Overview of Narva Windpark land-use planning and environmental impact assessment process

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1. Introduction

Hendrikson&Ko is one of the oldest environmental management and land-use planning companies in Estonia. We focus on consultancy in the fields of environmental management, spatial planning, public management etc. The company applies most sophisticated technologies including digital cartography, geoinformatics, noise and air pollution dispersal modelling and various other tools.

Hendrikson&Ko participated in land-use planning and environmental impact assessment as leading consultant and environmental expert. The project was financed by EU Cohesion Fund (project Technical Assistance for Construction of Narva 50 MW Windpark).

In following we give an overview of Narva Windpark spatial planning and environmental impact assessment process with focus on readers not specialized in respective processes in Estonia.

2. Overview of Estonian spatial planning and environmental impact assessment system

Estonia is the member state of European Union and Estonian legislation is harmonized with EU legislation.

The spatial planning legislation is not very strictly regulated in EU regulations and member states are relatively free to develop national systems. After independence in 1991 the Estonian spatial planning system was developed in the line of Scandinavian neighbours, mainly Sweden and Finland.
During the last 20 years the legislation, methodology and practice have developed quite a bit.
The base legislative act is *Planning law / Planeerimisseadus* (https://www.riigiteataja.ee/akt/121032011021)[1].

The spatial planning system in Estonia is based on 4-level spatial plannings:

- State plan (*üleriigiline planeering*) covers all Estonia and marks strategic issues and principles of land-use in very general level.
- County plan (*maakonna planeeing*). Estonian has 15 counties and county comprehensive plan is specifying state plan in a certain county. In county plan the main infrastructure objects (main roads, ports, airfields etc) and land-use priorities (nature protection, agriculture-forestry, industrial, urban etc) are marked in general. The maps are usually in scale of 1:100 000 or similar, so the objects cannot be on a very detail level.
- Local authority comprehensive plan / General plan (*üldplaneering*). Estonia has ca 240 local authorities (cities and parishes) and general plan is specifying county plan in certain local authority in more detail. The maps are usually in scale of 1:5000 – 1:20 000 and therefore the planned objects can be quite detail.
- Detail plan (*detailplaneering*) is the most exact planning and it is used for land plots to be developed (construction) in near future. The area of typical detail plan

[1] Links to legal acts lead to official and continuously updated legal acts system Riigi Teataja. The legal acts are in Estonian. Not all legislative acts are translated into English but available ones are in homepage of Ministry of Justice http://www.just.ee/6906.

is 0,1–100 hectares and the scale of maps is usually 1:1000 – 1:5000. Detail plan is base for technical design and after that for construction. Detail plan must comply with general plan.

There are several exceptions in those plannings. For example the possibility to make thematic plans in county plan and general plan level (for example for wind energy) or make planning only for a part of a certain authority territory. Objects of important spatial impact, major linear infrastructure objects and important objects in the state security level, have special conditions in the described 4-level planning system.
All planning processes are open for stakeholders and public, certain meetings and informing events are mandatory to guarantee democratic, widely and openly discussed decision making.

Narva Windpark land use planning is a special case of **general plan**. The speciality lies in the fact that wind parks over 5 wind turbines with total power over 7,5 MW are listed in the comprehensive list of **objects of important spatial impact** (*olulise ruumilise mõjuga objektid*) adopted by Government of Estonia with decree nr 198 in 2003 (https://www.riigiteataja.ee/akt/13195695). The size of the planning area was decided (by Local Authority and County Government) to be ca 714 hectares of ash field.

As Narva Windpark has no constructions (buildings for living etc) for which the detail plan is obligatory, the solution was to avoid further detail planning as additional process and instead design the general planning at a more detail level, which can be used later in technical design. In this way the double processes of planning were avoided without any legal faults and any harm to public interests or stakeholders.

So, the Narva Windark planning is **general planning for objects of important spatial impact** made in the accuracy of **detail planning**.

In EU level environmental legislation is much more regulated than spatial planning legislation. The basic act for Environmental Impact Assessment in Estonia is Environmental Impact Assessment and Environmental Management System Act / *Keskkonnamõju hindamise ja keskkonnajuhtimissüsteemi seadus* (https://www.riigiteataja.ee/akt/116112010013) witch complies with EU's so called EIA directives and SEA directives. Also assessment of impacts to Natura 2000 areas is mentioned in so called Habitats directive (article 6) covered in abovementioned act.

For land-use plans only Strategic Environmental Impact Assessment (SEA) is applicable In Estonia. EIA is not applicable for planning. Therefore **SEA was made for Narva Windpark planning**.

Similarly to land-use planning process, the EIA/SEA process is also open for stakeholders and public, certain meetings and informing events are mandatory to guarantee democratic, widely and openly discussed decision making.
For EIA/SEA the regional department of Ministry of Environment is the supervising and permitting authority. The regional department of Ministry of Environment is officially controlling and permitting the documentation in at least 3 stages (approving of EIA/SEA programme, approving of EIA/SEA report, approving of land-use plan).

During the last 20 years the environmental impact assessment (both, EIA and SEA) legislation, practice and methodology have developed a lot. Also joining Estonia with EU in 2004 improved the quality of impact assessment.

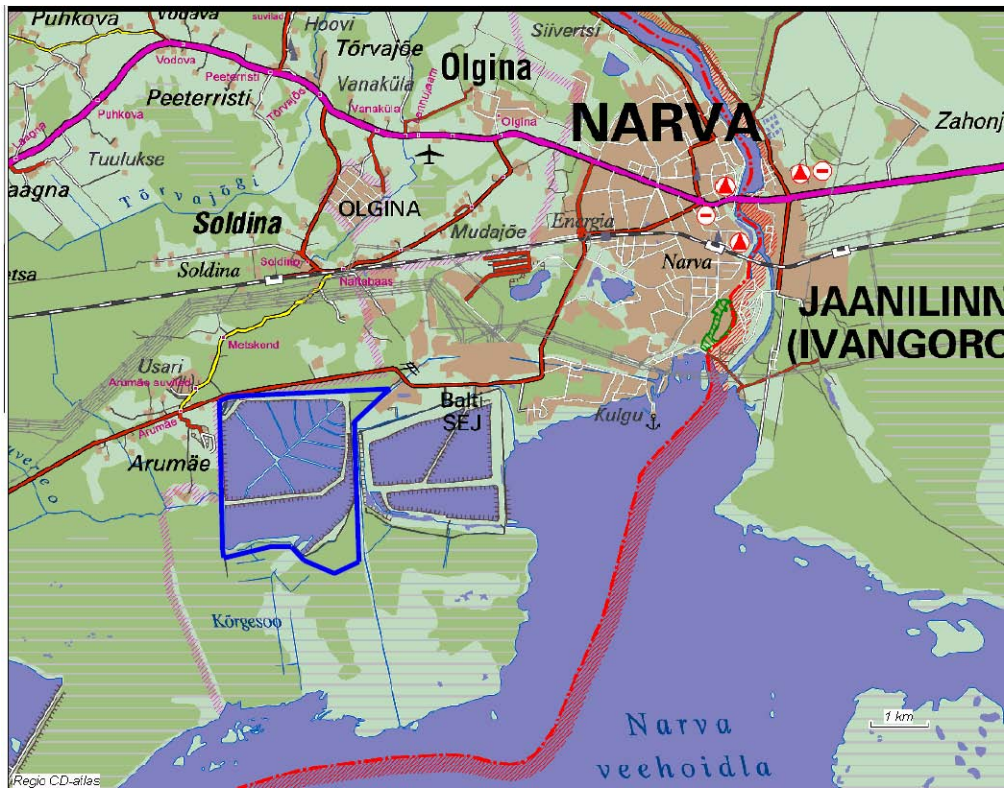
3. Overview of Narva Windpark planning and SEA process. Environmental impact

About project area

Estonia is located in eastern cost of Baltic Sea. The territory of country is 45 000 km² and population is 1,3 million people. Estonia is a member state of European Union and most of other important international organisations (UN, NATO, WTO, OECD etc). Narva is located in North-East of Estonia and is 3rd largest city in country with population of 70 000 people. Narva is known as industrial city and one major centre in oil-shale region. Narva Windpark is located in a closed ash field (no 2) of an oil-shale burning power plant constructed in the middle of 20th century.

The ash field is an industrial object, which clearly contrast from surrounding territory. The ash field is up to ca 25 meters higher from surroundings and has almost no natural plants growing or animal living in the territory, mainly because of high alkaline level (PH over 10).

Location of Estonia (Google Earth).



Location of Narva Windpark planning area (blue line).


The ash field no 2 (in the front in approx. 2003). During planning and SEA process in 2006-2007 the closing process was active. Closing of ash field consists landscaping of territory, neutralisation of alkaline water etc to transform object harmlessly to environment.

Spatial planning / SEA process and environmental impact

After successful tender process (March-August 2006) developer Eesti Energia and consultant Hendrikson&Ko signed contract (the project *Technical Assistance for Construction of Narva 50 MW Windpark* was financed by EU Cohesion Fund) for consultancy service in August 2006. Both processes, spatial planning and SEA, were covered in one contract and the process was carried out in very good cooperation between them. Maximum connecting of spatial planning and SEA processes is regarded as good practice in Estonia.

Local authority, Narva City Council, initiated appropriate planning procedure in December 14th, 2006 together with strategic environmental impact assessment (SEA).
The motivation and screening about the need for EIA/SEA was not needed, because for this kind of planning the SEA is mandatory by Estonian law. Also the Natura assessment was integrated into SEA procedure.
The planning area was decided by Local Authority and County Government to be ca 714 hectares of ash field.

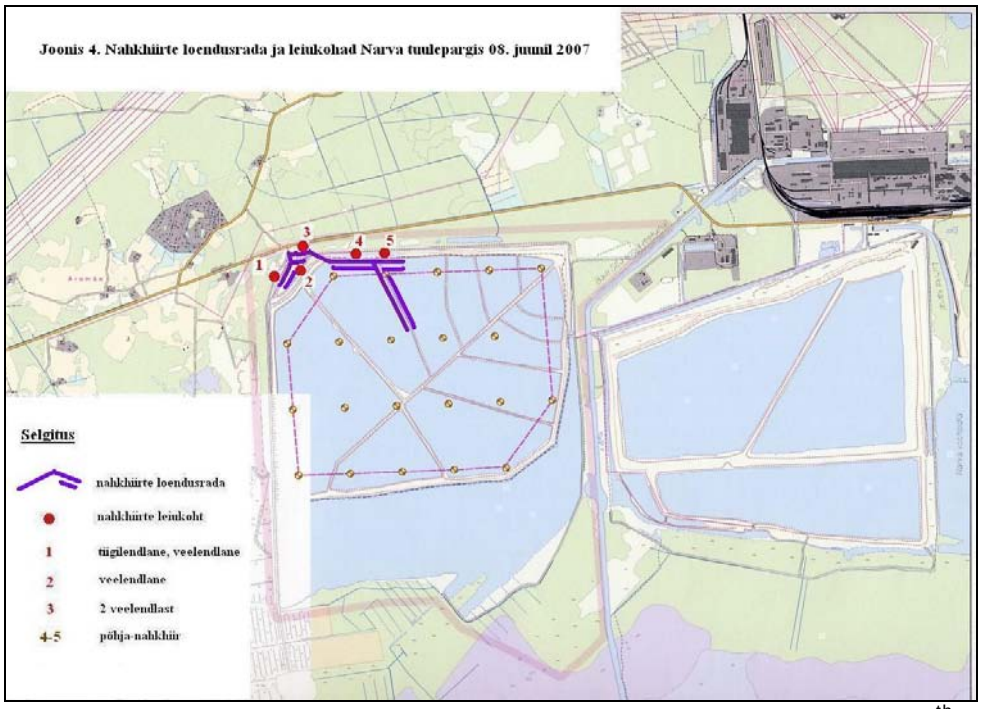
In period from September 2006 till January 2007 the main activities were related to collection of information (geology, natural values, existing infrastructure etc) to prepare preliminary planning proposal and SEA program.

On 21st of February 2007 a public meeting (SEA programme and preliminary planning proposal) was held in Narva with 24 participants, mainly representatives of different authorities.
The SEA program was approved by regional department of Ministry of Environment on 12th of March 2007.

In period from January 2007 till June 2007 the main activities were preparing of preliminary planning proposal and SEA report. In June 2007 the preliminary planning proposal was formed with 21 possible locations for wind turbines (maximum height of 150 meters). The big number of possible turbines was planned because of unknown technical design after procurement process. This is normal practice and the aim is set to cover maximum limits by planning.
As we know in 2011, 17 wind turbines, each 2,3 MW, are under construction. So, the planning is realised in optimal size clarified according to enacted plan through further technical design.

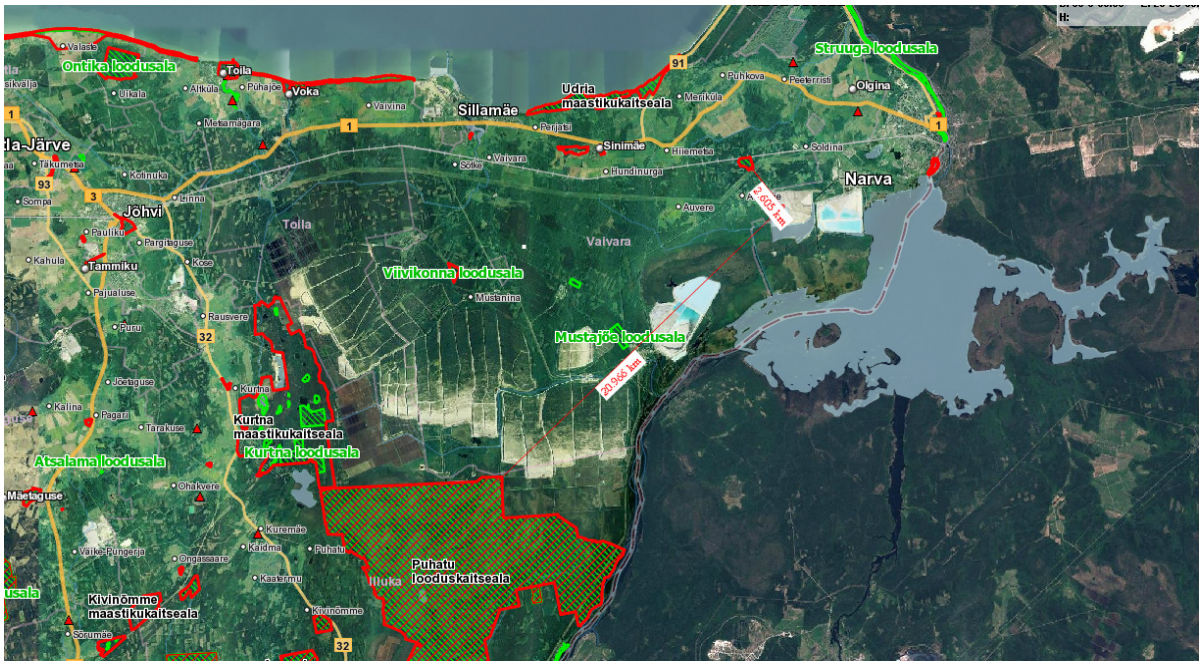
In SEA all possible aspects of environmental impact were studied. Due to the fact that by legislation the EIA is not necessary after this type of SEA, the assessment was carried out with the accuracy of EIA.
The main topics were noise and shadow impact for local people, visual impact to surroundings, impacts to nature protection areas (including Natura 2000 sites) and other.

To clarify situation with birds and bats, additional studies were carried out in spring-summer 2007. These studies confirmed the existing data and prognosis that ash field area is not attractive for birds and bats. As an example, bat survey results of one night (8th of June 2007) is shown in the scheme below.



Bat survey in spring-summer 2007. Examples of registered bats on 8th of June 2007 near the ash field, but not directly on the ash field.

In surroundings, the closest (ca 2 kilometres in north-west) protection area is a separate piece of Udria Landscape Reserve, which is also Natura 2000 area (nature area, but not bird area). The territory of the area is 33 hectares. The main part of Udria Landscape reserve is located in the seacoast in distance over 8 kilometres and this is also Natura 2000 area, but not bird area. The closest Natura 2000 bird area, Puhatu, is located 20 kilometres in south-west of the planning area.
Taking into consideration the distances and species of birds in certain Natura 2000 sites, the Wind Park in ash field will not have any significant effects on a site of nature conservation importance. Also the location of ash field is not on migratory birds flying routs and resting areas (feeding areas, fields, suitable water bodies and others).



Nature protection areas (including Natura 2000) in the region (http://xgis.maaamet.ee/xGIS/XGis).

The main mitigation measure in avoiding negative impact on birds and bats was the site selection in conflict free area. Taking into consideration site specific conditions and general practice in Estonia, the post-construction monitoring of birds and bats was not defined (or proposed).

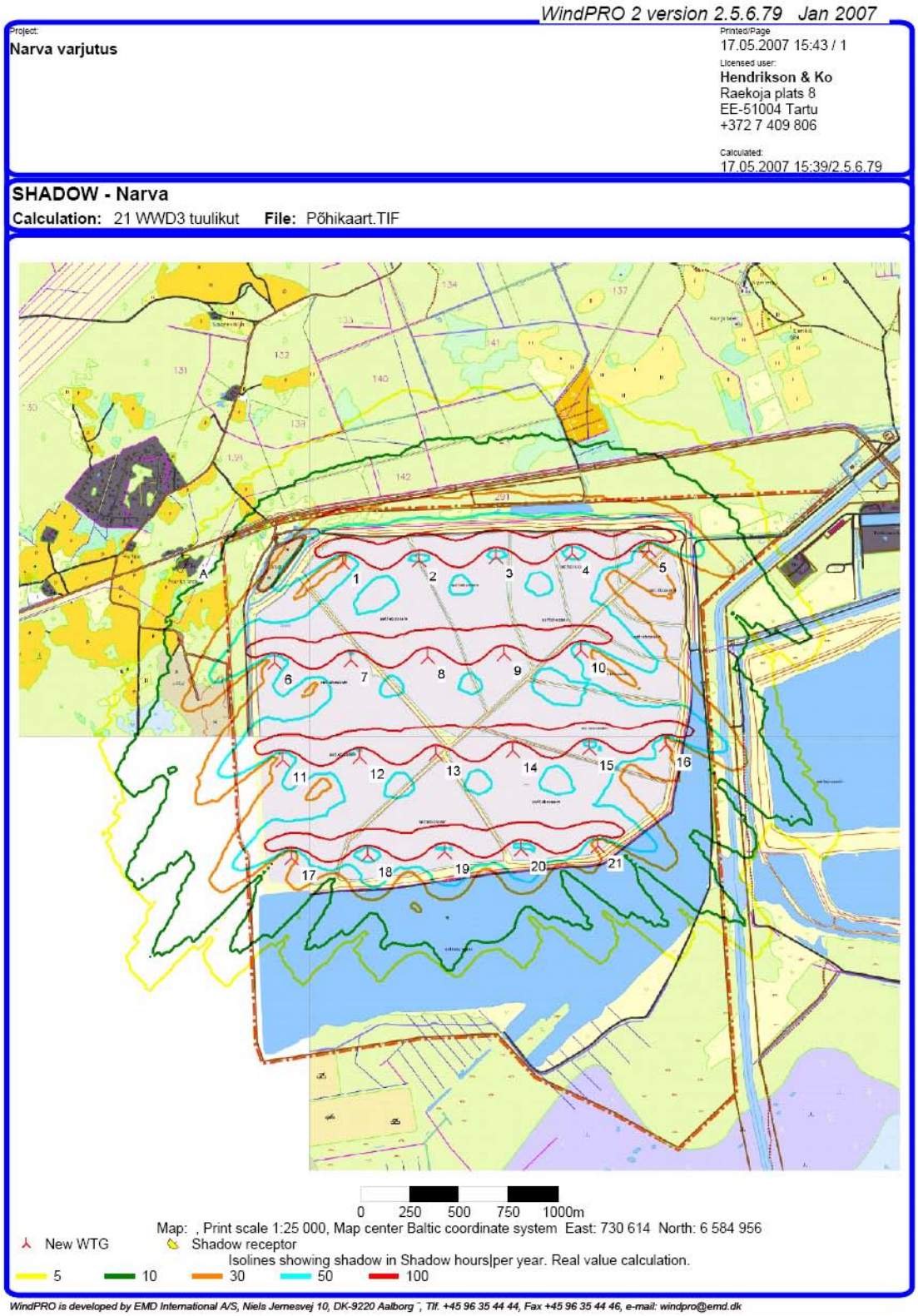
Also other possible issues of importance were analysed and assessed during SEA process in proper way using advanced methods and technology. For example for noise assessment, flickering assessment and visualization the special software WindPRO was used, examples of the results are presented in following.

Vizualisation of Narva Windpark (WindPRO).

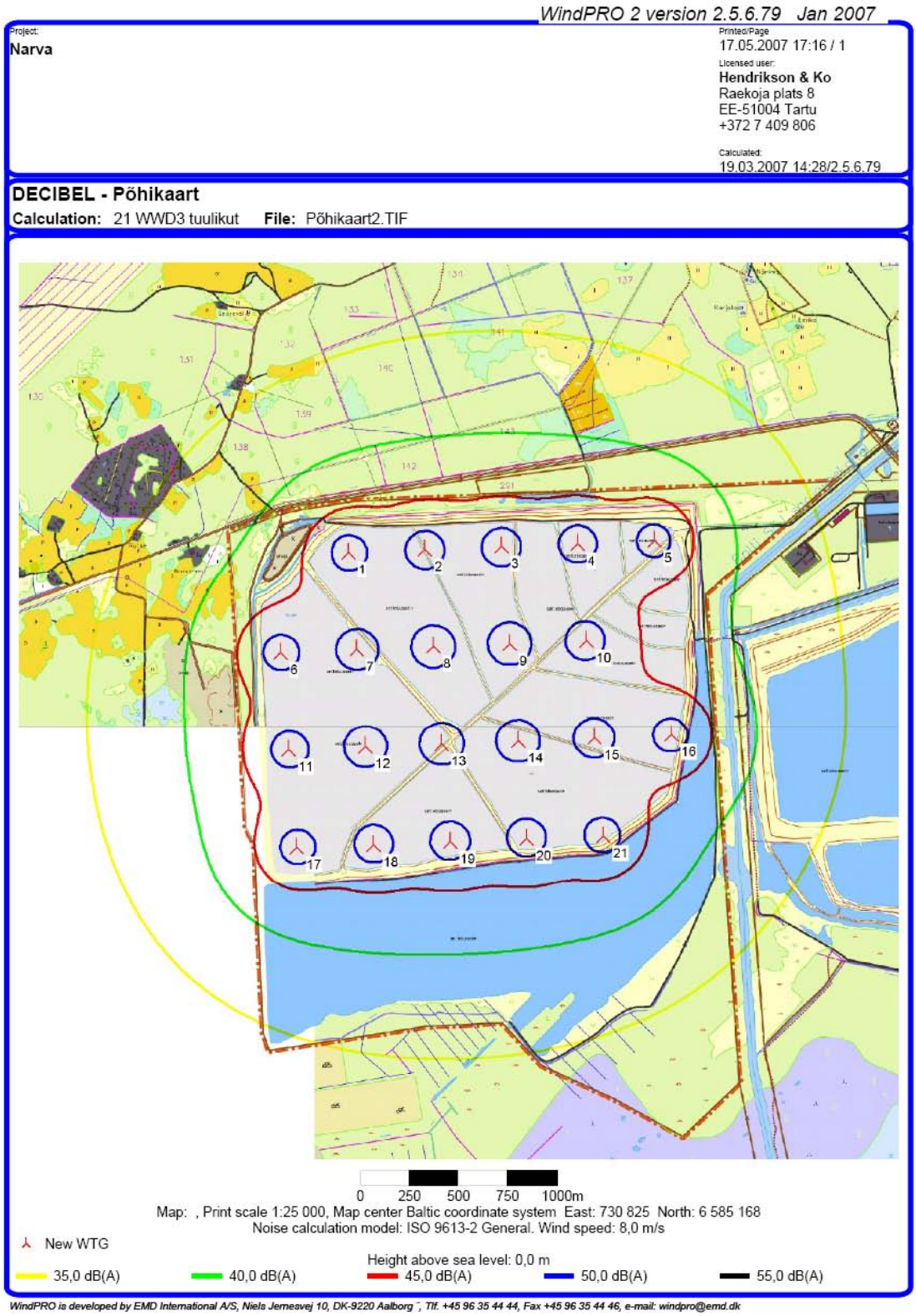
The Estonian noise legislation is in accordance with EU legislation. Wind turbines are defined as sources of industrial noise with the following acceptable noise levels regarding new developments and projects: 50 dBA in daytime and 40 dBA in night-time. The closest living house (Madise) is located about 700 meters from nearest planned wind turbine, which guarantees the maximum noise level below 40 dBA. The village Arumäe is located in distance of about 1 km and maximum noise level is 35 dBA in that area.

The allowed maximum flickering duration is not regulated by any legislation in Estonia. In base of good practice the Scandinavian and other countries guidlines and recommendations are often used. Mainly 30 hours per year is the maximum acceptable duration of flickering in a single household. Also 10 hours is often used in assuring good conditions in nearest impacted areas. The closest living house is situated about 700 meters in west (and also in relatively sensitive direction), where the flickering effect may

occur up to 7 hours per year. In closest village Arumäe the flickering effect is very small and occurs rarely which is mainly because of the distance and direction (north-west).



Modelling of flickering by WindPRO.



Modelling of noise by WindPRO.

On 3rd of July 2007 a public meeting (regarding the SEA report) was held in Narva with 13 participants, mainly representatives of different authorities.

During the period from June to August 2007 different authorities (fixed by Planning Act) approved planning proposal and according to Planning Act in 16th of August 2007 Narva City Council adopted the planning and send it to public consultation.

On 29th of October 2007, after 4 weeks of publication period (without any feedback from any organisation or person), the public meeting (regarding planning proposal) was held in Narva with 5 participants, all representatives of Narva City Government, Developer and Consultant.

For EIA/SEA the regional department of Ministry of Environment (Ida-Viru / Viru region) is the supervising and permitting authority. On the 1st of August 2008 the Ministry of Environment approved EIA/SEA report stating, that all relevant environmental aspects are assessed in proper way and there are no negative environmental impacts due to planned wind farm, also the public opinion is positive about proposed development.

On 18th of December 2007 the Narva City Council enacted the planning.

Summary of spatial planning and SEA process

Narva Windpark planning was **general planning for objects of important spatial impact** made in the accuracy of **detail planning**. For land-use plans only Strategic Environmental Impact Assessment (SEA) is applicable in Estonia. EIA is not applicable for planning, therefore **SEA was made for Narva Windpark planning**.

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Both, the spatial planning and SEA process, were open for stakeholders and public, as certain meetings and informing events are mandatory to guarantee democratic and widely discussed decision making.

Narva Windpark is located in a closed ash field (no 2) of oil-shale burning power plant constructed in the middle of 20th century.
The ash field is an industrial object, which clearly contrasts from surrounding territory. The ash field is up to ca 25 meters higher from surroundings and has almost no natural plants growing or animal living on the territory, mainly because of high alkaline level (PH over 10).

The spatial planning process (including also SEA in this period) was started by local authority, Narva City Council, in December 14th, 2006 with appropriate planning procedure initiation together with strategic environmental impact assessment (SEA). The whole process lasted till 18th of December 2007 when Narva City Council enacted the planning.
The period of 1 year is very short for this kind of planning and shows excellent work done by all participants and also implies relatively easy situation without major conflicts between stakeholders and natural values.

In 2011 the construction of 17 wind turbines is ongoing and there were no remarkable complaints or other emerging problems to refer some mistakes or discord in previous spatial planning and SEA process.

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