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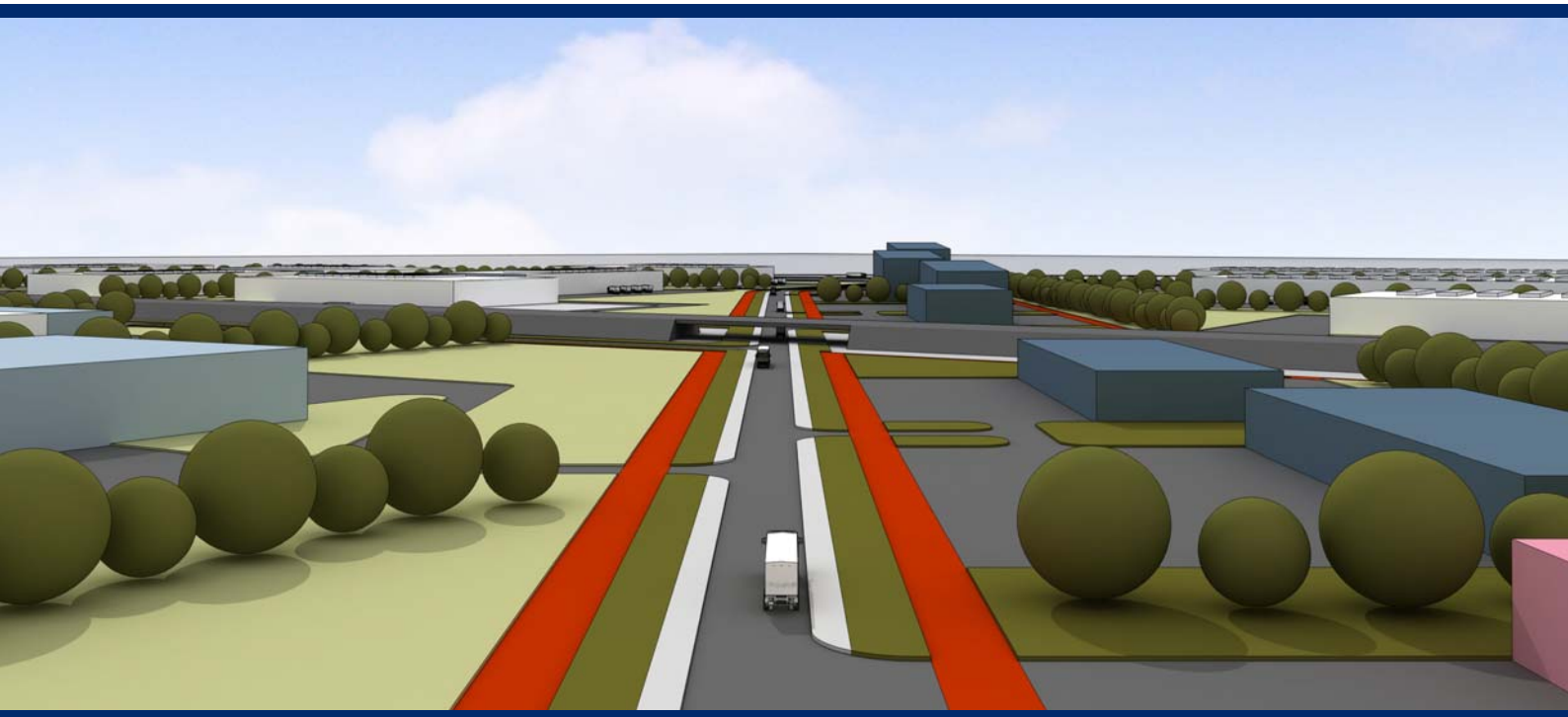

INDUSTRIAL PARK PEREYASLAV-KHMELNYTSKY: CONCEPTUAL DESIGN REPORT

2011

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Conceptual Design Report

Pereyaslav-Khmelnytsky, Ukraine

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1. Development motto and vision

1.1. Global trends and assumptions

From a long-term perspective, the expected continuing growth of the Ukrainian national economy will generate a higher demand for more advanced business locations. It will also lead to the development of a more sophisticated production infrastructure that will benefit both domestic Ukrainian producers and international investors (FDI). It is estimated that this domestic demand for advanced business accommodation will be larger in industrialized agglomerations and important transport nodes, where both indigenous and international businesses are already established. This is certainly the case for Pereyaslav-Khmelnytsky, given its location in the greater Kiev catchment area and its good accessibility.

The proposed development plan, of which this conceptual design report is one step, also aims to attract FDI-companies to the city. It is assumed that FDI-companies (especially investments in production facilities) will continue to move some of their operations from Western or Central Europe to the East. This is due to their mobility and the permanent need to seek the most cost-effective conditions to compete at global markets. It is assumed that this move will take place within the next 10-15 years and that Ukraine has the potential of playing a significant role as one of the "hot spots" in Eastern Europe. Parts of the country will be able to accommodate the spatial requirements for the expected FDI influx. It is obvious that the best prepared sites will have the focus of foreign investors first.

Experience from the development of Central Europe shows that, for the location of foreign direct investments, the number of inhabitants of the city itself is relatively unimportant. Of larger significance are the infrastructural / logistical relations, the structure and strength of the regional economy, and the size of the site in relation to the economical strength of the city. This relation has been analyzed in the framework of this project and the outputs of the analysis are included in attachment No.1.

1.2. Local development specifics and pre-conditions

The city of Pereyaslav-Khmelnytsky is the administrative centre of the district with the same name. It is located 70 kilometers to the south-east of Kyiv, in the forest steppe zone of central Ukraine. The city has a population of 28.900 and is 3152 ha. in size, thus being a relatively small town. The district has 33.600 inhabitants and has an area of 146.000 ha. In the catchment area of the proposed industrial park (bordered by an isochrone of accessibility of 40 min) are a number of smaller cities and villages, like Yahotyn and Berezan. Within this area are more than 75.000 inhabitants, thus boasting a regional labor force that is sufficiently large for the development of this industrial park.

The government of Pereyaslav-Khmelnytsky has an active role in supporting the development of a new industrial park and stimulating local economic development. During the process of strategic planning, the city identified a number of reasons why companies should invest in Pereyaslav-Khmelnytsky:

- the city is actively promoting industrial development;
- excellent location and available infrastructure;
- flexible industrial sites are available;
- skilled and competent labor force;
- secondary schools, a university, sport clubs, a hospital and social / cultural facilities are present
- Pereyaslav-Khmelnytsky has attracted Kostal Group, a German producer of car and industrial electronics in 2006;
- facilitation of the discussion between local businessmen and the regional government.

Pereyaslav-Khmelnytsky is a small city where beautiful nature and landscape contribute to a good living environment. The previous investment of German Kostal Group is a good example of the competence and cooperation of the city government to provide an advanced business environment. Kostal Group expects a 200% increase of the production capacity and the number of employees on its Ukrainian location, within the next two years. The available industrial land, serviced by adequate infrastructural connections and in the immediate proximity of the city, provides promising opportunities for attracting both indigenous and foreign investment.

A site of land has been identified that is suitable for the establishment of an industrial park of local / regional importance. The proposed industrial park could be combined with a commercial development (the so called shared services center in the southern part). The overall size of the available land is too large to develop all at once, therefore a phasing is proposed. The first phase will be available quickly to allow for an almost immediate start by interested investors.

A conceptual plan is prepared on the land, which is in the ownership of the city. A typical industrial park of local/regional importance in Central Europe has the following spatial parameters:

- a site with 15-40 ha of flat land, without any physical barriers or historical pollution;
- at least 50.000 inhabitants in the catchment area (up to 40-45min. accessibility by car/bus);
- no legal-ownership obstacles;
- the site offers flexibility, allowing a division into sub-sites/plots (0,5-3,5ha) for different owners;
- the plots accommodate industrial productive halls of various sizes (from 1.000 – 8.000 sq.m), or flexible spatial combinations of these;
- all business premises in the industrial park are free standing buildings / halls;
- a concrete plot offered to an investor has to accommodate future extensions of the investor's production facility. This means that the initial development shouldn't be too intensive;
- a step-by-step development ensuring the flexibility and opportunities to adapt to changing demands;
- a maximum distance of ten kilometers to the national and regional road network;
- the possibility of having special services on site (a multifunctional centre with some potentially shared services as a minimum: copying, legal services, catering, retail);
- the availability of infrastructure for an adequate accessibility of both the entire site and the individual building plots;
- a decentralized Park Management Unit (PMU) is recommended but not necessary; this can also be provided for by a city official from a centralized basis (e.g. city hall).

Concluding, the site in Pereyaslav-Khmelnytsky has almost all of the above features that are essential for a successful local / regional industrial park.

1.3. Development vision

The development vision is to create an industrial park that will play a significant role in accommodating the needs of both indigenous and FDI-companies to Pereyaslav-Khmelnytsky. This includes the development of a flexible and attractive local / regional industrial park with the working title **Industrial Park Pereyaslav-Khmelnytsky** (abbreviation IPPCH) with a total size of 23 ha. The IPPCH should attract companies seeking good conditions for the establishment of their production base, including a stable and committed local government.

At this moment it is unknown what companies will locate in Pereyaslav-Khmelnytsky. Therefore the development concept needs to be flexible, meanwhile taking into account the general types of industries that can be expected on this location. Due to the local specifics (rather limited resources of water) it seems to be realistic to develop industries and business services that demand relatively little water. This translates to a spatial concept that can be described as follows:

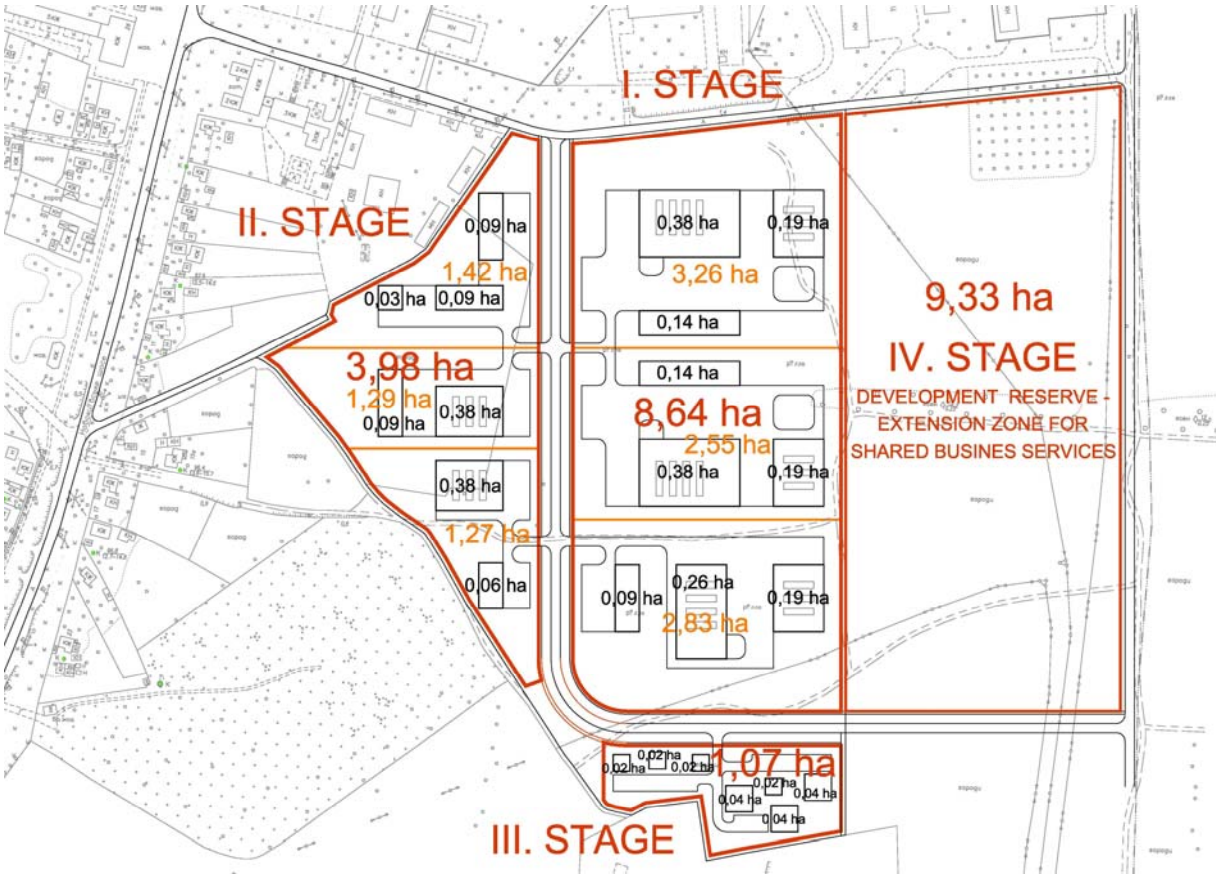
- The start of the development will be in the central part of the site, where infrastructure connections are already in place. It is proposed to assign and promote **phase I** for the development of small- and medium-sized mixed productive investments in light manufacturing industries, logistics, storage facilities, assembly operations and reparation workshops.
- **Phase II** of the industrial park will be developed on the western part of the site. This phase can be promoted to attract investors for the development of small and medium sized investments in light manufacturing industries, logistics, storage facilities, assembly operations and reparation workshops.
- To assign **phase III** to attract investors for the development of a "shared business services center". Optionally, this could be an investment by the city itself. A fully occupied industrial park will usually generate demand for the following services and functions: office accommodation, retail, catering, legal services, accounting services, reprography, and other commercial services that are not being developed with the industrial premises. If the IPPCH is managed by the city itself, then this would also be a suitable location for the Project Management Unit.
- To keep the site of **phase IV** as a development reserve, for which there is no detailed concept proposed at present. The concept should be developed taking into account the types of businesses attracted in the earlier phases, when there is a better insight in the expected demand. This could be a combination of business and commercial functions. It should be taken into account that phase IV has a number of building limitations and protective zones because of the existing power lines on this part of the site.

2. Development phases

A site with a total area of about 23 ha. has been divided in phases to accommodate step-by-step development. At this stage, (with data currently available) we assume that the development will start at the centre of the site (phase I), continue to the west (phase II) and later to the south (phase III). In doing this, we make a maximum use of the existing infrastructure to the site. There's also a reservation for a possible extension, further to the east, that can be developed later (phase IV; 9,33 ha). The planning of phase IV demands an extension of the current infrastructure, and may include the plans for a future bypass.

Phase	Area (ha)	Proposed general function	Not recommended
Phase I	8,64 ha	medium-sized light manufacturing industries, logistics, storage facilities, assembly operations and reparation workshops.	heavy machinery, production and next processing of metals, all segments of chemical industry, water consuming industries
Phase II	3,98 ha	small to medium-sized light manufacturing industries, logistics, storage facilities, assembly operations and reparation workshops.	all industrial functions producing increased levels of noise or air-pollution (close to housing), water consuming industries
Phase III	1,07 ha	shared business services, commercial development.	all medium and heavy industries
Phase IV (reservation)	9,33 ha	to be decided later, depending on businesses in phases I and II	heavy machinery, production and next processing of metals, all segments of chemical industry, water consuming industries.
Total net area	**13,69 ha excl. reservation** **23,02 ha incl. reservation**		

The proposed layout of each part, as well as its position in the overall framework of the site, is shown in the following scheme. This scheme includes the distances that have to be kept to technical infrastructures. There is an uncertainty about the location and/or functionality of the potential underground facilities. It is strongly recommended to make a detailed measurement and mapping of all underground infrastructure before starting the development process.



3. Spatial development framework

The development framework of the site aims to provide a flexible spatial layout, while making optimal use of the available land. When developing and zoning the site, a number of protection areas have to be taken into account. The above shown design has thus taken into account the following parameters:

- good accessibility from the south
- accessibility from the east is difficult at present, this could be improved by the future construction of a bypass
- existing electricity (transformer station) in proximity to the site
- a middle pressure gas pipeline at 250 meters from the site
- both water supply and a sewage system at 240 meters from the site
- a spatial plan that can be developed flexible in time
- air high-voltage cables
- sloping of the site, up towards the east
- proximity of residential zones
- existing water mains close to the site
- existing WWTP
- environmental limits
- environmentally friendly concept.

A key factor of success for the IPPCH is the attraction of a so called 'anchor investor' to either phase I or phase II. This 'anchor investor' is a strong enterprise with a sound brand, being either an indigenous or a foreign company. Usually other investors will then be attracted to the site as well. The profile of the 'anchor investor' often determines the profile of the park as a whole. Thus, it will function as a promoter for the future development of the entire park.

Phase I: description of the spatial development framework

Phase I has an expected functional mix of medium-sized light manufacturing industries, logistics, storage facilities, assembly operations and reparation workshops. Relatively large plots will be adequate for the proposed functions and provide the necessary flexibility. A division in three plots with sizes of 2,55 – 3,26 ha. is proposed in the site plan drawing. It is expected that there will be single storey buildings, with a spatial reserve included in each plot to allow for future extensions.

Given the size of the city and the profile of the municipal economy, it is possible that there will be a focus on relatively small business. If demand indeed focuses on smaller sized plots, the site drawing for phase I allows for flexibility; single plots can be subdivided in a larger number of smaller plots.

Phase II: description of the spatial development framework

Phase II has an expected functional mix of small to medium-sized light manufacturing industries, logistics, storage facilities, assembly operations and reparation workshops. To differentiate with phase I, this phase has smaller plots for potential investors. It is proposed to structure the site of phase II in three plots with a size of 1,25 – 1,45 ha, as shown in the drawing site plan. These plots shall accommodate industrial premises (halls) with a gross floor area up to 3.800 sq.m. To have a bandwidth in available hall-sizes, it is suggested to also include smaller halls of 300, 600 and 900 sq.m. of gross floor area. All industrial buildings within phase II are assumed to be single storey buildings. On each plot some space is reserved to allow for future extensions of the individual facilities. It is assumed that the plots of phase II will be developed after the completion of phase I. This allows for the reinvestment of the revenues from phase I, thus decreasing the need to rely on external funding sources.

Phase III: description of the spatial development framework

A special development framework is proposed for the relatively small sub-site III. It has a size of 1,07 ha. and is on the southern border of the site. Phase III has a good accessibility to the other plots of IPPCH (phases I – III) and is therefore suitable for shared service centers or joint facilities. These services are generally in office buildings, with a maximum of 3-4 storey's allowed. The development of this phase will only take off when there is a demand for shared services. This means that the IPPCH will have to be mostly developed and fully occupied.

Phase IV: spatial development reserve

Finally there is a spatial development reserve identified on the eastern part of the site. It is marked as phase IV and has a size of 9,33 ha. Its development depends fully on the success of the phases I-II and the type of companies / investors that will locate here. For this reason, a detailed spatial plan has not been made yet. Nevertheless, it is expected that the zoning of phase IV will be very similar to the zoning proposed for phases I and II. The type of businesses could be different, because it is possible that a higher level of services has been established in phase III. When making the design draft for this phase, the power lines on site have to be taken into account.

Spatial analysis of sites in Czech cities

A thorough spatial analysis of more than 40 industrial sites in Czech Republic has been made in the framework of this study. To have comparable outputs, this study focused at sites in cities smaller or equal to 25.000 inhabitants. The results of this analysis are shown in attachment No. 1 to this report, including unique mapping material. Our consultancy found the following conclusions as a result of this analysis, which can be used as an argument for the development of IPPCH:

- there is a direct relation between the economical strength of a city and its opportunities to properly develop and maintain an industrial park. Although some exceptions exist, larger cities are stronger economically, and will therefore be able to develop larger parks.
- for the category of cities with 20.000 – 25.000 inhabitants[1], in Central Europe a typical industrial park has a size of between 12,0 and 25,0 ha., which represents approximately 2%-9% of the total city area[2];
- however the map inputs are not showing the current situation, it is known to the consultant that some of the Czech sites developed at the beginning of the 21st century are not yet fully occupied in 2010.

Conclusion

The site is adequate for the development of an industrial park for the city of Pereyaslav-Khmelnytsky. Reasons for this are the economic strength of the city, the flexibility of the plots in the draft plan and the available regional labor force. Also, in recent years the city has been able to attract foreign direct investments.

The development of phase IV is conditionally and will take place only after phases I – III are fully completed. When drafting plans for phase IV, the protection zones below the existing power lines have to be taken into account.

[1] As a typical comparable representants consultant considers examples of the cities of Vyskov, Blansko, Havlickuv Brod, Zdarn. Sazavou, Krnov, Louny – for details pls refer to attachment No.1. Of course there is also exceptional example of the city of Koprivnice with industrial site with more than 80 ha or village Nosovice where Hyundai developed its own factory at the site with more 100 ha. These exceptional examples had not been taken into account.

[2] Compare:

phase I-III=13,69 ha

phase I-IV=23,02 ha

Pereyaslav-Khmelnytskyi territory=3.152 ha

ratio=(13,69/3.152) * 100 = 0,43%

ratio=(23,02/3.152) * 100 = 0,73%

4. Infrastructure development needs, requirements and assumptions

The energy demand and consumption has been calculated for following development stages and parameters:

Phase	**Size** (ha)	**GFA/site size** (%)	**Gross floor area of production and business facilities and storage halls** (sq.m.)	**Estimation of people employed**[3] (person)[4]
Phase I	8,64	23%	19.600	170 – 180
Phase II	3,98	28%	11.200	75 – 85
Phase III	1,07	19%	6.000	150 – 190[5]
Semitotal I - III	**13,69**		**32.800**	**395 – 455**
Phase IV	9,33	20%[6]	18.660	170 – 180
Total (incl. IV)	**23.02**		**51.460**	**565 – 635**

Other technical assumptions for all phases 1-3:

- All sites are considered "dry sites" as for the consumption of water. Production industries that are mainly "water-based" are not recommended due to a lack of water sources (for example paper/pulp production, iron/steel production, chemical industries, similar types of industry heavily relying on the use of potable and industrial water);
- It is assumed that the production facilities will have no special / extremely high demand for gas or electricity. Small / medium-scaled businesses in manufacturing, assembly and storage are expected only;
- All municipal sewage water of the developed IPPCH will be properly treated in the existing WWTP which is located 5 km. away from the site. If one of the production facilities will emit industrially polluted water, a special industrial WWTP will have to be located at the IPPCH or at the investor's own site.

4.1. Gas

Demand for gas						
Formula	**Qmax= size (ha) x average relative consumption in m3/hour**					
	ha	avg estimated consumption m3/hour, ha	number of working hours	number of working days	flexibility adjustment factor	approx. estimated total demand for gas m3/year[7]
Phase I	8,64	60	8	260	1,1	1.186.000
Phase II	3,98	60	8	260	1,1	546.000
Phase III	1,07	40	8	260	1,1	98.000
Semitotal I - III	**13,69**					**1.830.000**
Phase IV	9,33	60	8	260	1,1	1.281.000
Total (incl. IV)	**23.02**					**3.111.200**

[3] rounded-off

[4] assumptions based on experience from Central Europe

- logistic, warehousing and less labor intensive productions: 15 person employed/ha
- assembly, electronic, light machinery, processing: 20 persons employed/ha

[5] expert estimation

[6] expert estimation, taking into account power lines and their protection zones

[7] rounded-off

Conclusion

The demand for gas at the IPPCH is expected to be about 1.8 million m3 / year for the phases I – III. This equals to approximately 800 m3 / hour. When including phase IV, the total expected demand for gas is about 3.1 million m3 / year. This equals to approximately 1360 m3 / hour. Due diligence has shown that, according to city officials and utility providers, a gas quantity of 800 m3 / hour can be delivered. This means that it is probable that enough gas will be available for the development of phases I – III. When the development of phase IV starts, an upgrade of the existing gas supply network will be needed.

A potential gas connection point is available at the eastern part of phase IV, where an existing gas reduction station is in place. A new connection will have to be made between this point and the proposed site of phases I – III.

4.2. Electric energy

Demand for electric energy						
Formula	**Qmax= size (ha) x average relative consumption in KW/ha**					
	ha	avg consumption KW/ha	number of working hours	number of working days	flexibility adjustment	total demand for electricity MW[8]
Phase I	8,64	100			1,1	0,95
Phase II	3,98	100			1,1	0,44
Phase III	1,07	60			1.1	0,07
Semitotal I - III	**13,69**					**1,46**
Phase IV	9,33	100			1,1	1,03
Total (incl. IV)	**23.02**					**2,49**

Conclusion

The demand for electricity at the IPPCH is expected to be about 1,46 MW for the phases I – III. When including phase IV, the total expected demand for electricity is 2,49 MW. Due diligence has shown that, according to city officials and utility providers, an electrical power of 30 MW can be delivered. This means that enough electrical power will be available for the development of phases I – IV.

A potential electrical connection point is the existing transformer station to the south of the proposed site. A new connection will have to be made between this point and the proposed site of phases I – III.

4.3. Water

Demand for water (not industrial)						
Formula	**Qmax= size (ha) x average relative consumption in l/s, ha**					
	ha	avg consumption l/s, ha	number of working hours	number of working days	Flexibility adjustment	total demand for water l/s[9]
Phase I	8,64	0,8			1,1	7,60
Phase II	3,98	0,8			1,1	3,50
Phase III	1,07	0,6			1,1	0,70
Semitotal I - III	**13,69**					**11,80**
Phase IV	9,33	0,8			1,1	8.20
Total	**23.02**					**20,00**

[8] rounded-off

[9] rounded-off

Conclusion

The expected demand for water at the IPPCH is expected to be about 11,80 l/s for the phases I – III. This equals to approximately 42,5 m3/hour. When including phase IV, the total expected demand for water is about 20,0 l/s. This equals to approximately 72,0 m3/hour. Due diligence has shown that, according to city officials and utility providers, a water supply of 5 m3 / hour can be delivered. This means that insufficient water will be available for phase I. A new artesian well (>180 meters deep) will have to be drilled with a capacity of 40 m3/hour for the phases I-III.

A potential water connection point is west of the site. A new connection will have to be made between this point and the proposed site of phases I – III.

Depending on the distance from an existing fire station to the proposed site, a reserve for fire water may be needed. When a fire station is within 2 km. distance, no provisions have to be made. When the fire station is further away, a reserve for fire water of 6,0 l/s has to be made. In this case, the capacity of the artesian well will have to be 46 m3/h for phases I-III. A final technical solution for delivering fire water to the site still has to be decided.

4.4. Sewage water

Sewage water calculation						
Formula	**Qmax= size (ha) x average relative usage in l/s, ha**					
	ha	avg usage l/s, ha	number of working hours	number of working days	Flexibility adjustment	total demand for water l/s[10]
Phase I	8,64	0,8			1,1	7,60
Phase II	3,98	0,8			1,1	3,50
Phase III	1,07	0,6			1,1	0,70
Semitotal I - III	**13,69**					**11,80**
Phase IV	9,33	0,8			1,1	8.20
Total	**23.02**					**20,00**

Conclusion

The assumption behind the sewage water calculation is that all water that is being brought into the site will be used, and should thereafter be treated properly by a sewage system and a waste water treatment plant (WWTP). The expected amount of waste water from IPPCH is 11,8 l/s for the phases I-III. This equals to approximately 340 m3 / day of waste water with an 8 hour shift. When including phase IV, the expected amount of waste water is about 20,0 l/s. This equals to approximately 576 m3 / day with an 8 hour shift.

Due diligence has shown that, according to city officials and utility providers, a WWTP is available at a distance of 5 km. from the site. This WWTP has a capacity of 5000 m3 / day and is currently used for the treatment of 2000 – 3000 m3 / day. This means that the existing WWTP has sufficient capacity to treat the waste water that will be produced at the industrial estate, including phases I-IV. This does not take into account other development projects in the city. Also, it is assumed that no industrially polluted water is included in the total amount calculated. This water has to be treated properly by companies themselves.

A potential sewage system connection point is west of the site. A new connection will have to be made between this point and the proposed site of phases I – III.

[10] rounded-off

4.5. Surface water

Calculation of surface water for phases I-IIII

Q_{max}= size[11] phase I-II-III (ha) x 0,6 x 60l/s = 13,69 x 0,6 x 60 = 493 l/s

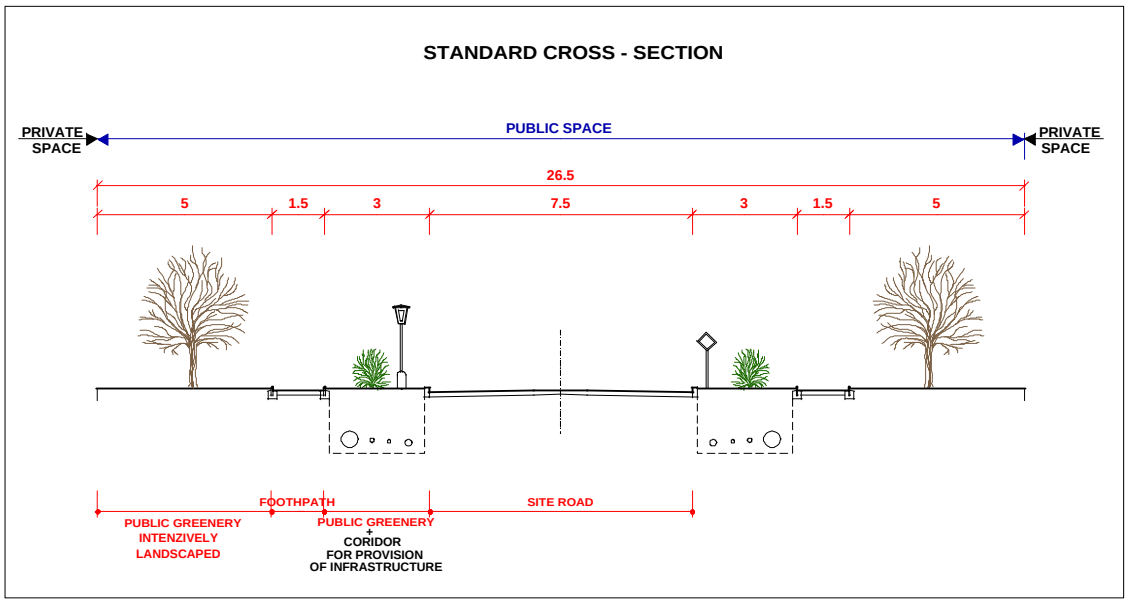
Qtotal= size total (I-II-III-IV) x 0,6 x 60 l/s = 23,02 x 0,6 x 60 = 829 l/s

Conclusion

The paved and built up areas within the IPPCH will be large, meaning that the needed discharge of surface water after heavy rainfall will also be sizeable. This water should be treated properly. A partial retention (up to 5.000 m3) of the surface water could be created on the western part of the site in the form of a retention lake, which will also be a barrier to the existing residential area to the west. This retention facility is on the lowest point of the site, and will be designed in such a way that it is able to collect rain-fall water from sites I-III created by 50-60 min of heavy rainfall. Secondly, a part of the surface water must be treated by the private companies at their own sites (about 20 %).

Remaining surface water has to be discharged to the closest surface sewage. It is expected that after retention the volume of surface water from the fully developed IPPCH (phase I-III) can still represent some 75 l/s and will be taken from the site with gravitation pipes (Dn 600-800mm) to the sewage point west of the site.

4.6. Standard cross-section



Conclusion:

A spatial configuration of a cross section is proposed to be able to maintain the public space of the industrial park in the future. Good maintenance is needed to preserve the quality of the park and thus keep it attractive for future investors. The layout (e.g. width) of the road and the footpath can be adjusted to local road standards, safety regulations or other local rules. If the road crosses through the IPPCH, a footpath is recommended on both sides of the road. If it's at the edge of the park, a single-sided footpath is sufficient. The so called "public space" usually remains in public ownership and is maintained by the city itself (highlighted in blue on the picture above).

[11] Size of the paved parking places + paved roads + paved footpaths + total size of the roofs of the production facilities and other buildings, approx 60% of the size of site is considered as a built-up area

5. Bill of development quantities

The table below roughly and provisionally shows the public investments that will be needed to realize phases I-III of IPPCH, based on the calculation of the development quantities. The breakdown of quantities into the phases is done according to expected approx. ratio 63:29:8, taking into account the sizes of the different phases. The assumption is made that the public sector will be responsible only for back-bone infrastructure and public spaces development; the investments in building plots will be the matter of private investment.

The breakdown of quantities is an estimation that will turn out to be different in reality. Yet, it is sufficient for the conceptual thinking in the current stage of development; it provides the city with a clear picture of the investments that are needed for the initial development. The calculation also shows how the initial costs could be divided among the investors or tenants of different phases. Final remark: additional investment actions realized outside of the development site of IPPCH are not included in the bill of quantities[12].

Bill of quantities						
Item No.:	**Item**	**Unit**	**phase I**	**phase II**	**phase III**	**total**
			8,64 ha	*3,98 ha*	*1,07ha*	*13,69 ha*
			63,1 %	*29,1 %*	*7,8 %*	*100%*
1.	Purchase of the land	ha	0	0	0	0
2.	Public paved site roads w. 7,6 m incl. road signs	sq.m	3071	1414	390	4.875
3.	Public parking places incl. road signs	sq.m	not applicable			0
4.	Public footpaths w. 1,5m incl. orientation system	sq.m	614	283	78	975
5.	Public green strips w. 3,0m incl. landscaping	sq.m	4505	2074	572	7.150
6.	Public green barriers	sq.m.	one location			1.500
7.	Backbone infrastructure - gas network incl. sub-connection points, Dn 150-200 mm	m	693	319	88	1.100
8.	Backbone infrastructure - water network inc. sub-connection points, Dn 300mm	m	725	334	92	1.150
9.	Backbone infrastructure - electric network incl. sub-transformer station	m	772	355	98	1.225
10.	Backbone infrastructure - sewage network incl. sub-connection points, Dn up to 600 mm	m	725	334	92	1.150
11.	Backbone infrastructure - surface water network/drainage incl. sub-connection points, Dn up to 800 mm	m	110	51	14	175

The table below shows the bill of quantities regarding the land to be sold to investors and the land alongside the back-bone infrastructure which should remain in public ownership.

[12] E.g. mainly: road crossing, roundabouts, bridges, necessary upgrade of the existing WWTP, necessary upgrade of the existing transformer station, necessary upgrade of the existing gas reduction station , necessary upgrade of the existing water sources and other similar additional investment projects caused by development out of site territory. To assess and to quantify this investment seriously a more detailed study is needed.

Bill of quantities – land for sale v. land to remain in public ownership						
Item No.:	Item	Unit	phase I	phase II	phase III	total
			8,64 ha	*3,98 ha*	*1,07ha*	*13,69 ha*
			63,1 %	*29,1 %*	*7,8 %*	*100%*
1.	Land for sale to investors	ha	8,64	3,98	1,07	13,69
2.	Land to remain in public ownership (roads)	ha	0,31	0,14	0,04	0,49
3.	Land to remain in public ownership (footpaths)	ha	0,06	0,03	0,01	0,10
4.	Land to remain in public ownership (green road strips)	ha	0,45	0,21	0,06	0,72

6. Development costs

The table below shows the approximate initial investments that have to be done by the public sector to meet the standard requirements of the investors coming to the park[13].

Bill of quantities - initial public investment					
Item No.:	Item	Unit	Units needed with all plots fully developed	unit price[14] (EUR)	total price (EUR)
1.	Purchase of the land	ha			0
2.	Public paved site roads incl. road signs	sq.m	4.875	60	292.500
3.	Public parking places incl. road signs	sq.m	0		
4.	Public footpaths incl. orientation system	sq.m	975	30	29.250
5.	Public green areas incl. landscaping	sq.m	7.150	15	107.250
6.	Public green barriers	sq.m.	1.500	5	7.500
7.	Backbone infrastructure - gas network incl. sub-connection points, Dn 150-200 mm	m	1.100	120	132.000
8.	Backbone infrastructure - water network inc. sub-connection points, Dn 300mm	m	1.150	210	241.500
9.	Backbone infrastructure - electric network incl. sub-transformer station[2]	m	1.225	150	183.750
10.	Backbone infrastructure - sewage network incl. sub-connection points, Dn up to 600 mm	m	1.150	250	287.500
11.	Backbone infrastructure - surface water network/drainage incl. sub-connection points, Dn up to 800 mm	m	175	250	43.750
	total EUR				**1.325.000**

13 The cost of a new artesian well and the retention lake are not yet taken into account

14 Based on approx. Central European unit prices, level 2009-2010. To be recalculated according to local price level with inclusion of all additional investment specified in the text above.

It is estimated that approx. 70 – 80 % of the total cost should be spent to open the sites of phase I. This requires an investment of 0,9 – 1,1 mil. Euro, not taking into account additional investments that will be needed around the site and the cost of the retention lake and artesian well. This investment will produce a fully serviced site of more than 126.000 square meters that can be sold to investors.

7. Feasibility report, risk analysis and follow up actions identification

The aim of this chapter is to identify the potential risks of possible development and propose a combination of measures to minimize them. The risks are evaluated only from the point of view of the technical and environmental aspect. There are certainly other risk portfolios at business, political, institutional and organizational level, but these are not managed in this concept.

No. :	Specification of risk	Level[15]	Proposed measures
1.	Uncertainty if the gas supply will be sufficient for phases I-III.	C	Evaluate / measure the use of gas when phase II is halfway finished. Include additional investments in the budget if necessary. Discuss total consumption of the park and possible methods of upgrading the network with administrator of town gas pipelines.
2.	Insufficient information about the underground infrastructure on site.	B	Perform a technical study on on-site infrastructure before the start of the development.
3.	Air/Noise pollution in relation to the existing housing on the western part of the site.	B	Heavy industry should be avoided at the site. For specific types of lighter industry, an air and noise spread study might be required to avoid negative impact on the nearby housing area. The prevailing direction of the wind should be taken into account.
4.	Pollution of surface water	B	Surface water should be treated in a waste water treatment plant before being discharged in a river. Industrially polluted water has to be cleaned by companies themselves, this should be regularly checked and enforced by city officials.
5.	Soil contamination	C	Any possibility of local soil contamination must be eliminated by organizational regulations and construction alterations in the industrial areas. Companies must adhere to the system for handling waste; this should be enforced by city officials.
6.	Potential risk of contamination of groundwater.	B	Foundations should correspond to hydrogeological conditions. All the functional areas of the industrial site must have paved surfaces. Substances harmful to water should be stored in special purpose areas only in the necessary amounts.
7.	Industrial accidents	B	Prepare accident measures plan for the park management and require accident planning from all investors entering the IPPCH.

[15] Level A: highest risk category (project as whole is jeopardized if proposed measure is not taking into account properly)

Level B: risk still important, but lower than level A

Level C: lowest risk