MORSTROYTECHNOLOGY

Client: *Administration of the Municipality "Kingisepp Municipal district" of Leningrad region*

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PROJECT PART-FINANCED BY THE EUROPEAN UNION

Baltic Sea Region INTERREG III B

Narva River Water Routes ESTONIA · RUSSIA

The present document is developed within the "Narva River Water Routes" project financed by the European Union

PRE-DESIGN STUDY OF YACHT STATION'S LOCATION NEAR INFLOW OF ROSSON' RIVER (KINGISEPP DISTRICT OF LENINGRAD REGION)

Saint-Petersburg

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PRE-DESIGN STUDY OF YACHT STATION'S LOCATION NEAR INFLOW OF ROSSON' RIVER (KINGISEPP DISTRICT OF LENINGRAD REGION)

Director General

Marine Construction and Technology Ltd. Co

M.Y. Nikolaevsky, Ph.D

Saint-Petersburg

2008

ОГЛАВЛЕНИЕ

1 Introduction

Working out of the "Pre-design study of yacht station's location near inflow of Rosson' river (Kingisepp district of Leningrad region)" includes 2 stages.

The first stage is technical and economic analysis and definition.

Under the second stage was made the general layout, architectural and construction concept of the complex and definition of the economical performance for the chosen variant of location.

Goals of the work are:

- definition of the most convenient place of yacht station's location,
- definition of structure and specification of the main building projects,
- becoming of basic data, technical conditions and requirements about building projects location, conditions of energy connection, utility system and communication connection,
- preliminary estimate of investments costs and investments efficiency of project's realization.

2 General tendencies of tourism development in Baltic Sea region

Water transport is the cheapest kind of transport (about 10% of economy on average). Support of water infrastructure is much cheaper than roads construction. In addition water transport is the ecologically cleanest. It is proved that water transport pollutes least of all.

For example, in accordance with project's INTRASEA [1] researches, tourist's potential of domestic water transport in Baltic region's countries is used not fully now. So in Finland, that is called "the country of lakes", only 10% (440 th. people) of passenger transportation by water transport is making on rivers and channels, and the rate of domestic waterways in total volume of passenger transportation is not significant.

In 2006 in Russia 14 mln. people were transported by domestic water transport that is not comparable to volumes of highway transportation, railways and urban public transportations.

In combination with growing interest to ecological tourism and reach natural resources of Baltic, there are all conditions for father water tourism development.

Sailing type of water tourism (tendencies are found out according to "Technical and economic feasibility study of tourist route (-s) on district: Ivangorod (Narova river) – Rosson' river (children's recreation camp) – Tichoe Lake". This research was worked out under the project «Narva River Water Routes»).

This type of water tourism becomes more popular between high-income population of Russia. But there are many factors that slow down the development of that tourism. As an example we can call the condition of necessary infrastructure's presence. Development of yachting can't be without small ports, quay walls, filling stations, fairway marking etc.

Nowadays there are in operation 3 yacht stations in Leningrad region and 7 yacht stations in Saint-Petersburg. There are no statistics of yachts quantity in the region.

On the one hand, small ports infrastructure in the Russian part of Gulf of Finland is ill-developed. On the other hand, population of Russia likes yachting more and more. So, it is usual situation when yachts that were bought by Russians go under the foreign ports. This allows for the owner to decrease costs dues of entrance duty and supplies of vessel. At the same time, water transportation is not limited in any way.

Transportation by domestic waters of Russian Federation, especially for the foreign vessels, is a big problem for yachting in Leningrad region. There are many limitations such as compulsory pilotage of vessels (means that owner of foreign vessel for transportation between domestic waters of Russia has to pay for pilot service that is expensive and usually is not approachable for yachtsmen).

But without regard to all difficulties, yachting in Leningrad region and Saint-Petersburg is developing very quickly. Number of yachts increases, yacht stations are in construction, and interest of population for this kind of sport grows.

[1] http://www.intrasea.org/

Potential of Leningrad region for yacht tourism development is huge. There are many rivers, lakes and channels on the territory of Leningrad region. These waterways were used for commerce, cultural and other kinds of connection at all times. Eldest trade route "from the Varangians to the Greeks" came throw rivers of the region. Large rivers, lakes and channels form river systems that are navigable through 2054 km including 600 km of long-distance waterways – Volga-Baltic Route (Baltic Sea, Gulf of Finland, Neva, Ladoga, Svir', Onega), Saimaa channel. There are 1800 large and small lakes on the territory of Leningrad region: Lake Ladoga (18400 km^2), Chudskoe Ozero (2611 km^2), Lake Onega (9890 km^2), a system of lakes and rivers Vuoksa (95.6 km^2). Rivers routes connect many cities and villages of Leningrad region.

During 2000-2006 there was stable increasing of number of organized tourists visiting Leningrad region. Dynamics (Illustration 1) allows supposing further growth of tourists of Leningrad region.

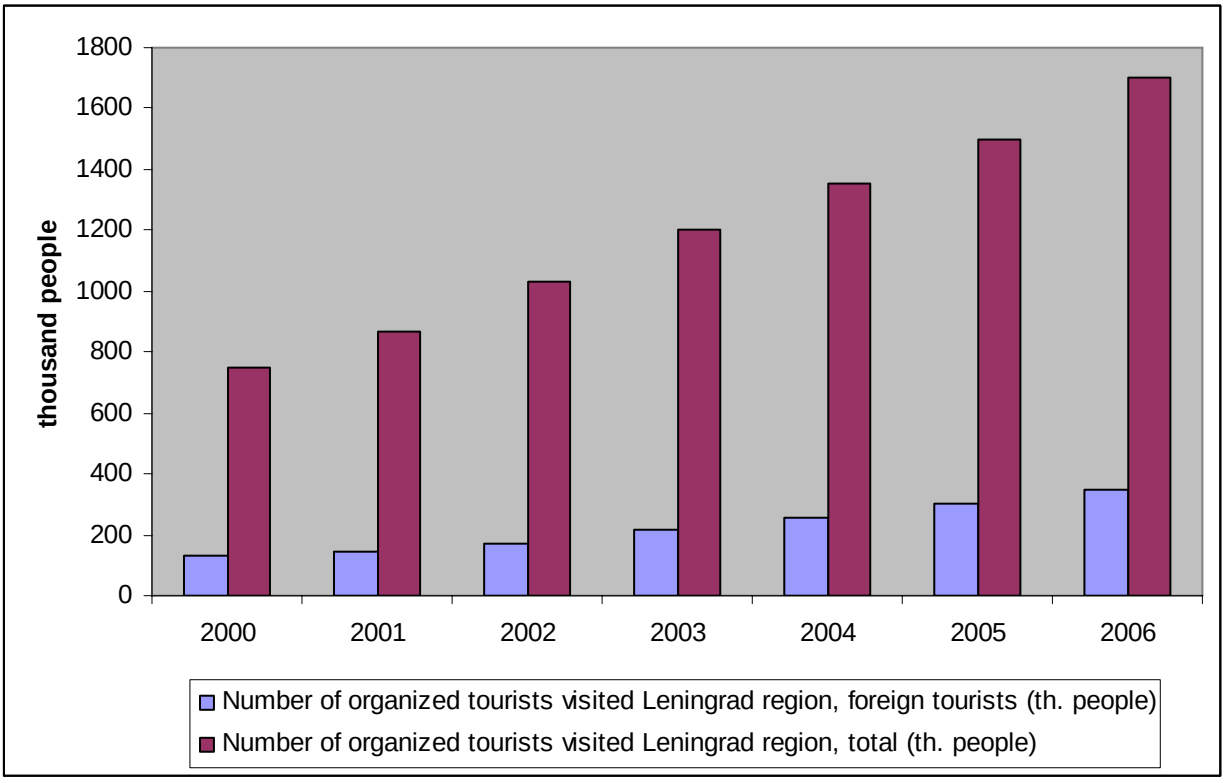


Illustration 1 Growth of quantity of organized tourists visiting Leningrad region, 2006-2006

There are 3 large passenger and commercial ports on the territory of Leningrad region: Vyborg, Vysotsk, Ust'-Luga. River ports are in Schlusselburg, Priosersk, Podporoje, Voznesen'e. River berths are in operation in Lodeynoe Pole, Svir'story, Mandrogy, Staraja Ladoga. Quay walls are in Primorsk, Ivangorod and in the villages Vladimirovka, Sjas'story. There are yacht clubs in Novaja Ladoga and Vyborg.

The main barrier for water tourism development is ill-developed infrastructure or lack of infrastructure. That means lack of berthing facilities, in places of the rest and stations there are no toilets, cafes, hotels and there is sometimes bad communication.

There is other problem today – place of station's location is in border zone. If tourists want to visit locality in border zone, they have to draw up special admission for entering to the territory. Such admissions can be individual or group. Time of examination of application for admission's drawing up is between 10 and 30 days. In addition tourist should have document of identification. Foreigners should have a migration card.

These rules make development of yacht tourism more difficult. But in case problems with requirements of FSB border administration will be solved, there will be no obstacles for water tourism development in the current region.

3 Location of the yacht station

3.1 Existing locations suitable for yacht station at Rosson' riverside

According to the Technical Assignment, the investigation of the area allowed to define 3 possible locations for yacht station at the bank of Rosson' river: Venekula village, Saarkula village and State Educational Institution for Additional Children Education "Child's Recreational-Educational Center "Rosson"" (SEI ACE CREC "Rosson", further called as "Rosson" Center for short).

3.1.1 Venekula village

Translated from Estonian language, Venekula means "Russian village". The village consists of about 100 houses, which are not inhabited on regular basis and are used for recreational purpose. The village is located at 1 km distance from the place where Rosson' inflows into Narova river. The village has good both hinterland and water approaches: the village is connected with asphalt road, only small segment of road within the village is soil-covered. Tourists usually set afloat their water crafts at this site.

The route to the village is the following: federal highway E20 Saint-Petersburg – Tallinn, in 10 km from Kingisepp towards Ivangorod to turn in direction of 1st of May village (road to Ust-Luga), in 30 km to turn in direction to Vanakula village, in 7 km – Venekula village and "Rosson" Center.

There is also a soil-covered country road from Ivangorod to Venekula village, which is exploitable in summer. This road is suitable only for off-roaders.

Illustration 2 Venekula village

Meadow around the shore is used for parking and storage place for watercrafts. There is no infrastructure related to water tourism in the village, there is no even potential site to locate it.

Illustration 3 Sheds for watercrafts in Venekula village

3.1.2 Saarkula village

Saarkula village is located on the opposite from Venekula, on the left riverside (if to move from Narova). The village consisting of only 30 houses has a very small resident population. The majority of the houses is used for recreation. Hinterland approach to the village is possible only by off-road vehicles.

The route to the village is the following: federal highway E20 Saint-Petersburg – Tallinn, in 10 km from Kingisepp towards Ivangorod to turn in direction of 1st of May village (road to Ust-Luga), in 40 km after passing the bridge over Rosson' river to turn to the forest and drive 20 km to the village.

In regard to water tourism, this location is interesting for those tourists who want to get to sandy 12-km Finnish Gulf coast located in 1 km from the village. There are no berths or any public infrastructure in the village.

Therefore, the village does not have suitable approaches and infrastructure, and is not attractive for location of yacht station.

Illustration 4 Saarkula village (view from the side of Venekula village)

3.1.3 State Educational Institution for Additional Children Education "Child's Recreational-Educational Center "Rosson"" (SEI ACE CREC "Rosson", further called as "Rosson" Center for short)

"Rosson" Center is located in close vicinity to Venekula village, therefore the route to these locations is identical. Child's recreational campus built in 1970-80s, allows to accommodate 400 people and occupies the area of 10 ha. The Center is oriented at schoolchildren and is fully booked during school holidays. In low season it accommodates adult groups. There is everything necessary for adult recreation in the Center, the management is ready to service adult groups in summer.

Illustration 5 The central alley of "Rosson" child's campus

The following buildings are located on the territory of "Rosson" Center:

1. Administration (office) building

2-storey building includes management offices, meeting hall, medical center, showers for 20 persons and 9 comfortable living rooms.

2. Central pavilion

The Central pavilion is the largest building of "Rosson" Center. This building includes restaurant, bar, library, dancing hall, gym, table tennis room, recreational rooms, radio cabin and a meeting room equipped as cinema with 380 seats.

3. Living quarters

There are four 3-storey accommodation buildings in the campus. Every floor has spacious hall, 8 rooms for 4 persons and 2 rooms for 2 persons, total capacity of the floor is 36 persons. Every store is equipped with showers and toilets. There are also drying cupboards for clothes and foot wear. Every building is equipped with cable television and means of communication.

4. Sport grounds

A lot of sport activities and public events are held at open sport grounds, including football, basketball and volleyball fields, lawn tennis court. Motorboat station at Rosson' river can be used for paddling and canoeing.

5. Bathhouse

The campus has modern bathhouse and sauna complex with swimming-pool, relaxation room with fireplace.

6. Embankment

The embankment has approaches both for pedestrians and motor vehicles. Motorway connects the embankment and the campus, with small segment of the road located in the forest.

Illustration 6 Rosson riverside

7. Beach

Location of "Rosson" campus allows spending time at 3 comfortable beaches, 2 of which are located directly at Rosson' riverside and the third one – on Finnish Gulf coast, where camping site is based. This beach is essentially popular.

8. Camping

Camping operates in summer months and allows accommodating 50 persons. It is located on the coast of Finnish Gulf, close to Tikhoe lake (Quiet lake). The camping has modern draftproof tents, field camp with all necessary equipment for cooking and dining, summerhouse (pavilion) for meetings and beach.

3.2 Choosing the best location for the yacht station

Investments in villages Venekula and Saarkula are not very attractive because building of infrastructure and road approaches will require substantial capital expenditure.

The research allows concluding that the best location of the yacht station would be "Rosson" Center, which already has some infrastructure. In this case investments in infrastructure development will be the lowest.

"Rosson" campus may be attractive for tourists both as recreational site and as a place to change from water transport to road transport and vice versa. There accessible road approaches to coastal area.

At the same time, the main characteristics of the project were defined regardless to exact location. This allows changing the location of the station at further stages of designing process.

Hydrometeorological conditions at the estuary of Rosson' river are advantageous for construction of yacht station. Water zone of perspective yacht station is protected from wind from Baltic coast, the river flow tends to change speed and direction slightly, which provides safe conditions for watercrafts' berthing.

The main disadvantage of the location is insufficient depths to receive sailing keel yachts. The most recommended type of watercraft for yacht tourism at Rosson river are dinghies, compromises yachts and twin-hull tourist boats. These vessels should be equipped with small outboard engines.

4 Building projects of yacht station

4.1 List of building projects

The current section includes main building projects of typical yacht station. Parameters, necessity and quantity of these building projects will be defined upon the project study.

Structure of building projects:

1. Operating water area with channel.
2. Floating pontoon for centerboard and motor boats (8 yacht station places) with service stations for energy and water supply.
3. Handling gear (if necessary).
4. Repair boathouse.
5. Administrative building (direction, guest's rooms, showers, WC, laundry, café).
6. Parking.
7. Fencing and checkpoint.

4.2 Description of main building projects

In accordance with primary depths data in place of marina's location, the depths of operating water area and channel are guaranteed.

Hydrometeorological data analyses of yacht station's place shows that for current types of yachts it is not necessary to have protecting structure.

4.2.1 Hydraulic buildings

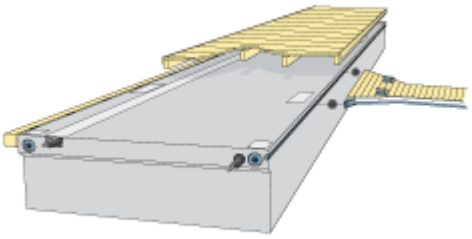
List hydraulic buildings of yacht station will include:

- Floating berth.
- Slipway (if necessary).

Floating berth

Floating berth for yachts and motor boats is designed for 8 yachts and has service stations for energy and water supply. It is recommend to use reinforced concrete pontoon. Such pontoon is the latest achievement in the field of floating berths buildings construction. Reinforced concrete pontoons are reliable and don't need special care. These pontoons have high acceptable loading and long time of exploitation.

Main pontoons parameters:



Length: up to 12 m

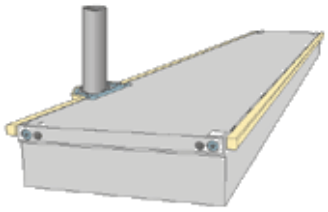
Width: 2,7 m (2,4 m – width of concrete float)

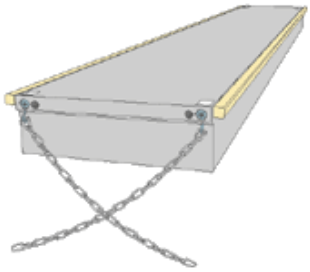
Net loading: 4,8 kN/m^2

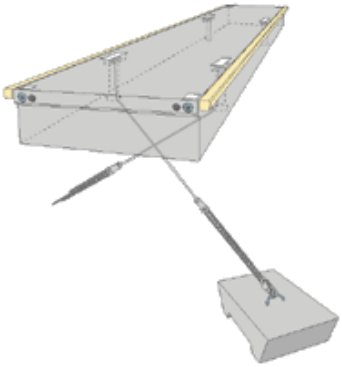
Height of board above water: 0,48 m (0,45 m with conduit)

Pontoons are made from reliable reinforced concrete floats, they are jointed with each other by steel bracings. The junction is possible at an angle and throughout the length.

As an additional equipment we can call different cover for concrete, wood aboveboard flooring, conduit for water and electricity giving, special rail for junction of mooring fingers to pontoon. Junction of pontoons on place of mounting is making by poles, chains and Seaflex system.





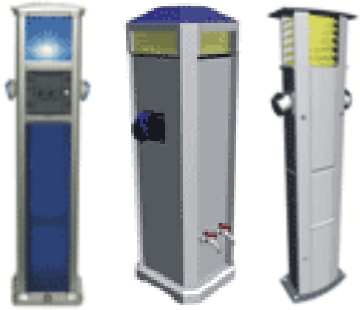


Cost of 1 pontoon's section is 10980€. It is planned to moor 3 section.

In addition, berths are usually packaged by service stations and bitts to make vessels station on marina convenient and safe.

Service stations light the berths in the night-time, provide electricity- and water supply for vessels.

Cost of 1 service station for water and electricity supply ROLEX is 1055€.



It is planned to moor 1 unit of service station.

Bitts for yachts and motor boats with different tonnage:

Slipway

Slipway (width – 10 m) is designed for launching of centerboard boats, motor boats and waverunners.

Construction of slipway can be made like filling of break stone in different factions in "wedging", on which the reinforced concrete cover of slipway is making. Launchways are making with slope from 1:4 to 1:8. Length of launchway is more than 2,5 times longer than length of the vessel. Vessel's loading is mechanical and is making by special wheel-mounted or roll-mounted trucks. As an example, one type of such trucks is hydraulic trailer. These trailers can have different capacity.

Main difference of hydraulic trailer by the side of vertical boat lift is that it costs 100000 Euro. In addition, for loading you don't need special place and pile-supported trestle that should be designed for high vertical loading. This decision of vessel's loading allows decreasing investments costs much.

On the other hand, it is necessary for slipway's construction to have big territory, significant depths to make planned slope and water area for launchways.

Abutments of floating berths

Abutments of floating berths are making like filling of mined rock with reinforced concrete ground with stairs (stairs leads to gangway bridge to floating berth).

4.2.2 Onshore facilities

Repair boathouse, area 100 m^2, is designed for minor repair. It is located over the some distance from floating berth, near parking and potential place of loading gear.

Administrative building is a single-floor building, area 160 m^2. There are in building: lobby, guest's rooms (7x10 m^2), showers (2x3 m^2), WC (2x3 m^2), laundry, café (25 m^2), direction and back regions.

Checkpoint and fencing – a single-floor building for security, 4x4 m. Fencing could be metal sections on stony poles or complete stone fence from tuff setting.

Open parking for 8 cars – asphalted ground with graphical laying of parking places. Area of the parking – 225 m^2.

5 Utility systems and approximate resources demand

5.1 Water supply and canalization

Platform of yacht's moorage will be equipped with the following networks:

– drinking water supply;
– fire fighting water conduit;
– domestic sewage.

5.1.1 Water supply

Water of drinking quality is used for fueling, for cold water needs of marine's visitors, for shower area, for water application of the territory, for hotel, for café, for laundry.

Settlement water consumption is define according to norms of water supply with "Construction norms and regulations" 2.04.01-85* (the supplement 3) proceeding from data that a maximum quantity of tourists can make 32 persons (is possible simultaneous station of 8 yachts, the maximal number of passengers of each yacht - 4 persons).

In that way, settlement water consumption will be 1,2 thousand m^3/year (8 m^3/day), it includes:

- water bunkering of yachts – 240 m^3/year,
- other water consumption – 960 m^3/year.

Water supply can be organized due to an available reserve of "Rosson'" Center. Now water consumption of the Center is 52 m^3/day, and licensed water consumption – 200 m^3/day.

Internal fire suppression defines at the rate of 2 streams – 5 l/sec, external fire suppression defines as 40 l/sec. It is a subject to specification on following design stages.

5.1.2 Domestic sewage

The total amount of domestic sewage makes 960 m^3/year (6,4 m^3/day). It is supposed to connect with sewer system of camp "Rosson'". The domestic sewage flows from the complex to local clearing constructions of full biological clearing with dump in water area.

5.1.3 Production sewer system

Production sewer system is formed in the form of flowing from café. Fat collectors are established at the outlet of flowing from café. After fat collectors flowing goes to system of domestic sewage on biological clearing constructions.

System of water disposal of "Rosson' " Center.

System of canalization – combined. There is no storm sewage system, disposal of melt and storm water is carried out on a relief. Domestic and industrial sewage go on

clearing constructions by sewage pumping station and after clearing in dawn-pressure service are dumped in the river Rosson'. Emission is coastal, disseminating.

The construction of emission consists of collector in diameter of 800 mm with the subsequent change of diameters through 3 m (from 750 up to 350 mm) and installations of a nozzle of active action.

Clearing constructions of "Rosson'" Center.

Clearing constructions represent station of biological clearing; estimated power of this station is 200 m^3/day. They were put into operation in 1988. The structure of clearing constructions consists:

- balance tanks;
- receiving-distributive camera with a manual lattice;
- aerotanks with aerators and airlifts;
- final settling tanks;
- a distributive tank;
- contact tanks;
- sandy filters;
- slit platforms;
- slit pump station.

Clearing constructions possess sufficient reserves of capacities. Estimated power is 200 m^3/day, loading in fact is 128, 8 m^3/day.

Clearing of flows made up to a degree of maximum concentration limit of dump in a reservoir with fishery significance.

Table 1 Approximate need for water resources

№	Name	Expenses	
		m^3/day	thousand m^3/year
1	Drinking water consumption from drinking water supply system	8	1,2
2	Domestic sewage	6,4	0,96

5.2 Power supply

In the present research connection to an existing source of electricity supply is stipulated in territory of camp "Rosson'".

Electric loadings

The main consumers of the electricity power of marina are:

- Production equipment of working rooms;
- Installations of electrical heating of buildings;

- Hot water supply;
- Power (including ventilating) equipment and internal illumination of buildings;
- Electric equipment of a check point;
- External illumination;
- Yachts.

Specific settlement electric loadings are define according to the document "Specifications for definition of settlement electric loadings of buildings, cottages, micro districts (quarters) of building and elements of a city distributive network. Changes and additions of section 2 "Settlement electric loadings" of Instruction for designing city electric networks SD 34.20.185-94".

Consumption of the electric power is certain proceeding from the assumption that yacht's parking will function within 150 days in a year. The average consumption of one yacht makes 2484 kw/ hour in a year (on average data of a current consumption of marinas).

Table 2 Settlement loading and consumption of the electrical power

	Value of a parameter
Settlement capacity Pp, kW	29,12
Annual charges of the electric power, thousand kW/ hour	104,83

There will be equipment with grounding and anti-lightning protection on a complex. Electricity supply of buildings of yacht's parking can be provided by transformer substation of "Rosson'" Center. The established capacity of transformer substation is 640 kW (transformers - 2 x 400). Electricity consumption of camp is 250 kW, in such a way there is an essential reserve of capacity of transformer substation at a rate of 390 kW.

The scheme of the engineering equipment of territory is presented in the supplement 3.

6 Investments costs, construction period and stages of construction and putting into operation

Rate of investments costs of yacht station construction (Supplement 4) is determinate in accordance with summing costs of its main components, using commercial offers of deliverers and producers of equipment, as well as using analogy method on the ground of specific expert estimates of main kinds of work and service costs. All costs include value added tax (VAT). VAT is not calculated for buying of "forestry tree felling ticket" in accordance with the Tax Code of Russian Federation.

Rate of Euro is 37 Rubles for 1 Euro.

Construction does not involve stages formation. Total construction period of yacht station is 12 months.

7 Estimate of commercial and budgetary efficiency of investments

7.1 Basic data for estimate of projects investments efficiency, methodological approach

There is a significant uncertainty in forecast of inflation rates, so the current estimate of investments efficiency was made on current basis (EURO), so dynamics of indexes was calculated without regard to inflation processes.

Financing of the project is planned at the expense of investor's capital.

Life of project is 25 years – period of minimal operating life of assets.

Estimation is made using basic data giving by the Client and becoming from data collection.

The estimate of investments efficiency on the current stage is very approximate because sources and conditions of investments, date of project's realizations beginning, relationships between projects participants and government, possibility of concessional taxation on the beginning stage of projects realization and other conditions are not define yet. This will be specify on the following stages of project realization, so the estimate of investments efficiency will specify too.

Estimate of efficiency includes financial estimate and estimate of investments efficiency (economical estimate). Indexes becoming during estimations complete each other.

Financial estimate (estimate of projects reliability) is an analysis of liquidity (paying capacity) of project during its realization time. Liquidity is the possibility of project to be liable for exist commitments betimes and full scale. It is based on "budget approach" – means on planning of cash flow. For this, total project duration is broken up on several time lines – planning horizons, each of them is considered separately in the context of cash flow and cash outflow proportion. Liquidity means non-negative balance of takings and payments during project duration.

Economical estimate accents the potential possibility of project to keep shopping value of committed facilities and make them grow by enough rates. In conditions of perfect competition the efficiency criterion of investments project is rate of profit becoming from invested capital. In this case profitability, payability and earning capacity mean not only capital growth, but such rate of capital growth that will compensate total change of buying power of money during concerned time, will allow minimal guaranteed rate of profitability and will cover investor's risks of project realization. On the one hand, for businessmen (borrower) cost of capital is a rate that businessmen will pay for possibility of financial resources using during the certain time period. On the other hand, for estimation of credit taking practicability businessmen should be oriented on the middle existing rate of profitability taking by the capital.

7.2 Accounting variants

Accounts were made in 4 variants. For project's commercial payback reaching it is necessary to allow 100% loading of yacht station that is unlikely in real conditions. So project in total is commercially inefficient. But realization of this project can make significant positive social and economic effects (see chapter 7.5). So the project can be financed from budgetary funds.

Variant 1 takes into account investments for all yacht station's building projects (design territory, hydraulic buildings and works, other buildings), all incomes and expenses that are attached to building projects. In accordance with this variant, maximum loading of marina will reach 100% until 2014.

Variant 2 is similar to Variant 1, the difference is in designed yacht station's loading that is assumed in this case 50% till 2013.

Variant 3 takes into account investments of hydraulic buildings and works only, thus incomes and expenses concerned with this building projects. Planned marina's loading – 100% until 2014.

Variant 4 is similar to Variant 3, but in this case operating performance of yacht station hasn't been taken into account. Investor will invest in hydraulic buildings and works, income of investor will be in this case profit from long renting of places for yachts (sale for 49 years), that will allow fast return of investments.

7.3 Revenue side of the project

In revenue side of the project were taken into account the following cash receipts:

1. For yacht's station (Variant 1, Variant 2, Variant 3).
2. For electricity supply of yachts (Variant 1, Variant 2, Variant 3).
3. For water supply of yachts (Variant 1, Variant 2, Variant 3).
4. For renting of guest's rooms (Variant 1, Variant 2).
5. For renting of café's accommodation (Variant 1, Variant 2).
6. For long renting of places for yachts (Variant 4).

Revenues of yacht station's exploitation were calculated in accordance with the following loading of yacht station:

Variant	Year	% of loading
Variant 1 and Variant 3	2009	50
	2010	60
	2011	70
	2012	80
	2013	90
	2014-2028	100
Variant 2	2009	20
	2010	20
	2011	30

Variant	Year	% of loading
	2012	40
	2013-2028	50

Fee for yacht's station (Variants 1, 2 and 3)

Analyses of yacht's and small vessel's station rates in different yacht clubs allowed finding the appropriate rate for project.

1. Project of yacht club construction and international guests harbor "Saima-Loma", in Zashitnaya bay (Saimaa Canal, Vyborg, Leningrad region). Construction began in April, 2007. Planned minimal rate for transit yacht station will amount 2,8 EURO for 1 lane meter per day.
2. Yacht club "New coast" on Pirogovskoe basin (Moscow region). Rate of yacht station is 2,2 Euro for 1 lane meter per day.
3. In Kalev Yacht Club (Tallinn, Estonia) cost of yacht's place is 15,34 EURO per day (with average length of yacht 10 m, rate here is about 1,5 Euro for 1 lane meter per day).
4. Berth for yachts in port of Narva. Rate for renting of yacht station is now 0,65 Euro for 1 lane meter per day (it is planned to construct new pontoon, rate will increase up to 2,28 Euro according to project).
5. Data of fact cost for yacht station per day (length of yacht is 7 m):

Table 3 Cost for yacht station (7 m), EURO

Marina	Cost, Euro	Cost of 1 lane meter, Euro
Marina Baltica Travemuende	**13**	**1,86**
Timmendorf Poel	**9,52**	**1,36**
Alter Strom Warnemuende	**8**	**1,14**
Vitte Hiddensee	**8,5**	**1,21**
Lohme Ruegen	**7,5**	**1,07**
Sassnitz Ruegen	**7,5**	**1,07**
Marina Kroeslin	**9,8**	**1,4**
Marina Leba	**7,8**	**1,11**
Marina Hel	**2,8**	**0,4**
Maria Gdansk Danzig	**7,8**	**1,11**
Smiltyne Klaipeda	**16**	**2,29**
Winterhafen Liepaja	**10**	**1,43**
Private Marina Pavilosta	**14,2**	**2,03**
Yachtclub Ventspils	**18,75**	**2,68**
Fishing harbor of Montu	**10**	**1,43**
Kuressaare Sadam	**15**	**2,14**
Virtsu	**16**	**2,29**
Haapsalu	**12,8**	**1,83**

Marina	Cost, Euro	Cost of 1 lane meter, Euro
Dirhami	**9,6**	**1,37**
Johusalu	**22,4**	**3,2**
Naissaare	**12,8**	**1,83**
Olympic port of Tallinn	**17,6**	**2,51**
Yachtclub Pirita	**15,3**	**2,19**
HMVK Helsinki	**20**	**2,86**
Average value of yacht station's cost		**1,74**

In accordance with this data for accounting was chosen the average rate for yacht station that amount about 1,74 Euro for 1 lane meter per day. Designed length of 1 place for yacht is 10 m, so cost for yacht station will amount 17,4 Euro per day. Chosen rate can be increased and thereby keep competitive.

Number of yachts was estimated in the following way: berth is designed for 8 yachts, navigation period is 150 days, average time of yacht station was accepted as 1 day. So maximum quantity of yachts that berth will be able to take, is 1200 yachts per year (nominal volume).

Thereby maximum loading of yacht station will amount 100% in accordance with Variants 1 and 3, and 50% in accordance with Variant 2. So revenues for yacht's station will reach:

- Variants 1 and 3 – 20 880 Euro per year since 2014.
- Variant 2 – 10440 Euro per year since 2013.

Electricity supply of yachts (Variants 1, 2 and 3)

Rate of electricity is 1,615 Rubles/ kilowatt-hour including VAT (0,044 Euro for 1 kilowatt-hour), it is planned to sale the electricity for yachts with 20% extra charge (0,0088 Euro for 1 kilowatt-hour), that will be the income. The average electricity consumption by yachts is 19872 kilowatt-hours per year (according to average data of electricity marina's consumption).

Revenues for electricity supply of yachts will amount:

- Variant 1 – 1041 Euro per year since 2014.
- Variant 2 – 520 Euro per year since 2013.
- Variant 3 – 173 Euro per year since 2014.

Yachts water bunkering (Variants 1, 2 and 3)

Water supply will be organized by extra charge (it is planned to increase cost of water by 40%). Rate of water consumption in Leningrad region is now 16,06 Rubles for 1 cubic meter including VAT (0,43 Euro for 1 cubic meter). So rate for water bunkering will amount 0,61 Euro for 1 cubic meter, revenue will amount 0,17 Euro for 1 cubic meter. It is accepted that 50% of yachts need water bunkering, and volume of 1 yacht's bunkering is 400 liters (0,4 cubic meter).

Cash receipts from water supply of yachts will amount:

- Variant 1 – 146 Euro per year since 2014.
- Variant 2 – 73 Euro per year since 2013.
- Variant 3 – 43 Euro per year since 2014.

Renting of guests rooms (Variants 1 and 2)

For determination of revenues that are possible to become from renting of guests rooms, there were analyzed rates for living in different camps and hotels of Leningrad region (Table 4), after that were selected places that are similar to project building with its living conditions, then – average rate of tourists stay was calculated (14,6 Euro/person per day). The current rate is preliminary and should be specified on the following project stages.

Table 4 Conditions and rate of tourists living in hotels and camps of Leningrad region

Place, Leningrad region	Living conditions	Rate for double room, Rubles/day	Rate of 1 person living, Rubles/day	Rate of 1 person living, Euro/day
Camp "Rosson'"	Facilities - in room	900,0	450,0	12,2
Camp "Zolotaya gorka"	Living in hotel, shared facilities on each floor	1 292,5	646,3	17,5
Camp "Okunevaya"	Shared facilities on each floor	1 025,0	512,5	13,9
Camp "Ladoga"	Facilities - in room	2 400,0	1 200,0	32,4
Camp "Avrora Club"	Facilities and TV - in room	2 266,7	1 133,3	30,6
Camp "Ujut"	Shared facilities on each floor, food is included	1 250,0	625,0	16,9
Hotal "Karina"	Standart room, facilities in room	1 000,0	500,0	13,5
Theatre arts center	Facilities - in room, food is included	1 120,0	560,0	15,1
Camp "Tichaya Zavod'"	Shared facilities on each floor	1 100,0	550,0	14,9
Average rate				18,5
Analogs are colored				
Average rate of analogs				14,6

Based on resources of yacht station, there will be 2100 tourists per year as maximum (7 rooms for 2 people each, average time of station is 1 day, period of navigation – 150 days a year).

Cash receipts from renting of guests rooms in accordance with project:

- Variant 1 – 30631 Euro per year since 2014.
- Variant 2 – 15315 Euro per year since 2013.

Renting of café's accommodation (Variants 1 and 2)

It is planned to give in rent the accommodation for café in administrative building. Rate for renting was chosen based on approximate tariffs for such kinds of accommodations in Leningrad region and amounts 95 Euro for 1 m^2 a year.

Cash receipts from renting the accommodation for café will be for Variants 1 and 2 – 2375 Euro a year after 2009.

Long renting of places for yachts

As an alternative preliminary estimation of economical effect from yacht station construction, Variant 4 of accounting includes in revenues cash receipts from giving in long renting places for yachts (sale for 49 years), that will allow fast return of investments. According to marketing researches, diapason of rates for long renting is between 1200 and 1800 Euro for 1 m^2. In this study was chosen the lowest rate of that diapason – 1200 Euro for 1 m^2. Cash receipts from long renting of places for yachts will amount 422 400 Euro in 2010.

Revenues of project are represented in the following table.

Table 5 Revenues of project, Variants 1 – 4 *

Name	Unit	Quantity	Cost of 1 unit (inc. VAT), EURO	Revenues per year, EURO
Variant 1 (for 2014 year)				
Yacht's station	number of places	960	17,40	16 704
Electricity	kilowatt-hour	15 897,6	0,052	827
Water services	cubic meter	192	0,61	117
Renting of cafe's accomodation	m^2	25	95	2 375
Renting of guest's rooms	people-days	1 680	14,59	24 511
TOTAL				***44 534***
Variant 2 (for 2013 year)				
Yacht's station	number of places	600	17,40	10 440
Electricity	kilowatt-hour	9 936	0,052	517
Water services	cubic meter	120	0,61	73
Renting of cafe's accomodation	m^2	25	95	2 375
Renting of guest's rooms	people-days	1 050	14,59	15 320
TOTAL				***28 724***
Variant 3 (for 2014 year)				
Yacht's station	number of places	960	17,40	16 704
Electricity	kilowatt-hour	15 898	0,009	139
Water services	cubic meter	192	0,17	33

* Values in table can be a little different with values in supplements because of round off

Name	Unit	Quantity	Cost of 1 unit (inc. VAT), EURO	Revenues per year, EURO
TOTAL				***16 876***
Variant 4 (for 2010 year)				
Long renting of places for yachts	m^2	352	1 200	422 400
TOTAL				***422 400***

7.4 Project's expenses

7.4.1 Capital investments and sources of financing

Capital investments and norms of amortization of fixed assets are set out in table (Table 6). Detailed calculation of costs of capital investments is presented in the supplement 4.

Table 6 Capital investments

Capital investments	Cost with VAT, EURO	Norm of amortization, %
Variant 1, Variant 2		
Hydraulic engineering structures	141 430	2%
Other buildings	134 188	8%
Utility systems	22 800	4%
Total	***298 418***	
Variant 3, Variant 4		
Hydraulic engineering structures	141 430	2%
Total	***141 430***	

Financing of project in 2009 completely due to own funds of investor, according to calculations.

7.4.2 Net working capital

Net working capital defines as excess of current assets over current liabilities. Current assets include raw materials inventory and calculated as a minimally necessary 15-daily supply level and daily flow.

In addition, there are advances to the suppliers in current assets with 5 – day's prepaying of 50% of deliveries, and reserve of money resources covering 7 – day's need.

Current liabilities include:

- Budget settlement. The amount of money resources assign with target dates of contributing of tax payments and deductions in non-budgetary funds.
- Salary is define with conditions that payments are twice a month. Size of corresponding money resources calculate at a rate of two-week fund of salary.

7.4.3 Cash outflow from operating activities

In the given stream of money resources all kinds of expenses connected with exploitations of yacht's parking define, including all buildings for Variants 1 and 2 (only hydraulic engineering structures - for Variants 3 and 4), and also the taxes paid during exploitation phase of the project. The project's current costs are:

1. ***Payment for electrical power (Variant 1, Variant 2)*** is calculated according to the settlement consumption of electrical power (when the loading is 100% the given parameter is 104,8 thousand kWt-hour a year), the project loading of yacht's parking and tariff in Leningrad region (0,044 Euro with VAT for 1 kWt-hour). Expenses for the electric power will make:

   - By the variant 1 – 4576 Euro in a year since 2014,
   - By the variant 2 – 2291 Euro in a year since 2013.

2. ***Payment for water consumption (Variant 1, Variant 2)*** is calculated according to the scheduled consumption of water (when the loading of yacht's parking is 100% the given parameter is 1200 m^3/year), the project loading and tariff for water consumption in Leningrad region (0,43 Euro with VAT for 1 m^3). Expenditure will make for the Variant 1 - 521 Euro a year since 2014, for the Variant 2 - 261 Euro a year since 2013.

3. ***Payment for flows (Variant 1, Variant 2)*** is 483 Euro in a year since 2014 for variant 1, and 242 Euro in a year since 2013 for variant 2. Nominal volume of yacht's parking flows will be 960 m^3/year, tariff for the water disposal in Leningrad region is 0,5 Euro with VAT for 1 m^3.

4. ***Payment for operating repair (Variant 1, Variant 2, Variant 3)*** is accepted as 0,05% - 0,1% of cost of capital investments annually (expenses for repair are minimal because new construction and purchase of the new equipments are supposed).

5. ***Salary*** is calculated according to the involved personnel and monthly average wages by taking into account all additional payments. The salary defines as average across Leningrad region for January, 2008 (data of Rosstat).

In this case by the variant 4 in 2009-2010 there will be only 1 technical worker, because after that objects of hydraulic engineering constructions will be handed over in long-term rent.

Table 7 Expenses on salary by different variants

Staff personnel	Quantity, people	Monthly salary, EURO	Salary expenses per year, EURO	Charge on payroll per year, EURO
Variant 1, Variant 2				
Technical worker	2	397,3	9534,7	2479
Variant 3, Variant 4				

Staff personnel	Quantity, people	Monthly salary, EURO	Salary expenses per year, EURO	Charge on payroll per year, EURO
Technical worker	1	397,3	4767,3	1239,5

Taxes and deductions as part of self-cost accrue in accordance with existing legislation.

Table 8 Tax rates

Name	%
Profit tax	24
VAT	18
Estate tax	2,2
Uniform social tax	26

7.5 Main aspects of commercial and budget efficiency. An estimation of project's social-and-economic effect.

Software product, developed with consulting firm "Alt-Invest 5.11", is used for calculation of the main parameters applied in a world practice for estimation of efficiency. The software takes into account methodological recommendation of the International Center of industrial researches at United Nations Industrial Development Organization.

It is necessary to pay attention, that as calculation is define in current prices, and the applied rate of discounting is nominal (that is containing an inflationary component) it is necessary to consider inflation forecast for calculation of Net Present Value (NPV).

Nominal interests rates include inflationary compose. All declared bank rates are nominal. Nominal rate estimates under the formula:

$$N = R + I$$

N – Nominal interest rate;
R – Real interest rate;
I – Inflation rate on financial market.

The given formula used for calculation of nominal rates in conditions of low inflation (3-5 % a year). At higher inflation relations of these two rates become nonlinear. The formula will be:

$$N = R + I + RI\ .$$

The real interest rate is the nominal rate cleared of inflation. At low rates of inflation the real rate estimates under the formula:

$$R = N - I .$$

In modern economic conditions it is possible to consider, that Russian economy approach to a level of low inflation. The ministry of economic development of the Russian Federation gives forecasts of inflation in a range from 3,7 up to 7 % up to 2018. We shall assume in calculations the worst conditions and take long-term rate of inflation of 4 %. In this case, in the given calculations long-term rate of inflation is 4 %, and the nominal rate of discounting is 10 %.

The rate of inflation is badly predicted, so calculation of parameters of the project's efficiency is executed in the current prices (in Euro), i.e. dynamics of parameters is calculated without taking into account inflationary processes. But as the rate of discounting specified in calculations is nominal (that is containing an inflationary component), long-term rate of inflation (4 %) is defined in calculation of the Net Present Value.

Calculation is made with following base value and forecasts:

- planning horizon– 1 year;
- estimated life of project – 25 years;
- rate of Euro – 37 rbl. for 1 Euro.

Operated results of yacht station have been calculated during commercial estimation of the project which includes profit and loss account, the report about movement of money resources, the forecast of balance, parameters of profitability and a financial condition of the enterprise, integrated parameters of project's efficiency and other calculation tables. Detailed calculations of money flows are resulted as a tables in Supplement (the Supplement 5 - the Supplement 8).

Budget efficiency can be defined for budgets of various levels or for consolidated budget. Parameters of budget efficiency calculate over definition of flows of budgetary funds. Sums of tax revenues and other payments for budgets of various levels are the basis for calculation of parameters of budget efficiency.

As a rule, cash outflow from the budget is:

- granting of target financings.

Cash inflow to the budget is taxes, namely:

- charges on pay-roll;
- personal income tax;
- VAT;
- Tax on income;

- Estate tax.

The main parameters of project's efficiency are presented in the table (Table 9).

Table 9 Parameters of commercial and budget efficiency of the project by variants of calculations

Parameter	Unit of measure	Value of parameter by variants			
		Variant 1	Variant 2	Variant 3	Variant 4
Commercial efficiency of project					
Quantity of places for yacht stations at a pontoon	place	8	8	8	8
Vessel's turnover	yacht/year	1 200	1 200	1 200	1 200
Quantity of tourists who rent a room	people/year	2 100	2 100	2 100	2 100
Maximal loading of yacht's station	%	100	50	100	-
Total employment	people	2	2	1	1
Estimated life of project	year	25	25	25	50
Total amount of capital investment with VAT	Euro	298 418	298 418	141 430	141 430
Nominal discount rate	%	10,0	10,0	10,0	10,0
Net Present Value (NPV)	Euro	11 386	-186 658	-27 329	94 111
Internal Rate of Return (IRR)	%	10,5	none	7,4	126,2
Payback period	year	10,99	24,67	13,83	1,43
Payback period (discounted)	year	22,98	none	none	1,47
Budget efficiency of project					
Tax revenues to federal budget*	Euro/year	13 929	9 668	6 579	1 173
Tax revenues to territory budget*	Euro/year	4 572	2 040	2 505	1 173
Nominal discount rate	%	10,0	10,0	10,0	10,0
Net Present Value of federal budget (NPV)	Euro	125 107	72 771	58 807	70 854
Net Present Value of territory budget (NPV)	Euro	55 654	21 672	27 644	72 682
* by the target year 2015					

Besides the mentioned direct economic effect, there can be possible indirect effect. During realization of the project following positive social and economic results can be reached also:

- Growth the number of tourists on a small vessels.

- Appearance of enterprises in region offering feed services, rent services, hotels, etc. (services of tour agencies (sale of tickets, excursion service; exchange and bank services), a beauty salons, services of communication and office services (a fax, phone, the Internet), medical services, a laundry and so forth; repair small boats and periodic service on water, shops of spare parts).

- Appearance of new workplaces in service sector, growth of employment.

- Growth of budget's incomes on different levels as a result of receipt of taxes from the new enterprises.

8 Implementation plan

Taking into consideration the fact that the most plausible variant (the second variant of economic calculations with lower occupancy rate) is not efficient according to preliminary calculations, organizational scheme of the project should be thoroughly elaborated at further stages of designing. It is necessary to envisage various financing sources, including municipal budget.

The designed complex includes durable facilities (hydraulic constructions). Pay-back period of such investments might be not acceptable for a private investor, consequently the optimal solution would be to attract private financing only for selected objects of the whole construction complex.

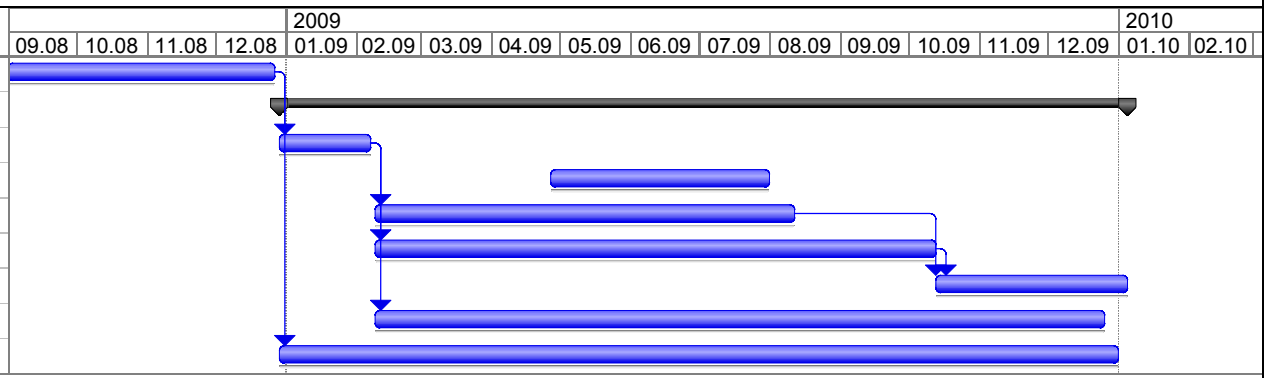
Having settled the issue of financing, permit for design should be obtained. The next stage is design process itself, which will be followed by construction. Full construction time of the yacht station is 12 months.

Simultaneously with construction active advertising and promotion campaign should be carried out. For example, information about new berthing facilities should be published on specialized web-sites dedicated to yachting.

Preliminary schedule of project realization is provided below.

Plan of project's realization

Ид.	Название задачи
1	Design works
2	**Construction of marina's objects**
3	Land reclamation
4	Hydraulic engineering structures
5	Repair boathouse
6	Adsministrative building
7	Open parking
8	Utility systems
9	Advertisement and promotion



9 Conclusions

Hydrometeorological conditions at the estuary of Rosson' river are advantageous for creation of yacht station. Water zone of perspective yacht station is protected from wind from Baltic coast, the river flow tends to change speed and direction slightly, which provides safe conditions for watercrafts' berthing.

The main disadvantage of the location is insufficient depths to receive sailing keel yachts. The most recommended type of watercraft for yacht tourism at Rosson' river are dinghies, compromises yachts and twin-hull tourist boats. These vessels should be equipped with small outboard engines.

In this research 3 potential locations for yacht station were estimated: Venekula village, Saarkula village and State Educational Institution for Additional Children Education "Child's Recreational-Educational Center "Rosson"" (SEI ACE CREC "Rosson", further called as "Rosson" Center for short). The best location of the yacht station would be "Rosson" Center, which already has some infrastructure. In this case investments in infrastructure development will be the lowest.

Chosen location of yacht station at the estuary of Rosson' river (based on children campus "Rosson"") is result of preliminary research. A full range of engineering, geological, hydrological and ecological investigations should be conducted at the further stages of design process to support final selection of the location. These investigations will allow defining if suggested engineering solutions are applicable to construction site conditions, optimize and minimize capital expenditures.

The next stage of the design process should also include detailed evaluation of possibility of commercial exploitation of the complex, definition of its need for handling gear and other specialized equipment.

Present research includes 4 variants of commercial and budgetary efficiency of the project. ***Variant 1*** takes into account investments for all yacht station's building projects (design territory, hydraulic buildings and works, other buildings), all incomes and expenses that are attached to building projects. Maximum loading of marina will reach 100% until 2014. ***Variant 2*** is similar to Variant 1, the difference is in designed yacht station's loading that is assumed in this case 50% till 2013. ***Variant 3*** takes into account investments of hydraulic buildings and works only, thus incomes and expenses concerned with this building projects. Planned marina's loading – 100% until 2014. ***Variant 4*** is similar to Variant 3, but in this case operating performance of yacht station hasn't been taken into account. Investor will invest in hydraulic buildings and works, income of investor will be in this case profit from long renting of places for yachts (sale for 49 years), that will allow fast return of investments.

Variants 2 and 3 are not commercially effective, Net Present Value (NPV) of the project in accordance with this variants is negative. NPV by Variant 1 is 11386 Euro, by Variant 4 net present value amounts 94111 Euro. Upon condition of this variants realization, the project can be attractive as independent investment measure.

Also indexes of project's budgetary efficiency were calculated upon current research. According to calculation, project is high-effective from budget point of view. Net Present Value (NPV) of federal budget will amount:

Variant 1 – 125 107 Euro,
Variant 2 – 72 771 Euro,
Variant 3 – 58 807 Euro,
Variant 4 – 70 854 Euro.

Therefore, for maximum effective project's realization it is necessary to elaborate the organizational scheme thoroughly. At further stages of designing it is advisable to envisage the possibility of budget funds using.

S U P P L E M E N T S

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SUPPLEMENT 1 – SITE PLANNING M 1:20000

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SUPPLEMENT 2 – GENERAL LAYOUT

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SUPPLEMENT 3 – ENGINEERING DEVELOPMENT PLAN

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SUPPLEMENT 4 – SETTLEMENT OF OVERALL YACHT STATION'S COST

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SUPPLEMENT 5 – COMMERCIAL ESTIMATE (VARIANT 1)

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SUPPLEMENT 6 – COMMERCIAL ESTIMATE (VARIANT 2)

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SUPPLEMENT 7 – COMMERCIAL ESTIMATE (VARIANT 3)

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SUPPLEMENT 8 – COMMERCIAL ESTIMATE (VARIANT 4)