additional funding for the implementation of the projects supportable by the European Union in the frame of Transport Operational Programme in order to ensure the priority development of the public road network. NIF Zrt. ordered from UTIBER-COWI-FŐMTERV CONSORTIUM the revision of the Feasibility Study of #445 Main Road Northern Bypass Around Kecskemét prepared in 2004 and in this context the preparation of the Environmental Summary. The documentations are needed to obtaining support from the Transport Operational Programme.

The Consortium's task is to prepare the feasibility study which meets the requirements of the European Union.

The strategic aim of the project is to improve the quality of public road transport and of movement from one place to the other.

The comprehensive aim of the project is the further development of the conditions of the public road transport.

As a result of the accession of Hungary to the EU the Hungarian environmental legislation has changed significantly. The main purpose of the preparation of this study is the review of the actual environmental status, the environmental impacts produced by the construction and operation, overview and summary of impact mitigating measures, plus the presentation of the valid legislative background.

Chapters 4-9 of this work summarize the available studies about environment protection. The authors of this synthesis study acted with due care during the studying of the available and other documents prepared earlier. In the frame of the assignment the results, descriptions, map data of measuring, modeling works included in the documents were not reviewed in detail, their investigation and the studying of the methodological compliance and correctness of these data did not belong to the scope of duties of the authors of this study.

During the performance of the work physical tests were not made. In order to help the understanding of chapters 4-9 the legal and planning background (see Chapter 3) was summarized in the frame of this assignment. The comprehensive evaluation of environmental impacts based on the available documents was also completed according to this assignment.

### ***2.2. Scope of tasks***

In June 2007 Preliminary Assessment Documentation was submitted to Lower Tisza Region Environment, Nature Protection and Water Inspectorate for the section between M5 – main road no. 5 – main road no. 441 – main road no. 44 of #445 Northern Bypass Road around Kecskemét.

The Lower Tisza Region Environment, Nature Protection and Water Inspectorate in its decision no. 44686-1-18/2007 stated that the planned activity does not require the preparation of environmental impact assessment and also confirmed the content requirements of the environmental work part of the plan for approval.

This environmental summary is based on the available documents. The reviewed plans and decisions were the following:

- Preliminary Assessment Documentation to #445 Northern Bypass Road around Kecskemét (between M5 – main road no. 5 – main road no. 441 – main road no. 44)
- Decision no. 44686-1-18/2007 of Lower Tisza Region Environment, Nature Protection and Water Inspectorate
- Statement of environmental special authorities on building permits listed in point 3.3.2.
- Building phase I: section between 5+100 – 10+300 km (main road no. 441 – main road no. 5) detailed design, environmental work part and noise screening wall special design
- Building phase II./1: section between 0+000 – 5+100 km (main road no. 44 – main road no. 441) and building phase II./2: section between 10+300 – 13+650 km (main road no. 5 – M5 motorway) detailed design, noise screening wall special design.

Therefore, this environmental summary contains the environmental aspects of northern bypass road around Kecskemét of main road no. 445.

### **2.3. Assumptions and restrictive conditions**

During the preparation of the summary all verbal, written information and information received in electronic form from the authors of the relevant studies and plans were regarded reliable and identical with reality, but we cannot be held responsible for their authenticity. We have not checked the trueness of the data received from data suppliers. We can only be held responsible for our own statements, conclusions made – on the basis of the available documents – in the summary material.

We have not made such detailed site visits and physical tests (explorations, sample takings, laboratory measurements) on the project area which would have been suitable for the detailed revealing of environmental conditions. The correctness of the measuring and modeling results in the available documents and of the conclusions made on their basis were reviewed by us with due diligence, in the course of which no errors of extraordinary significance were found.

### **2.4. The necessity of the project**

Kecskemét is passed by several main roads composing part of the national and international road network. Main road no. 5 and secondary main roads no. 52 and 441 also pass by the city center. Primary main road no. 44 and secondary main road no. 54 are passing on the Southern border of the city of Kecskemét establishing link with main road no. 5.

Today the **West – North-East transit traffic** resulting from the connection between the Dunaföldvár bridge and the central territories of the Great Plain **stresses the internal road network of Kecskemét. Two decisive traffic links have developed** between the mentioned main road network elements:

- One of them is the **connection between main roads no.52 – 441** which can only be implemented through the inner city today, producing by this significant environmental harm for the inhabitants of the inner city parts. If the bypass road is built the traffic of road no. 441 will get to main road no.52 via M5 motorway which could strongly

reduce the traffic of Ceglédi út – Bethlen körút – Széchenyi körút – Mária körút – Izsáki út.

- The other main link is between M5 motorway and no. 5 main road, and main road no. 44, that is the **Budapest – Békéscsaba** axis. Even today part of the traffic is running outside the city, this however forces the vehicles to make significant extra travel. Part of the traffic is running on the inner city roads which provides more direct link.

The Northern bypass road having detailed designs establishes direct link between main road no. 44, main road no. 441, main road no. 5 and motorway M5. As a result of the construction of the bypass road the more significant transit traffic in the direction of Békéscsaba – Kecskemét – Budapest, and Cegléd – Kecskemét – Dunaföldvár can by-pass the city of Kecskemét.

Besides this the planned road would not only meet the demands of the population – commuting to work, school, cultural and free time programmes – but would also take off the traffic of the industries of the region from the inner city road network.

Accessibility plays a decisive role in the competitiveness and growth of the economy. It has an important role in the attraction of working capital, in orienting the enterprises' selection of location, in reducing the distance between the purchasing and distribution markets, makes possible manpower mobility, and by servicing the international cargo transport contributes to realization of extra revenues. A well-established transport infrastructure contributes to the closing up of the countryside regions, within this of the handicapped regions, to the mitigation of regional differences of economic development, to the improvement of employment.

The well developed important transport routes and the high level services stimulate other types of investments of the domestic and international capital (settling in Hungary of manufacturing and service bases producing significant added value) and also improve the conditions for tourism.

The project contributes directly (during the construction and the operation) and also indirectly (by improving the capital attraction forces) to the increase of employment, which is an especially important factor in the regions having unfavourable employment figures.

The project also contributes to the achievement of horizontal targets. As a result of the implementation of the project the operation of traffic will be more efficient, the journey times will be shorter reducing by this the negative environmental impacts. The project will improve the competitiveness of the region leading to the increase of employment, improving the position of the handicapped ones. During the construction works additional jobs can be created by the involvement of the local entrepreneurs, which will positively influence the position of the target groups of equal opportunity programmes. The project will contribute to the enforcement of the principle of regional cohesion, to the release of socio-economic inequalities.

## **2.5. Considered technical changes**

In the feasibility study the final version assessed in this study was selected from the following technical versions.

## **Project versions**

The Feasibility Study investigated four different route versions the tracking of which deviates mostly between main road no. 441 – main road no. 5.

The main difference between version „A" and versions „B-C-D" is that while version „A" by cutting through the protective zone of the airport passes along its Northern border, the other versions are passing in the axis of the lane although in different length. What's more versions „B-C-D" is running closer to the settlement, in areas more sensitive from environmental point of view.

### **Description of version „A"**

It branches off the urban entry section of ex main road no. 44, from Békéscsabai (or Airport) road. The route leads towards North-West next to the Kecskemét Airport. It crosses in a large angle the protective area of the airport and reaches secondary main road no. 441 at its Northern plain. Thus it passes from the North side around Metro supermarket built next to secondary main road no. 441.

After this the track line version goes parallel with the protective zone of the airport, outside it. By by-passing the military objects the road turns into South-West direction in nearly 90 degree and thus cuts primary main road no. 5. Next to the entry road section of the city the track line version by-passes from the North Tesco supermarket erected on the border of the inner area.

The most critical section of the routes is between main road no. 5 and M5 motorway.

This version requires the construction of a new road along the whole length, along nearly 13,3 km with the necessary road connections and junctions.

### **Description of version „B"**

Branching off from Békéscsabai street will be made similar to version „A". Although the leading of the line along the Airport is a little different, but the restrictions of the design disposition had to be met in this version, too.

The route of line leads to North-West direction following the inner line of the protective zone of the airport runway. After the crossing of Cegléd-Szeged railway line it turns towards West and runs across the inner city area. The last section of this track line version reaches main road no. 5 on the Southern side of the city, next to Tesco supermarket and connects to the roundabout of Ladánybenei street. The connection is unfavourable since the shopping traffic of Tesco supermarket can be implemented via the sub-junction close to the roundabout junction, interlacing with the transit traffic of the by-pass road.

This version requires the construction of a new road along the whole length, along nearly 7,7 km with the necessary road connections.

### **Description of version „C"**

This version branches off from version „B" or follows its straight line. In nearly 500 meter distance it goes parallel with version „A" along almost one and half kilometer. After this it returns to the line of version „B" by by-passing Vacsi lane. Connection to main road no. 5 will go together with the previous version. The disadvantage of this version compared to

version „B” is that its site plan route is adverse and results significant lengthening of the route.

This version requires the construction of a new road along the whole length of 8,5 km with the necessary road connections and junctions.

### **Description of version „D”**

This version is developed by the connection of versions „B” and „C” in the region of Vacsi hill. It does not mean significant difference, the route is a little less favourable than in case of version „B”.

This version requires the construction of a new road along the whole length of 8 km with the necessary road connections and junctions.

### **Version to be implemented**

**Of the investigated versions version „A” is the best.** From traffic impact point of view the route running outside inhibited area offers the best solution. In this case the traffic is running smoothly at constant speed and also the traffic safety is better, since there are fewer conflicts.

Version „A” takes the transit traffic out of the sensitive areas of the settlement part.

The subject of the *Preliminary Assessment Documentation* (PAD) is the section between M5 motorway – loc.gov. road no. 5202 – main road no. 5 – main road no. 441 – main road no. 44 of #445 Main Road Northern Bypass Around Kecskemét and includes Phases I and II of the construction as well as the planning of a new simple lay-by instead of Hetényi resting place in section 76+800 km of M5 motorway.

It does not contain however the so-called Phase 0 (section 0+028,92-0+890,57 km) the starting chainage of which is the pavement edge of roundabout planned in section 4+470 km of main road no. 44 and its closing section is the pavement edge of roundabout planned on the entry road of the city.

For the section in subject, however design for approval and building permit were prepared (Reg. no. DA/KA/829/17/2009). The Lower Tisza Region Environmental, Nature Protection and Water Inspectorate participated in the procedure as special authority and granted its contribution to the building permit by its resolution no. 19965-7-3/2008.

The PAD has also not investigated the environmental impacts of the reconstruction of the junction in Nyíri street (roundabout instead of the overpass at Nyíri street). A procedure was initiated for the possible deviation from the content of the permit for the reconstruction of the junction at Nyíri street, as a result of which building permit was issued on no. DA/KA/1494/44/2010. The Lower Tisza Region Environmental, Nature Protection and Water Inspectorate participated in the procedure as special authority and granted its contribution to the building permit by its resolution no. 19965-12-3/2010.

### **3. Legislative and Planning Background**

#### **3.1. Relevant environmental regulations**

Act LIII of 1995 on the General Rules of Environment Protection determines basic principles of environment protection, its administrative and economic basis, the role and responsibilities of the government and local governments, as well as the approval processes and the information of the public. The Act also contains the general system of requirements of the environmental impact assessment procedure, as well as the rules of public hearing to be organized during environmental permit granting and impact assessment procedures. Specific rules of the organization of environmental impact assessment and of the obtaining of environmental permit are presented in point 3.2.

During the environmental impact assessment specific rules of air cleanness protection, of water and soil quality, noise and vibration protection and of built environment are taken into account. Below please find the summary of the Hungarian legal regulations in connection with geological formation and subsurface waters, surface waters, nature, noise and air cleanness protection.

#### **Geological formation and quality of subsurface waters**

- Act LV of 1994 on arable land
- Governmental Decree no. 219/2004. (VII. 21.) *on the protection of groundwater*
- Joint Decree no. 6/2009 (IV.14.) KvVM-EüM-FVM *on limit values established for the protection of groundwater and the geological medium*
- Decree no. 27/2004. (XII. 25.) KvVM *on classification of settlements located in sensitive areas in terms of groundwater status*
- Governmental Decree no. 123/1997 (VII.18.) *on the protection of the actual and perspective sources and the engineering facilities of drinking water supply*

#### **Quality of surface waters**

- Governmental Decree no. 220/2004. (VII. 21.) *on the rules of protection of surface water quality*
- Decree no. 28/2004. (XII. 25.) KvVM *on limits pertaining to the emission of water pollutants and on certain rules of their application*

#### **Nature conservation**

- Act LIII of 1996 on Nature Conservation
- Governmental Decree no. 275/2004. (X. 8.) on nature conservation areas of European Community importance
- Act LV of 1996 on the protection of wildlife protection, wildlife management and about hunting
- Act XXXVII of 2009 on forests, on the protection and management of forests
- Governmental Decree no. 67/1998. (IV. 3.) on the restrictions and prohibitions pertaining to the protected and strictly protected wildlife communities

- Governmental Decree no. 166/1999. (XI. 19.) on licencing procedure under the jurisdiction of landscape protection authorities
- Decree no. 13/2001. (V. 9.) KöM on protected and strictly protected species of plants and animals and on protected caves, and about the publication of plant and animals species significant from nature conservation point of view in the European Community (extended and amended by Decree no. 23/2005. (VIII. 31.) KvVM, and no. 22/2008. (IX. 12.) KvVM)
- Governmental Decree no. 275/2004. (X. 8.) on nature conservation areas of European Community importance

### **Noise and vibration protection**

- Governmental Decree no. 284/2007. (X. 29.) *on certain rules of environmental noise and vibration protection*
- Joint Decree no. 27/2008. (XII. 3.) KvVM-EüM *on determination limit values of environmental noise and vibration harms*

### **Air quality**

- Governmental Decree no. 306/2010. (XII. 23.) *on the protection of air*
- Decree no. 4/2011. (I. 14.) VM *on the air pollution thresholds and emissions ceilings for located point sources of air pollutants*
- Decree no. 4/2002. (X. 7.) KvVM *on the designation of air pollution agglomerations and zones.*

## **3.2. Applied rules of environment protection and building permit granting procedures**

### **3.2.1. Environmental licencing**

In Hungary Governmental Decree no. 314/2005. (XII. 25.) regarding the procedures of environmental impact assessment and the single procedure of authorization of utilization of the environment determines which activities, establishments and their significant modification, changes are subject to environmental licencing procedures. Activities listed in Annex 1 of the Decree are in every case subject to environmental impact assessment, those contained in Annex 3 are subject depending on the decision of the Environmental, Nature Protection and Water Management Inspectorate (hereinafter: Inspectorate). In the case of these latter preliminary assessment procedure shall be initiated at the competent Inspectorate in the frame of which the Inspectorate decides based on the submitted preliminary assessment documentation (hereinafter: PAD) if the environment impact of the activity is significant or not. If the impact is significant, detailed environmental impact assessment shall be made.

Before August 2009 it was necessary to perform **preliminary assessment procedure** in case of activities contained in Annex 1, the procedure was made in two steps. In such cases the environmental inspectorate closed the assessment phase by a decision in which the requirements towards the Environment Impact Assessment (hereinafter EIA) to be submitted by the user of the environment were determined. The preliminary assessment made possible for the user of the environment and for the representatives of the authority an early consultation about the investment. The environmental authority had to make available the PAD to all concerned competent special authority so that they could tell their opinion. The



environmental authorities had to collect the opinion of the competent local governments and to make the PAD available to the public.

A legislative change which came into force on August 1, 2009 introduced the concept of **preliminary consultation** into the environmental impact assessment system. The purpose of its introduction was to speed up certain big volume investments (that is to shorten the preliminary assessment procedure). Pursuant to the modification in case of activities contained in Annex 1 of Governmental Decree no. 314/2005. (XII. 25.) the preliminary assessment is terminated, instead the user of the environment may initiate preliminary consultation. In case of activities which are contained in Annex 3 of the Decree, too the preliminary assessment obligation will be kept (which means that it is not possible to ask preliminary consultation instead). The purpose of the preliminary consultation is to make possible for the competent inspectorate to give opinion about the content requirements of EIA, for the special authorities and the public to make their comments. In most parts the preliminary consultation process is equal to the former preliminary assessment procedure (e.g. as to the content requirement of the documentation to be submitted), but the administration time of the procedure is much shorter, than that of the preliminary assessment procedure. The preliminary consultation should be closed in 45 days by the Inspectorate, including the comments of the concerned public administration organs to be given within days.

According to a new legislative change coming into force on August 13, 2010 in case of activities contained in Annex 1 of Governmental Decree no. 314/2005. (XII. 25.) it is not mandatory to perform a preliminary assessment procedure or consultation, but rather the environmental permit can be obtained even in „one step”. Certainly, preliminary consultation can still be initiated. The preliminary consultation has the advantage that the application for consultation contains versions, the Inspectorate names the version or versions according to which – in appropriate circumstances – it regards the establishment possible and gives opinion about the content requirements of the environmental impact assessment.

Pursuant to the amendment coming into force on September 15, 2011 Annex 3 (*activity subject to environmental impact assessment based on the decision of the Inspectorate in the preliminary assessment*) was extended concerning the PAD relating to road constructions, or depending on the decision of the Inspectorates concerning the scope of activities, investments subject to EIA.

In case of investments not subject to PAD environment protection data sheet with content pursuant to Annex 13 of the amended Decree should be submitted in order to obtain building permit. Based on the filled out data sheet preliminary special authority decision can be requested (for 6 months), to which the complete permit granting documentation according to Decree 263/2006. (XII.20.) should be submitted.

Based on the above-written it can be stated that Northern by-pass section around Kecskemét of main road no. 445 is an activity subject to environmental impact assessment based on the decision of the Inspectorate that is it belongs to Annex 3 of Governmental Decree no. 314/2005. (XII. 25.). The Preliminary Assessment Documentation was prepared in 2007 and the resolution issued stated that it is not necessary to prepare environmental impact assessment for the project.

We confirm that the Hungarian procedural order applied for the project complies with 85/337/EEC Directive on the assessment of the effects of certain public and private environmental projects.

### 3.2.2. Building permit granting

After the positive decision made by the environmental impact assessment and following the granting the environmental permit other technical and environmental studies shall be prepared in order to perform the building permit granting procedure. This includes all the environmental requirements formulated by EIA and the review of regulations contained in the environmental permit and it may contain the re-assessment of environmental impacts and of the impact mitigating measures (e.g. traffic noise harms). The application for building permit including the technical and environmental designs shall be submitted to the transport authority. The application for building permit will be examined again by environmental authority acting as special authority in this permit granting procedure and by the competent local governments. Conditions and requirements specified by the environmental authority are contained in the building permit issued by the transport authority.

### 3.3. *The current availability of permits*

#### 3.3.1. Environmental decision and giving information to the public

Concerning the track of the by-pass road in subject Preliminary Assessment Documentation was prepared in 2007, and as part of the Design for approval a special environmental work part was completed also taking into account the information of the Lower Tisza Regional Environmental, Nature Conservation and Water Inspectorate (*decision no. 44686-1-18/2007 of Lower Tisza Regional Environmental, Nature Conservation and Water Inspectorate*) on the basis of which the planned road is not subject to impact assessment. The PAD and the environmental licencing plan revealed those impacts of the planned establishment which make harm to human beings and to the natural environment. The plan assessed the extent, consequences of harmful effects and – if necessary – made proposals for the mitigation of harmful effects.

Public hearing is not held during the preliminary assessment procedure, but during the procedure the Inspectorate allows insight into the documents.

In the course of every building permit granting procedure there was public hearing, organized by the competent Transport Inspectorate (there were totally 7 public hearing in case of 5 building permit granting procedures). These offered an insight into the technical designs.

#### 3.3.2. Building permits and giving information to the public

We have to note that the scheduling is different in the building permit and in the detailed design:

Sectioning in the building design for approval	Building permits	Sectioning in the detailed design	Building permits belonging to the different plan sections
Phase 0: 0+028,92-0+890,57 km	DA/KA/829/10/2009.	Phase I: 5+100-10+300 km	DA/KA/308/5/2009.
Phase I: 0+959,8 – 11+460 km	DA/KA/308/5/2009.	Phase II/1: 0+000 – 5+100 km	DA/KA/829/10/2009. DA/KA/308/5/2009.

Sectioning in the building design for approval	Building permits	Sectioning in the detailed design	Building permits belonging to the different plan sections
Phase II: 11+450-13+365 km, roundabout at road 44	<b>DA/KA/43/2/52010.</b>	Phase II/2: 10+300-13+650 km	<b>DA/KA/43/2/52010., DA/KA/1494/44/2010., KU/KF/105/26/2009.</b>
Phase II: 11+450-13+365 km., roundabout at road no. 44. Deviation from the valid building permit:  Roundabout instead of the overpass at Nyíri street	<b>DA/KA/1494/44/2010.</b>		
Permit for removal of the M5 junction and lay-b at Hetény	<b>KU/KF/105/26/2009.</b>		

In every building permit granting procedure public hearing, organized by the competent Transport Inspectorate was held (there were totally 7 public hearing sin case of 5 building permit granting procedures).

#### **4. Description of the proposed project**

Based on ÚT 2-1.201:2004 ÚME the planned road in the Feasibility Study belongs to K.III. design category. Environmental condition is: „A”, design speed:100 km/h. Correspondingly, based on the currently valid e-ÚT 03.01.11:2008 ÚME the design class is: K.IV., environmental condition: „A”, design speed:90 km /h.

##### ***4.1. Main project elements***

###### *Main project elements*

The planned #445 Main Road Northern bypass around Kecskemét establishes direct link in the Northern sector of the city between main road no. 44, main road no. 441, main road no. 5 and motorway M5.

The planned northern bypass road #445 around Kecskemét is a secondary main road, with 2x1 lane design.

Junctions:

- junction of main road no. 44 (roundabout) (0+000 km)
- junction at Csaba street (roundabout) (0+885.48 km)
- level junction at Kaffka Margit street (2+401.69 km)
- separate level junction of main road no. 441 (5+308.90 km)
- level junction at Vacsi lane (7+649.42 km)
- junction of main road no. 5 (without level crossing) (on main road no. 5 around 81+140 km section)
- junction of local governmental road no. 5202, Ladánybenei street, 4-way roundabout (11+354,79 km)
- roundabout junction at Nyíri street (12+248,88 km)
- separate level junction of M5 motorway (13+375,31 km)

Dirt road passage:

- Talfája lane (6+554.38 km)
- Hegedűs lane (8+547.00 km)

Bigger structure:

- Game pass (4+450 km)
- Crossing of Budapest – Szeged MÁV railway line (5+459.70 km)

At the crossing of surface waters bridge structures and culverts will be designed, at some places there will be bed correction.

Parallel dirt road (service road): 9,6km long, at the beginning mud shaker pavement, on the remaining part mechanically stabilized pavement.

## 4.2. Traffic forecast

The Preliminary Assessment Documentation made in 2007 prepared the assessments based on the following traffic data:

*(Traffic data of main road no. 445 Northern Bypass around Kecskemét at the time of putting into operation (2010) and future traffic data (in 2025))*

	From	Section	To	Summa traffic (veh./day)	
				2010	2025
445	M5 ap.		Side road no. 5202	4752	14796
445	Side road no. 5202		Main road no. 5	3809	12864
445	Main road no. 5		Vacsi lane	9678	15758
445	Vacsi lane		Main road no. 441	9330	11811

445	Main road no. 441	Kaffka Margit street	9412	13441
445	Kaffka Margit street	Main road no. 44	9934	13441
M5		M5 to the North from junction	20599	51167
M5		M5 to the South from junction	23324	43576
5202		5202 to North from junction	1251	1188
5202		5202 to South from junction	2074	2684
5		5 to North from junction	18506	37305
5		5 to South from junction	18526	40727
Vacsi lane		To Center	2142	5482
441		441 to North from junction	13437	13101
441		441 to South from junction	12014	14290
Kaffka M. u.		To Center	4001	5241
44		44 to East from junction	13103	17198
44		To Center	4935	6213

New traffic assessments were made to *the review of Feasibility Study made during 2012* according to the study plan for years 2015, 2020, 2027 and 2040.

The figures below show the network traffic in years 2015, 2020 and 2027 in a breakdown of vehicle unit/day.

On one of the figures the traffic is shown in total volume, on the other figure per vehicle categories.



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### **4.3. Main building activities and scheduling**

After acquisition of the land necessary to road construction and to the implementation of structures the archeological exploration and ammunition disposal works should be completed. Archeological explorations should be commenced by one year prior to the starting of building works. The findings of excavation shall be rescued according to the direct order of the regionally competent museums. The disposal of ammunition is also necessary in order to ensure safe working conditions. The work sites should also be prepared.

The cutting of trees and bushes belongs to the preparatory works. Vegetation will be removed from the expropriation area.

This is followed by humus removal, during which humus is removed in the thickness determined by the soil mechanical expert opinion. Part of this material will be deposited and will be used later for landscaping works. The surplus volume shall be transported and used on agricultural land site as agreed with the owner of the land.

In the frame of the preparatory works test driving of piles will be made at the structures, and also the temporary transport routes and water drainage systems shall be built.

Building works of public utilities shall be performed prior to road construction or during the construction works: replacement of public utilities and building of supply pipe, placing the crossing public utilities on the correct track and making the height adjustments of cables. Based on §6 of Decree no. 15/2000. (XI. 16.) KöViM public utility coordination contribution shall be obtained from the public utility operators affected by the road construction.

The bridge construction works should be commenced as soon as possible, since their building period is relatively long.

The building of earthwork is composed of the following work phases: terrain arrangement, earth transportation, spreading, compacting, trench building. The earth transportation contains the delivery to the site of the required volume of material and the transportation to landfill of the earth unusable for embankment building.

Correction works of road crossings and dewatering of the concerned site will be made simultaneously with earthworks.

The above-mentioned works are followed by the construction of road structure and of the engineering structures, and also by the implementation of the necessary environmental establishments (e.g. noise screening wall).

Road construction also covers the installation of traffic signs, of snow protection establishments, traffic engineering lane paintings, railings.

Grassing, plantation of vegetation – belong to the scope of the finishing works and they can be performed after the completion of final landscaping works.

Removal of temporary buildings, recultivation and test loading of bridges belong to the scope of finishing works.

By the end of 2015 the above-mentioned activities will probably be finished and the project elements can be given over to traffic.

### **4.4. Operational and maintenance activities**

After the establishment (construction) of public roads continuous operational tasks shall be performed.

The general rules of maintenance and operation of public roads is contained in the Regulation of Management of National Public Roads.

Road management generally means the following jobs:

- site visit of section, traffic monitoring
- repair, maintenance works of daily traffic (bench formation, pot-hole patching, replacement of traffic technological means)
- winter de-icing – the technology of de-icing of roads in winter shall be detailed in the winter operation plan. In the case of motor roads the quantity, type and method of salt spreading shall be determined on the basis of the data supply of meteorological stations, and of the indications of the road inspectors.
- mowing, trench maintenance – the grass covered sites shall be mowed at least twice per year outside the crest edge and at least four times inside the crest edge. Weed killing is generally made with the involvement of subcontractor on the bench and on the area to be expropriated. Thus weed killer is not stored on the engineering site, and it does not appear as harmful waste although there is the harmful waste storage place on the engineering site. Trench maintenance partly means the removal of the growing vegetation and of the alluvium, partly the collection of waste and drift.
- maintenance of surface paintings, railings, traffic engineering equipment – this primarily means painting and cleaning, but the repair of railings and boards damaged by accidents is also of significant volume. Washing of the equipment after winter operation.
- maintenance of structures – inspection, repair, corrosion protection
- waste collection (collection of waste, transportation of bodies of hit animals): collection of communal and other (sometimes harmful) wastes in the lay-bys and next to the motorway. Harmful wastes – also wastes thrown away in the lay-bys, next to the motorway – can be collected on waste collection points of the engineering sites.
- maintenance of railings – painting, repair, replacement of missing elements.
- fence maintenance – restoration of bent poles, checking, painting of prestressing wires, treatment of wooden poles, restoration after accident or willful damage, restoration of harms caused by animals.
- caring for plants – attendance of trees, hedge cutting.
- maintenance of noise screening walls: painting, repair, replacement of missing elements.



## 5. Actual condition of the environment

The environmental status of the project site is presented below according to the different environmental elements.

### 5.1. Soil, subsurface water

#### Topography and geology

Administratively the route of the road is running in County Bács-Kiskun, on the territory of Kiskunsági loess land being a small region among the big and small regional units of Hungary.

Assessment of the geological structure and morphological conditions of the design area was made on the basis of the characterization of Kiskunsági-loess land small region.

The design area can be found on a flat alluvial cone covered by loess and sand at 118,5-130 m above sea level. Among the mosaic formation typological units closed, small size holes and wide alkali flats can be found sometimes filled with lakes and marshes. The NW-SE direction longitudinal sand dunes between Kiskunfélegyháza – Kecskemét are covered by 1,5 m thick loess. Among them a series of oval shape small basins system (with natron lakes) is formed. 60% of the sediment close to the surface is typical, flood area infusion loess and sandy loess. Lime sludge, alkaline flats occupy significant surface. The bottom of the formations is mostly drift sand is small thickness, travelled along short transport distance – often interknitted, settled on the alluvial cone material of ancient Danube. Moderately seismic area.

#### Hydrogeology

##### Ground waters, subsurface waters

The ground water depth is between 2-4 m on the area. Volume is not significant. The chemical composition is made of calcium-magnesium-bicarbonate and contains sodium, too on large areas around Kecskemét. The hardness is between 15-25 nk°.

The volume of stratum water is less than 1 l/s.km<sup>2</sup>. The depth of the large number of artesian wells fluctuates between great extremes. Similar is the case with water yields. On many places the iron content is high.

##### *Ground water composition:*

In order to determine the ground water composition samples were taken from the below drillings and from the water of Páhok creek, the results are shown in the table below:

	Water sample	Acc. to standard MI 17215/2-86	Acc. to standard MSZ EN 206-1:2002
855_2 cpt	SO <sub>4</sub> =200,79 mg/l pH =6,66 chloride =92 mg/l	not aggressive	Belongs to XA1 aggressivity category
526_1 cpt	SO <sub>4</sub> =117,99 mg/l pH =6,99 chloride =496 mg/l	not aggressive	not aggressive
986 cpt	SO <sub>4</sub> =53,82 mg/l	not aggressive	not aggressive

	pH =6,93 chloride =30 mg/l		
341329_2 cpt	SO <sub>4</sub> =33,12 mg/l pH =7,04 chloride =204 mg/l	not aggressive	not aggressive

As to the aggressivity of ground waters category II/2 not aggressive is regarded ruling according to MI 17215/2-86 standard, while according to MSZ EN 206-1:2002 category XA1 aggressivity class is ruling.

### Soil conditions

The area concerned – due to its natural endowments – has high agricultural, moderate ecological and low forestry potential. The greatest part of the area to be expropriated is under cultivation.

### Land usage types

Lands used by Phase I:

Land usage	Quality class	[ha]	[m <sup>2</sup> ]
<hr/>			
<i>Arable</i>	1	0	1737
	2	1	7456
	3	6	6553
	4	9	1644
	5	10	5419
	6	2	9408
	7	1	2103
	<b>Total:</b>	<b>32</b>	<b>4320</b>
<hr/>			
<i>Meadow</i>	3	2	1090
	4	0	7265
	6	1	1233
	<b>Total:</b>	<b>3</b>	<b>9588</b>
<hr/>			
<i>Vineyard</i>	4	0	196
<hr/>			
<i>Orchard</i>	3	1	2708
	4	3	2246
	5	0	6219

	<b>Total:</b>	<b>5</b>	<b>1173</b>
<i>Grazing-land</i>	4	2	2990
	5	4	5311
	6	3	1104
	<b>Total:</b>	<b>9</b>	<b>9405</b>
<i>Forest</i>	3	1	6109
	4	0	3593
	5	0	205
	<b>Total:</b>	<b>1</b>	<b>9907</b>
<i>Uncultivated</i>		4	5456
<b>Grand total:</b>		<b>58</b>	<b>7666</b>

Lands used by Phase II:

Land usage	Quality class	[ha]	[m <sup>2</sup> ]
<i>Arable</i>	3	4	4491
	4	1	8802
	5	-	4297
	6	2	7435
	7	-	7751
	<b>Total:</b>	<b>10</b>	<b>2776</b>
<i>Meadow</i>	4	-	2685
	5	3	5081
	<b>Total:</b>	<b>3</b>	<b>7766</b>
<i>Vineyard</i>	4		681
<i>Garden</i>	4		1812
<i>Grazing-land</i>	3		2276
	4		845
	6		1067

<b>Total:</b>		<b>4188</b>
<i>Forest</i>	3	1745
<i>Woody area</i>	5	391
<i>Uncultivated</i>	1	820
<b>Grand total:</b>		<b>16 179</b>

Areas used by the relocation of the simple Hetényi lay-by: mostly grassplot, grazing-land and mowing land, to a smaller extent arable land can be found. The size of the used lands is about 1,9 ha.

### **Meliorated and irrigated lands**

The track line does not affect neither meliorated, nor irrigated lands.

### **Examination of areas sensitive to pollution**

Pursuant to Decree 27/2004.(XII.25.) KvVM on the classification of settlements located in sensitive areas in terms of groundwater status Kecskemét can be classified as a settlement located in an area **sensitive** in terms of subsurface water quality protection. The route of road no. 445 is located close to Kecskemét and it does not affect highly and outstandingly sensitive areas.

## **5.2. Surface waters**

### **Hydrography, crossed watercourses**

The analyzed area is a dry, strongly water deficient land with poor drainage conditions, crossed by several watercourses running to river Tisza. Among them the Alpár-Nyárlőrinci-canal, the Csukáséri-main canal and the Talfái-canal should be mentioned.

Limitation of the reservoirs according to regional category:

3. Temporary watercourse receivers:

Pursuant to point 17 of §3 of Governmental Decree 219/2004. (VII. 21.) on the protection of ground water all kinds of watercourses belong here the bed of which dries out temporarily.

4. Generally protected reservoirs: all surface water reservoirs not belonging to categories 1, 2 and 3.”

### **Water quality**

From water quality point of view all watercourses belong to class II, but the sections of watercourses passing through the settlement are more contaminated.

## **5.3. Air quality**

The different environmental elements and the factors induced by human activities have significant impact on air quality. Due to the **natural, social and economic conditions** the **high flying dust content of the air – often above limit value** – causes primarily the biggest

problem. The moderately warm, dry, windy weather of the city as well as the wrong cross-ventilation conditions are optimal for the development of flying dust.

Due to the geographical location of Kecskemét there is no danger of cross-border air pollution. Based on the measuring results of RIV measuring stations in the city of Kecskemét the **sulfur dioxide** pollution in the air was constantly low in the period of 1997-2002, the pollution shows a slightly diminishing tendency.

The higher average value of the „heating” half-years compared to the other part of the year „without heating” confirms that the pollutants are mainly of heating origin. Based on the increase of pollution level in the half year with „heating” in 1999/2000 it can be assumed that the use of fossil fuels had increased due to the price increase of the environment-friendly heating methods.

During the investigated period the **nitrogen dioxide** pollution of the city’s air was always under the limit value. Regarding the whole of the period between 1997-2002 the NO<sub>2</sub> pollution level had somewhat reduced.

Based on the hardly different average values of the „heating” and „non-heating” half year periods it can be concluded that the pollution is mainly coming from the traffic.

The average **fluoride** concentration in the ambient air proved to be always below the limit value during the whole investigated period. In the last three years the average fluoride pollution reduced slightly. In Kecskemét the fluoride pollution is generated by the industry, pollution is practically the same in the „heating” and „non-heating” periods.

In the evaluations published about the national air quality conditions in the past decade the city of Kecskemét was mentioned as one of the settlements most strongly polluted by the **settling dust**. Based on the average concentration the reduction of the pollution level of the settling dust can be determined. The reduction of the average pollution has been especially significant from the „non-heating” half year of 2000. Dust is mainly originating from the soil surface, but its presence in the ambient air of the city of Kecskemét is not independent from the vehicle traffic in the inner settlement part. The maximum settling dust values are mainly measured in the winter – spring periods, but the summer peaks are not rare either.

Based on the data of the monitoring station operated by the Institute of ÁNTSZ in County Bács-Kiskun (National Public Health and Medical Officer Service) it can be stated that the air quality of Kecskemét, mainly due to the high level of ragweed pollen pollution is very unfavourable as to the allergens of biological origin.

From air cleanness protection point of view the **industrial** structure can be regarded positive. Due to the natural conditions no significant heavy industry could develop in Kecskemét. The traditional industries (food processing and light industry) built on the processing of raw materials coming from the nearby agricultural lands represent significant share even today.

The quality of air – in addition to the above-written – is strongly influenced by the **traffic**, too. Kecskemét is located in the intersection of M5 (E 75) international main road, and of main roads no. 52, 54, 5 and 44. The bypass section of M5 motorway around the city was opened in December 1997. Its positive impacts on the urban traffic could already been felt after some months of habituation time. Consequently, in order to reduce the harmful health and environmental effects of the growing urban vehicle traffic the construction of a bypass motor road would be highly necessary on the Eastern side of the city.

#### **5.4. Habitats, flora and fauna, Natura 2000**

The National Park Directorate of Kiskunság regards the track line acceptable from environmental point of view, but the grassland registered in the ecological network with the bordering forest lanes, where the site visit was made can be found close to the track line in the direction of airport runway.

The alteration of the soil surface would impact agrarian habitats not significant from nature conservation point of view, or the spontaneously developing shrubby vegetation and the animal population living there. In the agrarian habitats mainly r-strategist flora and fauna population with good regeneration abilities, mostly enduring disturbance well, able to accommodate to the fastly changing environment and eurytopic to several environmental factors (ubiquista) are living. The nearby, large-size agricultural tables will probably ensure also on the long run the ecological conditions of the furrow-weeds and the eurytopic vertebrate and invertebrate animals mainly living here.

#### **General description of the area**

Along the track line five habitats and vegetation types can be separated:

1. Plantation forests, silver poplar (*Populus alba*), English oak (*Quercus robur*), silver berry (*Elaeagnus angustifolia*), field elm (*Ulmus campestris*), willow (*Salix* sp.) mixed plantations, some European black pine (*Pinus nigra*).
2. Watery habitats, saline spots, currently watery habitats, living and eating place of rich avifauna. Sedges, reeds cock and reed with patches.
3. Grassland of dry sand hills, on significant spots thyme (*Thymus* sp.) associations.
4. Interim good quality pasture grasses.
5. Seaweed vegetation of watery habitats of canals with bulrush reeds border.

During the site visit it was found that protected habitats and living beings can be found on the grassland, and that the paddock and watering places of the „preserving” animals can be found on the NW side of the area, under the „Small forest”. This is the eating and living place of 60-80 cattle (partly crossed Hungarian grey cattle). Their advantage is that they also eat the hard, sedge grass. The track line of the road crosses the paddock the architectural value of which is not significant, but rather the value of acacia forest planted on the territory of the watering place, the well and paddock providing shadow to the animals are important.

On the sandy hill there is only one „inhabited” hole of the protected ground squirrel population which is not affected by the track line.

***The road construction does not affect directly the flora and fauna population which is outstanding, endangered, and highly protected from environmental point of view.***

The planned investment has impact on the following forest areas:

Topographical no.	Forest plan mark
0416/150	322 D
0416/141	322 C

0428/15	325 A
0428/43	324 E
01534/90	372 B

In its statement the Directorate in Kecskemét of the National Forestry Service has not raised any objection against the track line.

### ***5.5. Landscape protection***

The design area carries the traces of the once significant suburban farm world and of the garden, vineyard and orchard culture having great traditions.

On landscape level the road has impact on the region affected from land usage, regional development and visual point of view.

#### **The planned track line does not affect nature conservation area.**

During the site visit highly protected plant population, species were not found. The ecologist found only one hole „inhabited” by the protected ground squirrel population of the sand hilly area, but this is at about 500 meter from the track line.

We have seen eating egret, stork on the sometimes watery salty meadows around section 3+000 km of the track line.

Pursuant to Act LIII of 1996 the **natural area** means any area primarily characterized by near-natural conditions. Based on this the already mentioned alkaline meadow and pasture lands are natural areas and at the same time compose part of the *National Ecological Network* as **puffer zone**.

The planned track line crosses the Csukáséri-main canal once, and the Alpár-Nyárlőrinci-canal twice, which also compose part of the National Ecological Network as **ecological corridors**.

During the site visit the following **unique landscape values** were found:

- A wooden crucifix in the shadow of huge silver poplars (*Populus alba*) standing directly next to the route of the planned road, on the dirt road of Vacsi lane, at 7+650 km section.
- The old willow standing lonely on the open area along the alkaline meadow to the West of 3+700 km of the planned road line can be evaluated as biologically unique landscape value.
- A stable (thick, cob-wall, thatch roof earth building) corresponding to the traditional local architecture was found on an inhabited farm to the North of 8+650 km section of the track line. Horses and cattle are kept here.

**The track line does not impact directly unique landscape values.**

### ***5.6. Human and social environment, cultural heritage protection***

#### **Health effects**

The envisaged daily noise level will probably not reach the limit value set by the current regulations. The noise coming from the newly built establishment does not carry direct health risk.

According to the disturbance tests made until now the most typical impacts of traffic noise are worsening of understanding of speech, disturbance of sleeping or impact on the circulatory system.

As to the vibration harms according to the measurements the public road traffic does not produce harms affecting directly and adversely, possibly irreversibly the human organism. Based on the distance of the planned track line from inhabited area we can exclude its impact on human living space and individuals.

Due to the above-mentioned distance damages caused by vibration to the buildings can also be excluded.

Based on the preliminary calculations the carbon monoxide, nitrogen oxide and hydrocarbon content of exhaust gas, or dust „raised” by the communicating vehicles produce health risk from air pollution point of view.

Although high concentration of carbon monoxide is poisonous, but the value allowed in the traffic (compared to which the envisaged pollution is lower by one order) is by several order smaller than the concentration. Therefore the adverse health effects of carbon monoxide can be neglected.

Nitrogen oxide in high concentrations irritates the eyes, nose and mucous membrane, contributes to material corrosion and to the formation of acid rains.

The carcinogen impact of hydrocarbons is the most negative impact, but in this respect also the too high concentrations create a risk, which are not present here.

The health impact of dust pollution is insignificant due to the distance of the inhabited areas, and is strongly weather dependant.

As to the public road air pollution impacts it is important to note that catalytic vehicles have by one order lower harmful material emission and adding lead to fuels was also terminated in 1999. We have no information about tests investigating the impact of other compounds deriving from catalysts.

The construction of the by-pass road can improve the safety of the inner city significantly due to the strong decrease of transit traffic.

### **Population and economy**

The planned project is located in the South Great Plain region. Of the three counties of the region one, County Bács-Kiskun is affected on small regional level, namely through the Kiskunsági-loess land small region. Administratively the design area directly affects the city of Kecskemét.

The most important settlements of the small region are located next to the main road carrying the international traffic of the region, while the tiny villages can mostly be accessed from lower level public roads with target traffic. Several cultural historical values can be considered as attraction force of national importance from the point of view of excursion tourism (Kecskemét, Kiskunfélegyháza). In these settlements the infrastructural conditions of recreation are available. Several lakes can be found in the small region, the utilization of their recreational potential requires the development of infrastructure.

### **Cultural heritage protection, built environment**



The planned track line – according to the list of historical monuments of Hungary – does not influence monuments, monumental areas.

The Office in Szeged of the Cultural Heritage Protection Office ordered the preparation of heritage protection impact study.

According to the heritage protection impact study the planned track line affects several archeological sites, and passes close to several archeological places. Therefore prior to the construction of the planned road preliminary excavations, and test explorations shall be made.

Archeological sites proposed for preliminary exploration:

- Talfája-hillside, to the West of Talfája-channel, Northern bypass road, site no.2
- Talfája-hillside, Northern bypass road, site no. 3

Archeological site proposed for sounding:

- Talfája- hillside, to the South of Alpár-Nyárlőrinci-canal, Northern bypass road, site no.1

## ***5.7. Noise and vibration***

### Basic design data

#### **Traffic data**

During the traffic analysis traffic data of cross-sectional traffic counting publication of ÁKMI (2005) were taken as a basis. The future traffic data (for 2010 and 2025) were determined on the basis of Road Technical Specification no. Út 2-1.118:2005 on „Determination of future traffic of public roads with projection method”. The currently valid, generally used traffic estimation was made with the method included in the mentioned Technical Specification (with the use of the correct traffic growth multiplier).

In the noise calculation we have taken the planned traffic data for 2025 as a basis. Traffic according to the acoustic vehicle categories was determined according to Road Technical Specification no. ÚT 2-1.302:2003 on Calculation of traffic noise.

The potential railway noise level was considered on the basis of traffic data provided by MÁV Zrt.

It was stated in a letter by Lower Tisza Region Environmental, Nature Conservation and Water Inspectorate that during the design of the road in subject the noise protection requirements shall be determined in a way that the existing noise level should also be taken into account. In addition to the present road and railway lines the airport is also regarded as existing noise source.

The airport noise level was taken into account according the noise protection zone categories. For the sake of secure planning the lower value of limits specified by the regulations (Governmental Decree 176/1997. (X.11.) were taken into account in the different zones (A, B, C zones).

The determination of noise screening protective zones of Szentgyörgyi Dezső Air Base No. 59 of the Hungarian Defence Forces in Kecskemét was issued in April, 2004 by UVATERV

Rt (Drawing no.: 51.604/502) and was listed on no. 127/4/2004 by the Military Air Office of the Ministry of Defense, and was supplied with the note „The results of the noise screening protective zone calculations correspond to the specifications of the airport maintenance permit.”

In the event the existing traffic noise level exceeds in any places the relevant limit value, the noise level cannot increase further.

Based on the drawing of noise screening protective zones certain zones are crossing the planned road. Concerning the buildings to be protected in the different zones -10 dB noise level limit value was taken compare to the standard noise level value, so that the noise emission of the planned road could not increase the existing noise level (the increase should be less than 1 dB).

Noise protecting zone	Airport $L_{eq, M}$ dB(A)		Planned road $L_{TH}$ dB	
	Daytime	Night	Daytime	Night
A zone	75	65	65	55
B zone	70	60	60	50

Thus in case of buildings to be protected in the noise screening protective zones the total noise level of traffic (public road, railway, air flight) will probably not exceed the noise level values defined for the different zones.

In case of buildings to be found outside the C zone the following limit values were taken into account by PAD:

$$L_{TH \text{ daytime}} = 65 \text{ dB(A)}$$

$$L_{TH \text{ night}} = 55 \text{ dB(A)}$$

Determination period during the day: between 6-22 o'clock, during the night: between 22-6 o'clock.

### Buildings to be protected

On the design area the scope of buildings to be protected were examined according to noise screening protective zones in an about 100-150-250 m wide lane until the design border line. Several buildings were checked from noise protection point of view. The function of certain buildings was given by the Mayor's Office of Kecskemét.

The noise screening protective zones divide the design area into the following sections according to the sectioning of the planned road:

Road section	Noise screening protective zone
0+950 - 0+989 km	C zone
0+989 - 1+504 km	B zone
1+504 - 4+935 km	A zone
4+935 - 5+550 km	B zone

5+550 – 8+515 km	C zone
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The Client envisaged the demolition of buildings being inside the 10 m line from the expropriation border of the planned road and of building in the region of 7+650 km section, therefore they cannot be found among buildings to be protected.

### **Description of the noise calculation method**

In the case of implementation of noise reduction measures and of demolition of the designated buildings noise level at the buildings to be protected next to the planned road will presumably remain below the limit value, or the existing noise level will not increase.

During the analysis the flight noise level was regarded a precondition according to the lower limit value of the noise screening protective zones. Total noise level of the planned road, of the crossing routes and the railway line were calculated for the noise emission limit value taken on the basis of the noise level of noise screening protective zones.

During planning the future noise level was determined on the basis of traffic data of Road Technical Specification no. ÚT 2-1.302:2003 on Calculation of traffic noise. In the planned status the prospective noise level on the different detection points was determined with the help of SoundPlan 6.3 software.

### **5.8. Waste management**

Waste deposit site is not affected directly by the planned road and it is not planned to establish one in the area.

The building of dead pit is not mentioned by PAD.

Communal wastes shall be transported to communal waste disposal sites (Kecskemét), while transportation of hazardous wastes will be managed by a company authorized for transportation, collection and treatment of hazardous wastes.

During construction and operation special attention shall be paid to the collection, temporary storage and destruction of wastes produced by building and operation.

During construction and operation wastes production should be envisaged and their disposal should be solved according to the valid regulations –Act XLIII of 2000 and the relevant law and decrees.

## 6. Impact of construction

### 6.1. Geological medium and subsurface waters

The impacts of construction works on the soil and on the ground water are mainly caused by the movement of machines, filling up of fuels, transportation, storage of hazardous waste and waste disposal.

In different sections of the work site containers are set up for the storage of tools and for performing smaller administrative works. Water supply is provided by drilled wells, or water tanks delivered to site depending on the local conditions. Mobile WC, e.g. TOI-TOI WC is installed on the site.

The machines are stored on the site, but their repair is made in central repair workshops or in special service units. The replacement of oil in heavy machines, or in earthmoving equipment is made in specialized workshops.

Fuel is supplied by own, or rented tankers.

The tankers are equipped with pump nozzles generally used at petrol stations, thus minimizing the oil contamination during filling.

Environmental impacts are:

- disposal of communal waste water and rainwater of the work sites during construction works
- disposal, storage of hazardous materials, communal wastes
- building of building roads, culverts at the watercourse crossings
- erosion protection during construction works
- protection against emergencies.

Land sites to be used temporarily during the building period (sites of barrow pits, building sites, landscaping areas, landfills) are included in the detailed design. The detailed design is subject to the licencing of the competent authorities.

The designation and design of storage of waste and hazardous wastes produced during construction and of the fuel storers of earth-moving equipment in the surrounding of topsoil and ground water not sensitive to pollutants should be specified as a main requirement taking into account not only the general topsoil conditions, but also the groundwater flow directions. Contamination of soil caused by building materials and fuel used during construction can be avoided by keeping the regulations.

Regarding that the construction will use a relatively narrow land stripe there is no need to envisage significant *reduction* of the *arable land*. On the other hand the soil protection instructions should be considered widely, organizing with great care that the transport routes use as little as possible lands under agricultural cultivation. During construction, preparation of work site attention should be paid that the valuable arable lands suffer the lowest possible harms. In order to minimize extra land usage due to landscaping, material transportation, compacting because of treading the land areas can only be used to the reasonable and really necessary extent.

After finishing the works the site shall be exempted from the possibly produced contaminations.

## ***6.2. Surface waters***

The construction works have the greatest impact on the quality of watercourses through machine maintenance, repair works. During the building of bridges and road structures the leaking fuels may cause contamination. During the construction the pollution of watercourses should be avoided. Therefore it is advisable to find site for the storage of machines farther from watercourses. During the building works it may happen that debris (optionally containing contaminants, too) can get into the crossing channel from the open terrain level and from the fresh, unprotected earthwork. In this case the debris shall be removed immediately, preventing by this the alluviation of the watercourses.

The banks and trenches should be protected from the erosion with appropriate technical and biological measures.

During construction works waters should be continuously drained, therefore the existing water drainage lines should not be closed, the canals' cross section should not be reduced. During the construction works beds can only be reduced (closed) to an extent that prevents inundations after flood waves.”

During construction works surface and subsurface waters can mostly be contaminated as a result of negligence, accidents (fuel, oil). These contaminations can be prevented by keeping the regulations.

## ***6.3. Air quality***

On the design section, as always is the case with road construction the transportation, working-in and quarrying demands of earthworks caused by earthmoving machines or earth transportation trucks are dominating.

This test requires an organization plan prepared directly prior to the construction (adjusted exactly to the possibilities of the winning contractor).

Pavement covering layers are mainly produced in mixing plants, which have their own air polluting impact. In the frame of special licencing procedure establishment permit can be granted to the sites.

The earthwork building is the type of construction activity which requires the most movement of vehicles. Its harmful effects can be mitigated by selecting barrow pits close to the track line and by using transport routes by-passing the inhabited areas. Where possible it is suggested to carry the materials on the track line. The barrow pits will probably be close to the building section, transportation will be run on the connecting road network, later this can be solved by building from South to the North on the new line – in order to avoid inhabited areas – using the surrounding dirt road network, which latter should be de-dusted if used.

With good work organization the air pollution of the construction works can be maintained below the allowed value.

## ***6.4. Living world, flora and fauna***

The road and the establishments needed to the construction occupy significant territories, resulting direct loss of habitat, or reduction of habitat for a number of flora and fauna species. The reduction of the number and extension of habitats may reduce the richness of species on the concerned sites. We have to note that the road line mainly occupies agricultural lands, therefore high value habitats and species are not damaged.

The road construction produces additional temporary loss of habitat. Transport routes, deposit places of building materials occupy lands, destructing, polluting the habitats.

The usage of habitat should be limited to the minimum on areas belonging to the designated ecological network.

### ***6.5. Landscape***

From landscape protection point of view the construction generally results temporary changes – for example view of working machines – but its effect can be final, too. It is mainly connected to the establishment of barrow pits and landfills.

The road construction entails the alteration of the terrain surface, making cuts and banks, temporary destruction of the surface during the building period in case of use of lands outside the expropriation areas. Disturbance caused by the alteration of terrain surface, by the preparation sites needed to the construction works and by the disposal of produced wastes, as well as the use of land may extend to territories outside the regulated track line of the roadway.

The construction means the building of significant volume of embankment, beginning the excavation of large amount of material suitable for embankment building; consequently landscape injuries will be left in the surrounding of the roadway. The possibilities of their utilization should be examined, the destroyed surface should be restored based on special plans. The impact on the landscape of embankment building and establishment of barrow pits depend on their location, dimension, height and depth.

Additional surface destructions limited to the construction period, and land usage shall be restored after the finishing of building works.

### ***6.6. Noise and vibration***

The noise impacts of road construction can only be estimated in advance after knowing the barrow pits, mixing sites, machine park of the builders. This test requires an organization plan prepared directly prior to the construction (adjusted exactly to the possibilities of the winning contractor). Therefore PAD can only make general statements. These are the following:

The depot of the machines and equipment doing the building works should be determined as close to the roadway line as possible, avoiding the unnecessary movements on the surrounding road network.

The earthwork building is the type of construction activity which requires the most vehicle movement. Its harmful effects can be mitigated by selecting barrow pits close to the track line and by determining transport routes by-passing the inhabited areas, and going outside the expropriation border of the road. Where possible it is suggested to use the already existing carriageway.

Production of pavement layers is primarily made in mixing plants. Significant portion of the materials are delivered from faraway places (from quarries). During installations it is suggested to ensure accessibility to the railway in order to mitigate the impact of public road transport passing through the settlements.

### ***6.7. Wastes***

During construction of facilities (including barrow pits) the production of different types of wastes can be envisaged.

The following types of wastes can appear during construction:

- excavated soil
- sealing, gluing and insulation material waste
- wastes of paints, lacquers and other corrosion protection materials and coatings
- oil and oily wastes
- fuel wastes
- contaminated packaging material, absorbents, oily rags
- hydraulic oil containing packaging material
- contaminated solvents and diluents
- materials used to road surface building (cement, concrete, brick, tile, ceramics, etc. breakage)
- non-usable wooden waste
- bitumen waste and broken asphalt rubble
- metal and plastic wastes

There is a continuous production of communal wastes depending on the staff number working on the construction. It is recommended to transport communal wastes to the municipal landfill of the settlement as often as they are produced.

During construction, operation of the equipment hazardous wastes is also produced:

- motor, driving gear and lubrication oils
- waste battery
- oily sand
- oily rag
- wastes from vehicle maintenance
- bitumen mixtures, tar and tar products
- paint residues and paint package materials

Waste will be produced during the whole investment period, according to the scheduling of works depending on the design of establishments and on the construction technology used.

During the construction the contractor is responsible for the collection and correct storage of wastes. Wastes produced on the building management site, on the preparation sites shall be collected and disposed of in line with the regulations, separately, without contaminating the soil and ground waters.

After finishing the construction works the site, including the temporarily used lands should be cleaned from wastes, building debris, unnecessary building materials and they should be disposed.

Waste produced during the construction can only be given over to a licenced waste treatment firm and wastes given over to a licenced disposal company should be documented.

If the relevant rules are adhered to no significant environmental harms resulting from the use of hazardous materials and wastes can be expected.

## **7. Operation and impacts of operation**

### ***7.1. Geological formations and subsurface waters***

#### Soil

Impacts of the operation of establishments:

- land occupation
- waste „production” (mainly communal wastes of traffic participants)
- condensation, inwash of gases and other particles from vehicle operation
- dry atmospheric deposition
- contaminants washed down with rainwater
- impact of winter de-icing.

As to pollution and environmental harm impacts the most dangerous pollutants get to the environment from the exhaust gases of vehicles during operation. The greater portion of the exhaust gas (60-80 %) gets to the atmosphere, and only the smaller portion causes contamination by getting directly onto the soil. Dust, solid material and other surface pollutants of public road get to the atmosphere and from there to the soil by natural atmospheric factors (wind, rain) and by air movements caused by the traffic.

The soil is also polluted from the atmosphere of the road environment by deposition (dry deposition), by condensation and washing-in (wet deposition) and by washing down pollutants from the contaminated vegetation next to the road, by the rainwater pouring down along the road pavement.

The planned route mostly passes through agricultural lands, arable lands and the impact area of the above-mentioned factors does not extend beyond the expropriation border.

#### Subsurface water

Impacts of project operation:

- communal waste water and rainwater
- disposal, storage of hazardous materials, communal wastes
- contaminants deriving from averages (e.g. hydrocarbons)
- condensation, washing-in of gases and other particles deriving from vehicle operation
- dry atmospheric deposition (pollutants connected to dust, e.g.: heavy metals)
- impact of winter de-icing.

The impact of usage of de-icing materials in winter is very varied, the traditional sodium chloride salting materials produce salinization, while high chloride concentration can have a temporary impact on mineral intake. Contaminated salting materials may contain smaller quantities of heavy metals, cyanides. Since these materials get into the environment after the vegetation period, only their long term impact can cause problems. The salt level of the ground is basically weather-dependant. According to the valid regulations the maximum quantity of salt which can be spread out for de-icing is 1200 g/m<sup>2</sup> annually. The experiences show that this quantity does not produce detectable change in the ion concentration of the soil.

The planned route of the road does not affect and does not get close to hydrogeological protective profile, or water base conservation area.



## 7.2. Surface waters

The planned by-pass road crosses several canals, which are receivers of the rainwater of the region.

The gravitational drainage of rainwater of the planned road was solved by ditch, or by covered cut ditch. The planned ditches are covered, or dirt ditches.

The dirt ditches are built with biological protection, humus layer and grassing. The *drainage ditches* (*bottom ditch*, *belt ditch*) have high pollutant removal efficiency if they are not covered.

The covered surface changes the water supply, where infiltration reduces on the area under the carriageway, thus the rainwater falling on the roadway will almost completely appear in the ditch system in the form of surface water.

In lack of infiltration into the soil water arriving in concentrated form from the covered surfaces will produce additional strain on the section after the inlet.

The lengths of the corrections should be reduced to the necessary minimum.

In addition to rainwater pouring down from the road air pollutants from above the road can get onto the land sites next to the road directly through washing out from the atmosphere by rain and by dry deposition and can get to areas next to the road. Until the pollutants get to the receiver the reduction of their volume is significantly influenced by the embankment of the motorway and the water drainage ditch itself.

Winter de-icing shall be determined based on the valid regulations (Joint communiqué 1/1988.KM-ÉVM-BM-KVM) and on the sensitivity of the area.

## 7.3. Air quality

The operation of the planned #445 bypass road around Kecskemét influences the air quality in a way that it distracts traffic from the concerned sections of the road network, thus air pollution caused by traffic will increase in its surrounding. Opposite to this the pollution will in general reduce around the formerly used public roads.

The impact of the investment on air quality was investigated based on meeting the air pollution limit values within protection distance that is the concentrations of air polluting materials were determined at 10 m distance from the axis of public roads. The air emission calculations were based on the forecasted traffic data and on the specific emission data of the Közlekedéstudományi Intézet Rt. for year 2010, and estimations were made for two time periods, for the year of the planned commissioning (2010) and for the following 15th year (2025) taking into account five most typical components; carbon monoxide, nitrogen oxide, particles, hydrocarbon, standard hourly traffic.

The following atmospheric condition was supposed for top concentration calculations:

- Mild wind, that is lower than 2 m/s wind speed
- from strong inversion to instable condition of air

### Calculation assessment

Based on the calculations made on the direct impact area the concentration values do not exceed the health limit values of air pollution within the minimum protection zone with the traffic estimated for 2025.

According to the air cleanness protection calculations health limit values of air pollution are met within 10 m distance from the road axis, even taking into account the traffic estimated for 2025. There is no residential building within this distance. This practically means that above the limit value air pollution cannot be expected outside the area to be expropriated by the road.

Pursuant to Decree 4/2002. (X.7.) KvVM on the designation of air pollution agglomerations and zones Kecskemét is among the designated cities based on solid (PM<sub>10</sub>) pollutant.

The Local Government of the City of Kecskemét made available „The Contingency Program of designation of regional zones of solid air polluting component in the city of Kecskemét” according to which dust is basically coming from the soil surface, its presence in the ambient air of the city of Kecskemét, however is not independent from the vehicle traffic of the inner area of the settlement.

Completion of the planned by-pass road would clearly have a positive impact on the air quality of the city, since the present transit traffic passing through the inner city would not pollute the city’s air.

#### ***7.4. Living world***

The operation has the most significant impact on the habitat quality. Pollutants deriving from the traffic, the noise and light effects disturb the living world of the region.

A habitat fragmentation caused by a lined project will also be manifested in animal hitting during the operation.

Proposals formulated by PAD will be detailed in the point dealing with Impact mitigating measures.

#### ***7.5. Landscape***

##### Benefits of landscape usage

The West-East and North-East transit traffic deriving from the connection of Dunaföldvári bridge and the middle areas of the Great Plain strains the inner road network of Kecskemét. The link between M5 motorway, secondary main roads no. 52 and 441 and main road no. 44 is only ensured through the great avenue of Kecskemét. The planned northern bypass road around Kecskemét that is main road no. 445 satisfies a long ago raised traffic need: link between M5 motorway, main road no. 5, main road no. 441 and main road no. 44 with the stress relieving of the city.

Thus the inner city road network will be relieved from the transit traffic, reducing the present big environmental burdens (noise, air, etc.) of inhabited areas.

Plus the planned road will get close to the suburban industrial, economic and commercial facilities and will reveal certain values (e.g. unique landscape values; beautiful view of meadows, pastures).

The region opened by the road will be revaluated from economic point of view and new industrial, trade developments can be expected mainly around the junctions.

The leading of the route line raised several problems (e.g. closeness of NATO airport, close-to-nature areas, forests); by solving these problems the line is running in a lane with the least amount of conflicts.

### Conflicts of landscape usage

The land usage in itself poses landscape usage conflicts. The biggest problem appears on places where the planned road directly affects inhabited areas and where it passes close to the inhabited areas.

Because of road construction residential buildings have to be demolished partly due to the land occupation of the road, partly due to exceeding the noise limit value (see noise protection work part).

The road line passes by the hurdle of stock-breeding site around 4+000 km section and cuts the pasture into two parts. Therefore an animal passage should be built in section 4+450 km.

The cutting into two parts of the forests and grasslands creates another landscape usage conflict, thus the road not only separates the habitats from each other and thus disrupts the continuity of the ecological corridor, but the view of the road in the landscape will break up its unity as new line element. The crossing of the canals – as ecological corridors – can also cause a conflict, but this can be eliminated by using proper size culverts.

The planned road crosses several orchards which is a conflict source not only because of area reduction, but also because of the pollution caused by the road, which effect should be mitigated by forest lanes.

In the case of arable lands the appearance of the road produces conflict in the scenery mainly on places where it is led on the bank. From land usage point of view a new traffic area appears. In case of cultivated lands the conflict of disruption of the current road system should be solved. The cutting through of the arable lands is not necessarily a conflict regarding „cutting of land” since the danger of deflation is high on the area, thus the condition of micro and mezzo climate, thus soil productivity can be improved by smaller parcels.

### ***7.6. Human and social environment, cultural heritage***

Economic and social consequences of the road construction are complex. Since the inner city transit traffic will be reduced its „livability index” will improve. Financial costs of environmental harms of traffic (built, natural, human) will be less. Number of traffic accidents will decrease. Since the heavy truck traffic will be moved to the bypass road, both noise and vibration levels will show reducing tendencies.

Based on the above-written real estate prices will most probably increase in the affected area. All conditions are available for the establishment of new logistic centers.

Parallel with the reduction of the transit traffic in the inner city areas the deterioration of the inner city road network will slow down proportionately.

The positive change of air quality data and the reduction of traffic noise will create so-called new living space for the local population.

The probability of traffic jams in the traffic peaks typical of urban environment will prospectively reduce, thus the travel time will also be shorter.

### Cultural heritage protection

If unexpected archeological findings are revealed during operation (repair works, accident, average) measures shall be taken according to regulations of § 24 of Act LXIV of 2001 on Cultural heritage protection.

In case of average special emergency plan shall be prepared. Operational regulations are specified in the operational and maintenance plans.

### **7.7. Noise and vibration**

Noise levels expectable on the front sides of the different buildings are specified by the Annex of PAD.

The possibility of noise reduction was investigated in case of buildings to be protected where according to the calculations the exceeding of the limit values taken in A, B, C noise screening zones can be expected. If the noise reduction measures are implemented and the designated buildings are demolished the traffic noise level will probably be below the limit value at buildings along the planned road, or the existing noise level will not increase.

In section II (between 11+450.00 - 13+600.00 km) the traffic noise limit values shall not exceed the limit values specified by the regulation for connection roads in small, garden city type residential areas.

It was concluded from the calculations that the following noise emission is produced by the different speeds:

Year	$L_{Aeq}(7,5\text{ m})$ dB	
	Daytime	night
2010	71,4	64,9
2025	76,4	69,9

Based on the above-written the calculated protection distances are:

in 2010 **34 m**

in 2025 **66 m**

Delimitation of the protection distance was determined by PAD from the least favourable condition, from the night noise level. Beyond the thus determined impact area the noise level will not exceed the limit value. Obstacle-free, open area spreading was taken into account in the impact zone calculation. This value was considered by PAD as most favourable that can be accepted as good approximation.

### **7.8. Wastes**

Wastes produced during the operational period are the following according to their origin:

- waste from service, maintenance, usage (communal waste, biodegradable wastes, hazardous wastes, building and demolition wastes);
- wastes from accidents, average cases.

Wastes deriving from service, maintenance, usage:

Collection of communal type „roadside” waste is seasonal. Collection is made in plastic bags. Collection and transportation will likely be made by the operator (or its contracted service provider). The collected waste will not be stored, but will be directly transported to the landfill facility.

Wastes from maintenance and service works will not be stored but will be given over directly to the operator. During the works the operator is responsible for keeping the documentation specified by the regulations.

Collection places established for the storage and treatment of maintenance and service hazardous wastes will likely be established on the operator’s site. Transportation and treatment will be made by the authorized and contracted contractor in line with the legal regulations. During the processes the documentation required by the relevant rules will be kept by the operator.

Wastes deriving from accident, averages:

Type and form of appearance, physical and chemical characteristics of wastes produced by these types of events cannot be predicted. According to the experiences spilling accidents can be expected in these cases. Wastes are mainly produced by the remediation activities. The vast majority of the produced wastes is regarded hazardous waste, thus their treatment and transportation is specially regulated by rules. Remediation activities for such cases are contained in the average plan.

## 8. Impact mitigating measures

In this chapter the impact mitigating measures are summarized on the basis of the statements of special environmental authorities given to the building permits. Requirements relating to the design phase were satisfied during the detailed design process.

### 8.1. *Soil, subsurface water*

Regulations of building permit no. DA/KA/308/5/2009:

(Special authority statement no. 12.2/2914/1-TAL/2007 of Plant and Soil Conservation Directorate MGSZH of County Bács-Kiskun)

- *If earthworks involving humus laying are connected to road construction work phase, they can be performed as part of it, if they affect the soil, e.g. storage the permit for temporary usage for other purposes should be obtained from the competent Land Registration Office.*
- *Our special authority contribution is valid for construction works on the cultivated lands the design for approval in case of works extending to the arable lands should be supplemented with a restoration and recultivation plan.*
- *If the surplus humus soil is used for filling up the surface of cultivation area, landscaping plan shall be prepared for that land site and these works will be licenced by our authority. The landscaping plan should be based on soil condition expert opinion.*
- *This document of the soil protection authority shall be given over to the investor and the contractor with the obligation to keep the specifications during the works.*
- *During earthworks and deposition works efforts should be made for the protection of humus soil layer (against wind, water erosion, weeding.)*
- *Depending on the conditions of the production site rainwater drainage should be solved already during the construction works in order to prevent soil erosion and the threatening of the adjacent areas (intensive, bigger volume rainwater could also be drained).*
- *During the works the adjacent crop land cannot be contaminated by materials alien to soil. Contaminated soils can only be used if their exemption from contaminants is proved by preliminary tests.*
- *The construction may not disturb the cultivation on the surrounding crop lands (storage of machines and materials is only allowed on uncultivated lands, or on sites not used as crop lands.)*

Regulations of building permit no. DA/KA/829/10/2009:

(Special authority statement no. 12.2/1848/1-TAL/2008 of Plant and Soil Conservation Directorate MGSZH of County Bács-Kiskun)

- *As a result of the implementation of the project the conditions of soil preserving farming cannot deteriorate or be restricted on lands under agricultural cultivation.*
- *After finishing the works not any kind of residual material can be left on the adjacent agricultural lands (humus free subsoil, rubbles, etc.).*

- *Due to its poor humus content the humus layer on the road line can be listed into the 'to be saved conditionally' category. Consequently, the contractor shall remove the layer down to the technically necessary depth, shall deposit it and the removed topsoil can be used on the bank slopes in the last working phase.*

Regulations of building permit no. KU/KF/105/26/2009:

(Special authority statement no. 12.2/2272/1-TAL/2009 of Plant and Soil Conservation Directorate MGSZH of County Bács-Kiskun)

- *The investor shall announce the commencement of the works to the soil conservation authority, the investor shall keep continuous up to date records on the volume of saved, deposited and transported humus.*
- *The investor is responsible for the protection of the deposited humus, its weed-free storage, and its use according to its original function.*
- *Prior to the commencement of the construction works a building-organization (organization) plan exactly detailing the way and place of temporary storage of the saved humus layer and its final usage – corresponding to its original function – (on site and non on-site usage) shall be submitted to our Directorate for approval from soil conservation point of view. The project can only be started after the approval of the organization plan.*
- *In order to ensure the control of placing, usage of the saved humus – after technical acceptance procedure – a humus resource accounting shall be submitted to our Directorate parallel with the commissioning plan documentation to be submitted to the permit granting authority.*
- *On the agricultural lands under cultivation next to the construction site the conditions of soil preserving farming shall not get worsened or be restricted due to the project. After finishing the works not any kind of residual material can be left on the adjacent agricultural lands (humus free subsoil, rubbles, etc.)*

Regulations of building permit no. DA/KA/43/2/2010:

(Special authority statement no. 12.2/136/5-TAL/2008. of Plant and Soil Conservation Directorate MGSZH of County Bács-Kiskun)

- *The investor shall announce the commencement of the works to the soil conservation authority, the investor shall keep continuous up to date records about the volume of the saved, deposited and transported humus.*
- *Prior to the commencement of the construction works a building-organization (organization) plan exactly detailing the way and place of temporary storage of the saved humus layer and its final usage – corresponding to its original function – (on site and non on-site usage) shall be submitted to our Directorate for approval from soil conservation point of view. The project can only be started after the approval of the organization plan.*
- *In order to ensure the control of placing, usage of the saved humus – after technical commissioning procedure – a humus resource accounting shall be submitted to our Directorate parallel with the commissioning plan documentation to be submitted to the permit granting authority.*
- *On the agricultural lands under cultivation next to the construction site the conditions of soil protecting farming shall not worsen or be restricted due to the project. After*

*finishing the works not any kind of residual material can be left on the adjacent agricultural lands (humus free subsoil, rubbles, etc.)*

- *Protection of the deposited humus, its weed-free storage and its use according to its original function belong to the responsibilities of the investor.*

(Special authority statement no. SZBK/4375/2/2008 of Mine Directorate of Szolnok)

- *Solid mineral raw material used to road construction can only derive from licenced raw material exploitation site.*
- *If on the design area the subsurface systems are affected the construction works can be commenced with the preliminary contribution and under the technical supervision of the operator.*

Regulations of building permit no. DA/KA/1494/44/2010:

(Special authority statement no. 12.2/10255-6/2010 of Plant and Soil Conservation Directorate MGSZH of County Bács-Kiskun)

- *The temporary humus depots are established on the building site.*
- *The investor is responsible for the protection of the deposited humus, its weed-free storage, and its use according to its original function.*
- *The investor shall report the commencement of the works to the soil conservation authority, the investor shall keep continuous up to date records about the volume of saved, deposited and transported humus.*
- *Prior to the commencement of the construction works a building-organization (organization) plan exactly detailing the way and place of temporary storage of the saved humus layer and its final use – corresponding to its original function – (on site and non on-site usage) shall be submitted to our Directorate for approval from soil conservation point of view. The project can only be started after the approval of the organization plan.*
- *In order to ensure the control of placing, usage of the saved humus – after technical commissioning procedure – a humus resource accounting shall be submitted to our Directorate parallel with the commissioning plan documentation to be submitted to the permit granting authority.*
- *The humus soil and humus free subsoil shall be deposited separately, humus free subsoil cannot be deposited on agricultural land.*
- *On the agricultural lands under cultivation next to the construction site the conditions of soil protecting farming shall not worsen or be restricted due to the project. After finishing the works not any kind of residual material can be left on the adjacent agricultural lands (humus free subsoil, rubbles, etc)*

(Special authority statement no. SZBK/2257/2/2010 of Mine Directorate of Szolnok)

- *Solid mineral raw material used to road construction can only derive from licenced raw material exploitation sites with certificate proving the ownership right of the mineral raw material.*



## 8.2. *Surface water*

Regulations of building permits no. DA/KA/308/5/2009., DA/KA/829/10/2009. KU/KF/105/26/2009., DA/KA/43/2/2010. and DA/KA/1494/44/2010:

(Special authority statements no. 19965-5-8/2008, 19965-7-5/2008, 19965-10-1/2009, 19965-9-1/2009 and 19965-12-3/2010 of ATI KTVF)

- *The deposition, drainage of rainwater is subject to water rights permit. The water licencing documentation shall be prepared with a content specified by Governmental Decree 72/1996. (V. 22.) and Decree 18/1996. (VI. 13.) KHVM and shall be submitted to our Inspectorate.*
- *The works can only be started after obtaining the water establishment permit for rainwater drainage system.*
- *Our Inspectorate will only grant contribution to the putting into service of the road after obtaining water licences (establishment, operation) for the rainwater drainage system ensuring dewatering of the road.*

## 8.3. *Air*

Regulations of building permit no. DA/KA/308/5/2009:

(Special authority statement no. 19965-5-8/2008 of ATI KTVF)

- *Dusting shall be minimized on the transportation, or preparatory access routes.*
- *During the construction diffuse dusting of the works (including material handling) shall be limited to the lowest possible level with taking the necessary technical measures.*
- *During the construction materials producing diffuse dusting can only be transported in covered form.*
- *In rain free periods diffuse air pollution shall be prevented by water spraying of the roads.*
- *Covered road surfaces shall be regularly cleaned from the mud and dust carried on.*

Regulations of building permit no. DA/KA/829/10/2009:

(Special authority statement no. 19965-7-5/2008 of ATI KTVF)

- *During the construction diffuse dusting of the works (including material handling) shall be limited to the lowest possible level with taking the necessary technical measures.*
- *During the constructions materials producing diffuse dusting can only be transported in covered form.*
- *Transportation works can only be performed by machines in good technical conditions, and meeting the environment regulations.*
- *In rain free periods diffuse air pollution shall be prevented by water spraying of the roads.*
- *Covered road surfaces shall be regularly cleaned from the mud and dust carried on.*

Regulations of building permit no. KU/KF/105/26/2009:

(Special authority statement no. 19965-10-1/2009 of ATI KTVF)

- *During construction and operation dust production shall be limited to the minimum.*
- *In rain free periods diffuse air pollution shall be prevented by water spraying of the roads.*
- *Covered road surfaces shall be regularly cleaned from the mud and dust carried on.*
- *During construction burning of all kinds of wastes is prohibited.*

Regulations of building permit no. DA/KA/43/2/2010:

(Special authority statement no. 19965-9-1/2009 of ATI KTVF)

- *During construction and operation dust production shall be limited to the minimum.*
- *In rain free periods diffuse air pollution shall be prevented by water spraying of the roads.*
- *Covered road surfaces shall be regularly cleaned from the mud and dust carried on.*
- *During construction burning of all kinds of wastes is prohibited.*

Regulations of building permit no. DA/KA/1494/44/2010:

(Special authority statement no. 19965-12-3/2010 of ATI KTVF)

- *During construction and operation dust production shall be limited to the minimum.*
- *During the construction diffuse dusting materials can only be transported in covered form.*
- *Covered road surfaces shall be regularly cleaned from the mud and dust carried on.*

#### **8.4. Living world, flora and fauna**

Regulations of building permit no. DA/KA/308/5/2009:

(Special authority statement no. 12.3/18-5206-2/2007 of Forestry Directorate of MGSZH of County Bács-Kiskun)

- *Prior to the commencement of construction works withdrawal from production of forest areas of Kecskemét affected by road construction shall be licenced pursuant to (1) of §66 of Act LIV of 1996. To this end the applicant shall initiate a special procedure at our Authority by submitting Annexes listed in section (1) of §87 of Decree 29/1997. (IV. 30.) FM.*
- *During road construction works any type of use (material deposition, preparatory site, etc.) of forest areas located along the track line and not allowed for withdrawal from production is prohibited.*

(Special authority statement no. 19965-5-8/2008 of ATI KTVF)

- *The game passage (animal driving passage) should be built in section 4+450 km.*

- *The construction shall be implemented with the greatest saving of the natural environment, with the preservation of the still high value habitats.*
- *It is prohibited to establish material dumping and deposition site on grassland (especially in section 2+700 – 5+300 km of the planned road).*
- *In the 100 m distance lane from the axis of the Alpári-Nyárlőrinci canal it is not possible to establish material storage, deposition place, or machine storage depot.*
- *In the surrounding of watery habitat construction works can only be performed in dry or frozen periods.*
- *Cutting of trees, bushes can only be made outside the vegetation period (between 15 September – 15 March). If protected bird species are nesting on trees the concerned trees cannot be cut out until the flying out of the hatchlings.*

Regulations of building permit no. DA/KA/829/10/2009:

(Special authority statement no. 12.3/18-9829-2/2007 of Forestry Directorate of MGSZH of County Bács-Kiskun)

- *Prior to the commencement of construction works withdrawal from production of forest area under topographical no. 0652/70 of Kecskemét affected by road construction shall be licenced pursuant to (1) of §66 of Act LIV of 1996. To this end the applicant shall initiate a special procedure at our Authority by submitting Annexes listed in section (1) of §87 of Decree 29/1997. (IV. 30.).*

Regulations of building permit no. KU/KF/105/26/2009:

(Special authority statement no. 19965-10-1/2009 of ATI KTVF)

- *The construction shall be implemented with the greatest saving of the natural environment, with the preservation of the still high value habitats.*
- *It is prohibited to establish material dumping and deposition site on grassland, and these lands cannot serve for the procession place of vehicles.*
- *Cutting of trees, bushes can only be made outside the vegetation period (between 15 September – 15 March). If protected bird species are nesting on trees the concerned trees cannot be cut out until the flying out of the hatchlings.*

Regulations of building permit no. DA/KA/43/2/2010:

(Special authority statement no. 12.3/18-9998-2/2008 of Forestry Directorate of MGSZH of County Bács-Kiskun)

- *Prior to the commencement of construction works withdrawal from production of forest areas under topographical no. 01534/89 and 01534/90 of Kecskemét affected by road construction shall be licenced pursuant to (1) of §66 of Act LIV of 1996. To this end the applicant shall initiate a special procedure at our Authority by submitting Annexes listed in section (1) of §87 of Decree 29/1997. (IV. 30.).*
- *During road construction works use for any purposes (material deposition, preparatory site, etc.) of forest areas located along the track line and not allowed for withdrawal from production is prohibited.*

(Special authority statement no. 19965-9-1/2009 of ATI KTVF)

- *The construction shall be implemented with the greatest saving of the natural environment, with the preservation of the still high value habitats.*
- *It is prohibited to establish material dumping and deposition site on grassland, and these lands cannot serve for the procession place of vehicles.*
- *Cutting of trees, bushes can only be made outside the vegetation period (between 15 September – 15 March). If protected bird species are nesting on trees the concerned trees cannot be cut out until the flying out of the hatchlings.*

### **8.5. Landscape protection**

#### Regulations of building permit no. DA/KA/308/5/2009:

(Special authority statement no. 19965-5-8/2008 of ATI KTVF)

- *In order to ensure the fitting of the traffic establishments into the landscape native and endemic wood species adequate to the local habitat conditions shall be used during plantation works.*
- *After finishing the works the restoration of the original condition of the occupied areas, especially of the grasslands should be ensured. (The original condition means the landscape and natural status preceding the starting of works.)*

#### Regulations of building permit no. DA/KA/829/10/2009:

(Special authority statement no. 19965-7-5/2008 of ATI KTVF)

- *The roadway and the connecting other structures should be fitted into the landscape. The fitting into the landscape is proposed to be completed within 1 year after the putting into operation using plant groups composed of several levels, native species adequate to the habitat.*

#### Regulations of building permit no. KU/KF/105/26/2009:

(Special authority statement no. 19965-10-1/2009 of ATI KTVF)

- *After finishing the works the restoration of the original condition of the occupied areas, especially of the grasslands should be ensured. (The original condition means the landscape and natural status preceding the starting of works.)*

#### Regulations of building permit no. DA/KA/43/2/2010:

(Special authority statement no. 19965-9-1/2009 of ATI KTVF)

- *Along the road trees covering the road and bushes shall be planted in order to fit into the landscape with native plant species typical of the landscape and the production site.*
- *After finishing the works the restoration of the original condition of the occupied areas, especially of grasslands should be ensured. (The original condition means the landscape and natural status preceding the starting of works.)*

## **8.6. Built environment**

### Regulations of building permit no. DA/KA/308/5/2009:

(Special authority statement no. 490/2226/005/2007 of South Great Plain Office of the Natural Heritage Protection Authority)

- *Preventive exploration or test exploration shall be made on archeological sites affected by the project in subject.*
- *Archeological sites designated as a result of test exploration shall be preliminarily explored. Prior to the commencement of the works the investors shall sign a written agreement with the archeological special service for the completion of test and preventive explorations.*
- *Construction works can only be started after the finishing of preventive explorations.*
- *On other parts of the track line archeological monitoring should be ensured during mechanical humus works.*
- *Furthermore, the licensee is expected to inform the cultural heritage protection authority about the commencement of works and about the date of technical acceptance procedure.*

### Regulations of building permit no. DA/KA/829/10/2009:

(Special authority statement no. 490/2226/009/2007 of South Great Plain Office of the Natural Heritage Protection Authority)

- *In order to ensure the protection of archeological heritage earthworks can only be made under archeological surveillance during the project.*
- *By 15 days prior to the commencement of the works the licensee shall inform the archeological special service in documentable written form in order to make possible for them the monitoring of the works and the cultural heritage protection authority shall also be informed prior to the beginning of works about the date of technical acceptance procedure.*

### Regulations of building permit no. KU/KF/105/26/2009:

(Special authority statement no. 490/4731/001/2008 of Regional Office in Szeged of the Cultural Heritage Protection Authority)

- *Preventive exploration should be made on the archeological sites affected by the project in subject. For the completion of preventive exploration works the investor is expected to sign a written agreement with the archeological special service prior to the commencement of works.*
- *In case of archeological site no. 18 of Kecskemét it is proposed in connection with the project that the exploration works should be finished by the same party who managed the former exploration works.*
- *Construction works can only be commenced after the finishing of preventive exploration works.*
- *On the remaining parts of the track line archeological surveillance is required during the mechanical humus works.*

- *Furthermore, the licensee is expected to inform the cultural heritage protection authority about the commencement of works and about the date of technical acceptance procedure.*

Regulations of building permit no. DA/KA/43/2/2010:

(Special authority statement no. 490/1550/004/2008 of South Great Plain Office of the Natural Heritage Protection Authority)

- *Preventive exploration should be made on the archeological sites affected by the project in subject. For the completion of preventive exploration works the investor is expected to sign a written agreement with the archeological special service prior to the commencement of works.*
- *Construction works can only be started after the finishing of preventive explorations.*
- *On other parts of the track line archeological monitoring should be ensured during mechanical humus works.*
- *Furthermore, the licensee is expected to inform the cultural heritage protection authority about the commencement of works and about the date of technical acceptance procedure.*

Regulations of building permit no. DA/KA/1494/44/2010:

(Special authority statement no. 490/1123/002/2010 of South Great Plain Office of the Cultural Heritage Protection Authority)

- *Preventive exploration should be made on the archeological sites affected by the project in subject. For the completion of preventive exploration works the investor is expected to sign a written agreement with the archeological special service prior to the commencement of works.*
- *Construction works can only be started after the finishing of preventive explorations.*
- *On other parts of the track line archeological monitoring should be ensured during mechanical humus works.*
- *Furthermore, the licensee is expected to inform the cultural heritage protection authority about the commencement of works and about the date of technical acceptance procedure.*

## **8.7. Noise**

Regulations of building permits no. DA/KA/308/5/2009, DA/KA/829/10/2009 and DA/KA/43/2/2010:

(Special authority statement no. 19965-5-8/2008, 19965-7-5/2008 and 19965-9-1/2009 of ATI KTVF)

- *The noise screening walls specified in the plans shall be built with the given parameters (length, height).*
- *In the case of real properties where the noise screening wall cannot be built for technical reasons, expropriation of the real property should be given preference.*

- If the owner of the real property does not contribute to the expropriation (purchase), passive acoustic methods should be used. In this case the written statement of the owner of the real property about the acceptance of this solution should be attached.
- Within 90 days after the temporary putting into operation of the road standard control noise tests shall be made on calculation points contained in the documentation. The exact place and number of the measurement points should be coordinated with our Inspectorate. The prepared measurement protocol shall be submitted to our Inspectorate.

**Based on the designs for construction noise screening walls will be built on the following sections:**

Building phase I:

Side	Mark	Starting chainage km	Ending Chainage Km	Length [m]	Height [m]	Remark
Kecskemét						
Right	J1	5+100	5+199	100,00	2,00	Total wall height
Right	J2	5+600	6+080	480,00	2,50	Total wall height
Right	J3	6+320	6+844	510,00	2,50-4,50	Total wall height
Left	B1	7+100	7+342	240,00	4,50	Total wall height
Left	B2	7+870	8+111	240,00	250	Total wall height
Right	J4	7+920	8+398	480,00	2,50-4,50	Total wall height

Building Phase II/1:

Side	Mark	Starting chainage km	Ending Chainage Km	Length [m]	Height [m]	Remark
Kecskemét						
Right	J5	4+800	5+100	302,00	2,07-3,07	wall height above road level
Right	J6	0+079	0+161	84,00	2,75-3,00	wall height above road level
Left	B3	0+204*	0+471*	272,00	1,94-2,80	wall height above road level

Building Phase II/2:

Side	Mark	Starting chainage km	Ending Chainage Km	Length [m]	Height [m]	Remark
Kecskemét						
Right	J7	11+400	11+853	452,00	2,20-2,36	wall height above road level
Left	B4	11+925	12+165	244,00	2,31	wall height above road level
Left	B5	11+169	11+334	204,00	2,67-2,87	wall height above road level

## 8.8. Waste

Regulations of building permits DA/KA/308/5/2009, DA/KA/829/10/2009, KU/KF/105/26/2009 and DA/KA/43/2/2010:

(Special authority statement no. 19965-5-8/2008, 19965-7-5/2008, 19965-10-1/2009 and 19965-9-1/2009 of ATI KTVF)

- *The waste producer, owner shall collect the waste in his property, or resulting from any activity in a way that is not harmful to the environment, selectively and in the case of hazardous wastes with the method determined in § 10 and Annex 3 of Governmental Decree 98/2001. (VI. 15.).*
- *If the produced wastes are not collected, treated on the place of production, treatment can only be made in a licensed plant site and if this latter site is not the site of the owner or producer of the waste, the transportation to the site, collection (storage) there, treatment can only be made based on waste treatment licence.*
- *Recyclable wastes cannot be disposed of neither by deposition nor in other way, the only acceptable way of treatment is their recycling (re-processing, recovery, energetic utilization), or giving over to a recycling plant. Consequently, if filling back or using as filling up material of the – probably great volume – uncontaminated soil excavated during the construction works is not possible, it should be used either to the recultivation of closed waste disposals, or as covering layer in operating landfills.*
- *Wastes can only be given over to licenced waste treatment plants.*
- *Records specified by Governmental Decree 164/2003. (X.18.) should be kept about the wastes and data supply prescribed by the Decree shall be provided to the Inspectorate.*
- *During the putting into service it should be certified that wastes produced during the completion of the project were treated according to the legal regulations, in a licenced way.*



## **9. Monitoring**

The completed tests do not give ground to, or the special authority statements given for the different sections do not require the conduction of monitoring activity after the implementation of the project.

## 10. Summary evaluation of environmental impacts

The summary and evaluation of the environmental impacts of the investment described in the previous sections can be found in the table below. It should be underlined that the below summary evaluation should be interpreted together with the detailed description of the environmental impacts, since otherwise the simplified evaluation alone can be misleading.

During the evaluation of impacts all the impact mitigating factors were taken into account. In general the evaluation deals with impacts on areas directly affected by the project, the only exception to this is human and social environment, in which case the impacts on the wider environment were also taken into account. Effects of construction, operation and of the eventual averages were evaluated separately. It has to be noted that for the purposes of this evaluation average case means such typical situations, where the flowing or leaking of hazardous materials may happen (e.g. public road accidents of fuel or gas transporting freight vehicles). The secondary effects of the eventual emergencies (e.g. traffic problems on the surrounding road network) were however not taken into account during the impact assessments.

For the evaluation of the impacts the below rating indicators were used (the abbreviations are in brackets):

- terminating (M)
- damaging (K)
- loading (T)
- bearable (E)
- neutral (S)
- improving (J)
- value-adding (É)
- non relevant (NR)

Certain impacts were given double evaluation by the simultaneous use of two rating indicators in order to represent the different conditions of certain project sections. In these cases indicators shown by bold letters represent the general evaluation, while the secondary indicators relate to the sections mentioned in the notes.

<i>Affected elements/systems and main impact factors</i>		<i>Building</i>	<i>Operation</i>	<i>Average</i>	<i>Note</i>
Soil	Arable land volume	<b>M</b>	<b>NR</b>	<b>NR</b>	The track line of the road does not affect soils of outstandingly high quality
	Soil quality	<b>E</b>	<b>E</b>	<b>E/T</b>	The soils have moderately good water drainage capacity, thus in case of an eventual spilling out of liquid polluting materials great part of the ground would be contaminated.
	Material use	<b>E</b>	<b>NR</b>	<b>NR</b>	
Water reserves	Surface waters	<b>E</b>	<b>E</b>	<b>E</b>	
	Subsurface waters	<b>NR</b>	<b>NR</b>	<b>E/T</b>	On sections where the ground water is high, there is a danger of inland water and the soils have good water drainage capacity, the subsurface water can be easily contaminated in case of an average.
Nature	Habitat	<b>E</b>	<b>E</b>	<b>E</b>	On one place the project affects an element of the national ecological network. The track line was determined based on the principle of the smallest damage, which means that if the present plan version is implemented the planned project will cause the least damages to the environment.
	Flora	<b>E</b>	<b>E</b>	<b>E</b>	
	Fauna	<b>E</b>	<b>E</b>	<b>S</b>	
Wastes and hazardous materials		<b>E</b>	<b>E</b>	<b>E</b>	
Human and social environment		<b>E</b>	<b>J</b>	<b>NR</b>	
Landscape		<b>E</b>	<b>E</b>	<b>NR</b>	
Noise and vibration	Noise	<b>E</b>	<b>E / J</b>	<b>NR</b>	With the construction of the road noise level will be reduced on the inner areas of the settlements.
	Vibration	<b>E</b>	<b>E</b>	<b>NR</b>	
Air quality		<b>E</b>	<b>E / J</b>	<b>NR</b>	With the construction of the road air quality will be improved on the inner areas of the settlements.