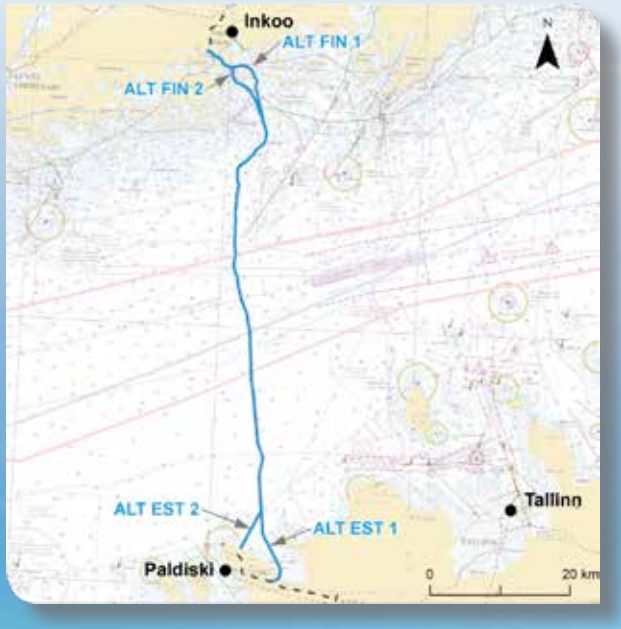
Gasum



SUMMARY

BALTICCONNECTOR

Natural gas pipeline between Finland and Estonia

ENVIRONMENTAL IMPACT ASSESSMENT PROGRAMME

January 2014

RAMBØLL

SUMMARY

PURPOSE OF THE PROJECT

The Balticconnector natural gas pipeline will connect the gas transmission pipeline networks of Finland and Estonia. Connecting national gas transmission networks would significantly improve the regional availability and security of supply of gas and thus enhance the reliability of energy transmission in various circumstances in Finland and the Baltic countries (Figure 1).

Balticconnector is categorised as a priority project and has therefore been granted Community financial assistance. Previously, the Balticconnector offshore pipeline project became part of the EU founding Trans-European Energy Network (TEN-E) programme. Connecting Finland and Estonia gas infrastructures it will guarantee a more coherent and diversified natural gas grid within the Baltic Sea Region, and thereby improve the security of supply of natural gas to the north-easterly EU member states. The offshore pipeline would enable the exchange of natural gas between Finland and Estonia, and at the same time offer the possibility for making use of the underground natural gas storage facilities in Latvia. The pipeline would be able to operate in both directions – as a true 'interconnector' pipeline – making it also possible to transfer natural gas through Finland to Estonia.

If the Baltic Sea regional LNG terminal location will be decided to be in Inkoo, the Balticconnector pipeline will be connected to existing gas network in Finland and to the planned Finngulf LNG terminal in Inkoo. Development of Inkoo LNG terminal project is going on and the environmental impact assessment (EIA report) has been submitted to coordinating authority. Linked to large-scale LNG terminal, Balticconnector would create a coherent natural gas network in the Baltic States and Finland. However, the offshore pipeline will be equipped with a compressor station at both ends to allow bidirectional flow also without the operation of the LNG terminal.

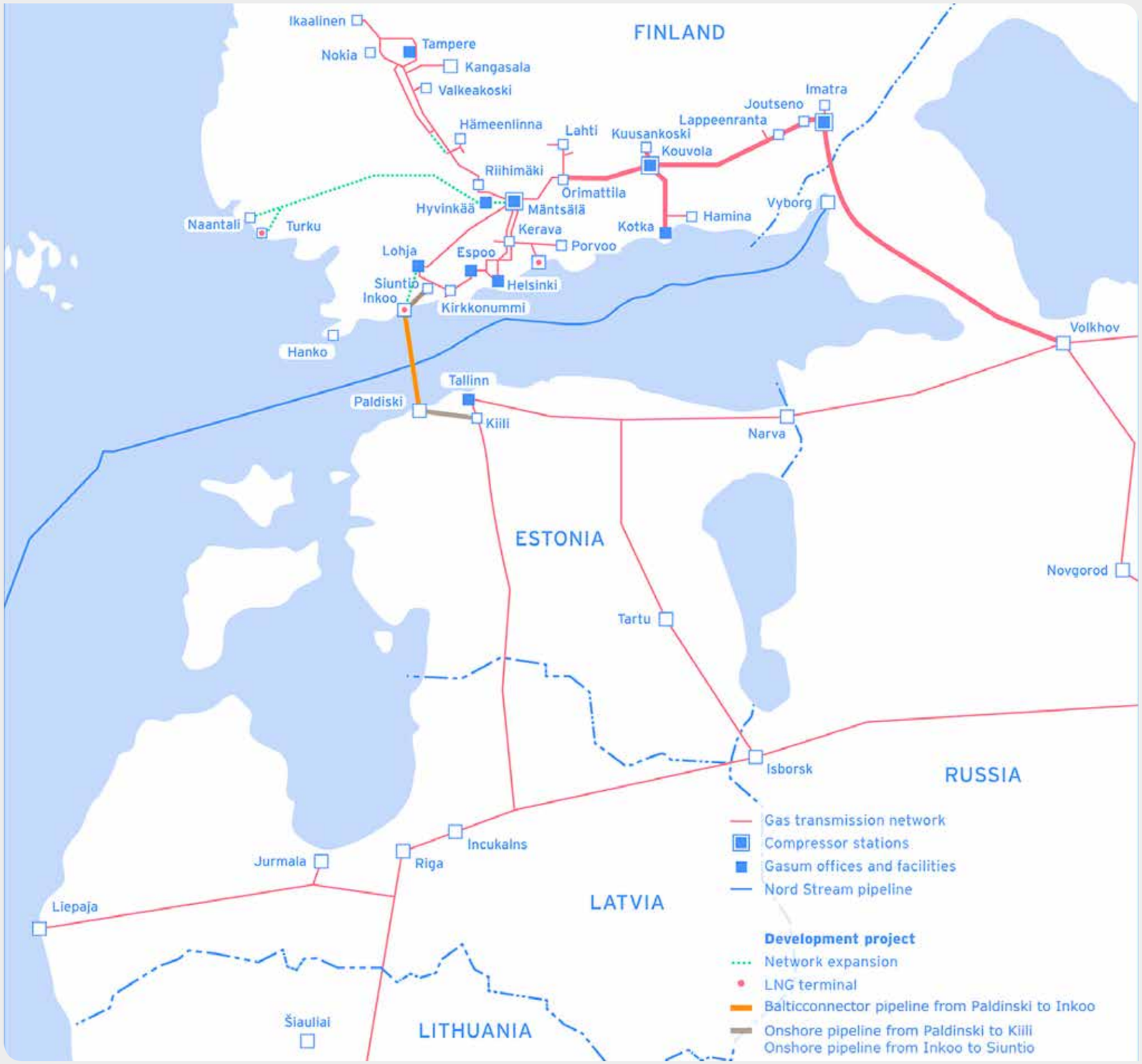


Figure 1. Natural gas pipeline network in the area of the Gulf of Finland

PROJECT DESCRIPTION

In the scope of EIA the Balticconnector natural gas pipeline project includes:

- Offshore pipeline from Inkoo to Paldiski;
- Receiving stations (both Finland and Estonia);
- Onshore pipeline from point of landfall to compressor station in Inkoo and from point of landfall to receiving station in Paldiski Kersalu;
- Compressor station in Inkoo.

The developer of the Balticconnector gas pipeline project is Gasum Oy. The offshore pipeline route has been studied and extensive marine surveys conducted in 2006. Additional environmental surveys are carried out in autumn 2013 – spring 2014. The developer's view of the schedule is that it would be possible to start the Balticconnector construction works in the beginning of 2016 and to commission the pipeline during 2017.

TECHNICAL OVERVIEW

Injection capacity to the Balticconnector pipeline will be about 7.2 million m^3/day i.e. about 300.000 Nm^3/h. The annual throughput from the terminal to Balticconnector is estimated to be 5 TWh/a. The planned annual gas transfer capacity of Balticconnector will be two billion cubic meters. In the preliminary plans, the offshore pipeline is of size 20 inches (= 508 mm). The length of the offshore pipeline is about 81 kilometres. The optimisation of the route will take place in connection with the detailed route planning based on geotechnical and geophysical surveys.

The offshore pipeline will be installed by means of a pipe lay vessel of either an anchored or dynamically positioned (DP) type (Figure 2). In deep parts of the Gulf of Finland, the pipeline will remain exposed on the sea bottom. Rock mattresses are used when crossing existing pipelines or cables. The steps of pipeline pre-commissioning include flooding, cleaning and gauging, pressure tests, dewatering and drying/conditioning and gas filling.

The compressor and receiving station will be placed near the point of landfall of the offshore pipeline and close to the onshore pipeline sections. The gas pressure and flow rate will be raised in compressor station to a level required by the network operation status.

The compressor station will be designed and built according to the requirements defined in EN 12583:2000 (Gas supply systems – Compressor stations – Functional requirements) and other relevant international safety and environmental-protection standards. Noise, flue gas and methane emissions occur to some extent in the vicinity of a compressor station. However, these will not exceed national emission limits and regulations. If a gas turbine driven compressors units are evaluated most suitable for the task and selected task, approximately 60 - 150 t of local CH_4 and 15–30 t NO_x flue gas emissions will be emitted per year.

The gas pipeline and Inkoo compressor station will be controlled and monitored from the control centre located in the Kouvola (Finland) natural gas centre, which is permanently staffed. During the operating life of the gas pipes, both internal and external inspections of the pipes will be made on a regular basis. Lifespan of the pipeline is about 50 years. The pipe taken out of use is typically left in place.

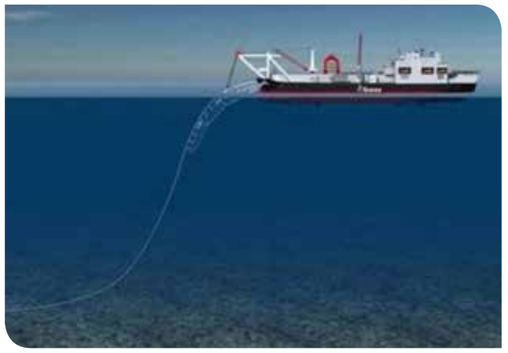


Figure 2. S-lay with DP pipelay vessel (Allseas.com, 2013)

Figure 3. Pipe joint provided with PE coating (black) outneath the concrete weight coating

ALTERNATIVES OF THE PROJECT

In the EIA the following alternatives will be assessed (Figure 4):

- **ALT 0:** Non-implementation of the Balticconnector pipeline. The natural gas pipeline from Paldiski to Inkoo will not be constructed
- **ALT FIN 1:** Construction of the Balticconnector natural gas pipeline across the Gulf of Finland from Paldiski, Estonia, to Inkoo, Finland, route north of Stora Fagerön
- **ALT FIN 2:** Construction of the Balticconnector natural gas pipeline across the Gulf of Finland from Paldiski, Estonia, to Inkoo, Finland, route south of Stora Fagerön
- **ALT EST 1:** Construction of the Balticconnector natural gas pipeline across the Gulf of Finland from Paldiski, Estonia, to Inkoo, Finland, point of landfall in Kersalu in Estonia
- **ALT EST 2:** Construction of the Balticconnector natural gas pipeline across the Gulf of Finland from Paldiski, Estonia, to Inkoo, Finland, point of landfall in Pakrineeme in Estonia

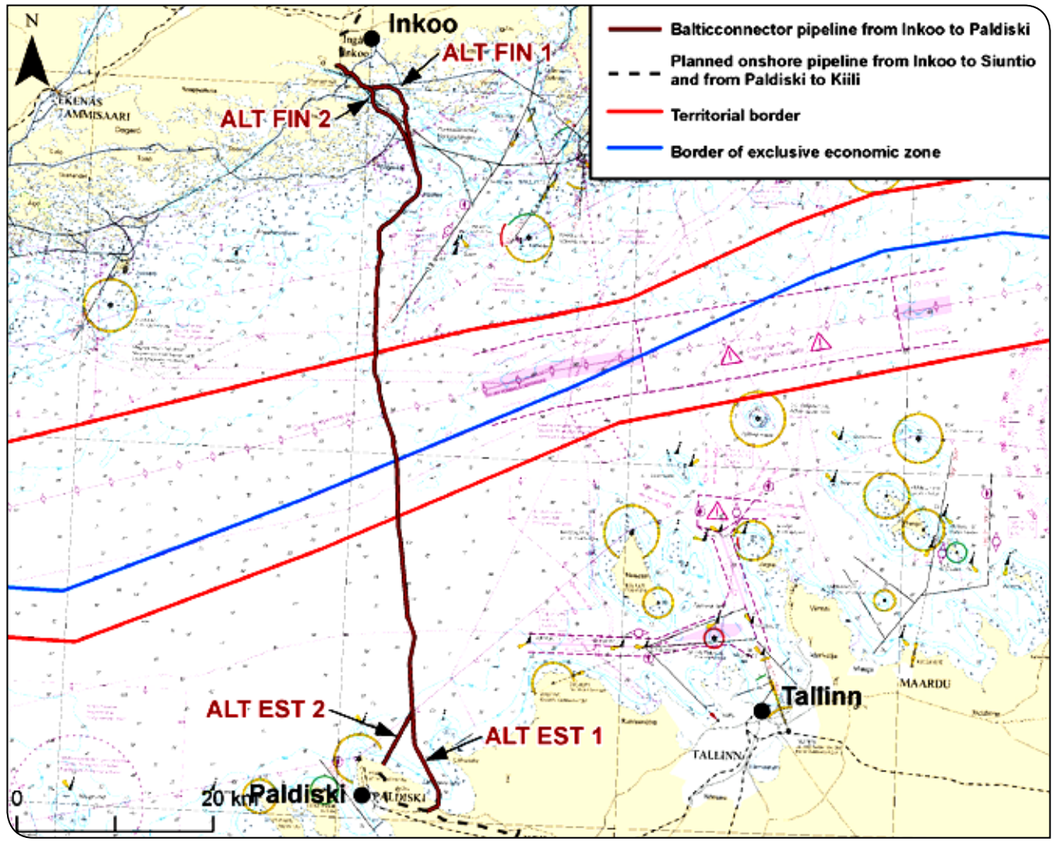


Figure 4. The route of the Balticconnector offshore pipeline

The planned point of landfall in Finland is located on Fjusö Peninsula, about two kilometres east of the Inkoo harbour. The area to the north of the planned point of landfall includes a strongly remolded harbor, power plant, quarry and heavy industrial area. There are also functions of the National Emergency Supply Agency, fish harbour and winter storage area for boats. In the Inkoo archipelago, the route of planned pipeline has been examined in two alternatives: north and south of the island Stora Fagerön (Figure 5).

In Estonia, there are two possible points of landfall (Kersalu ALT EST 1 and Pakrineeme ALT EST 2) on the shore of the Pakri Peninsula in the territory of Paldiski municipality (figure 6). The landfall site in Kersalu (Estonia) has been determined to be most suitable by a related spatial plan e.g. taking into account the connection to existing gas network. The optional landfall site in Parkineeme will be considered related to the proposed LNG terminal site in Paldiski.

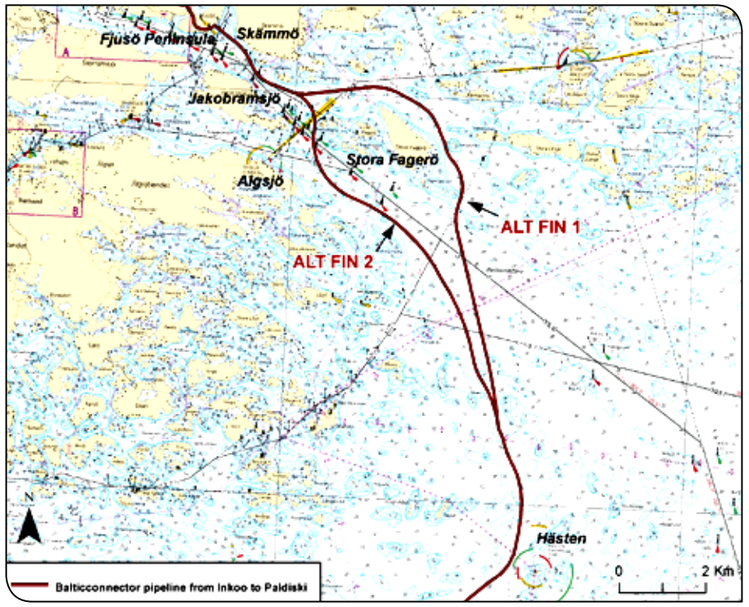


Figure 5. The route of the Balticconnector offshore pipeline

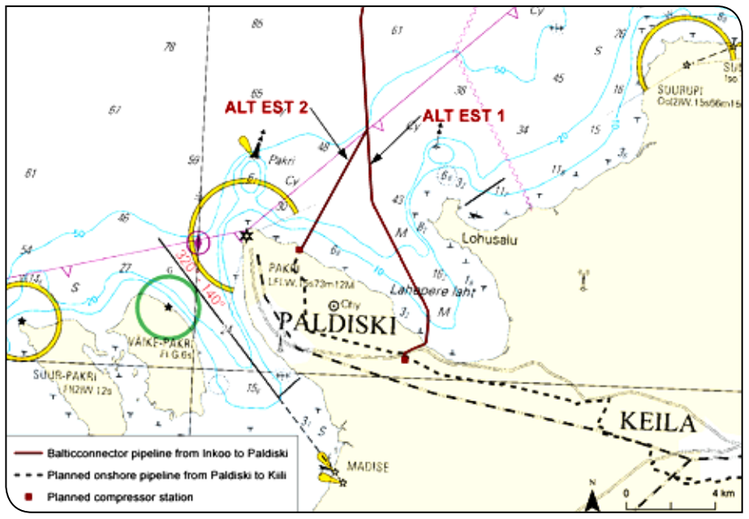


Figure 6. Alternative points of landfall at Pakri peninsula

CURRENT SITUATION IN THE PROJECT AREA

The planned offshore pipeline crosses the routes of regular ship traffic along nearly the entire route. Both of the route alternatives of the offshore pipeline cross the Inkoo fairway (13.0 m) at one point. The Finnish alternative 1 crosses the fairway at a point where the fairway is wider and somewhat deeper. The Inkoo fairway is about 34 kilometres long and has low traffic and most of it is frequenting the power plant harbour.

In the Inkoo archipelago, there is a high concentration of summer cottages (2,000), in addition to permanent residents (300). For this reason, small boat traffic is very vivacious. Many professional fishermen also move in the Inkoo archipelago on the route of the gas pipeline. Fishing is an important industry for many residents in the archipelago. Bottom trawling is practised only near the coast of Estonia in the Gulf of Finland. In the Pakri peninsula, the low density area suitable for farm buildings and area of summer houses have been preserved in the zone. There are no urban residential areas in close vicinity of alternative points of landfall in Estonia.

In the Finnish offshore project area there are five Natura 2000 areas within 10 kilometres from the planned pipeline. Balticconnector will run through one of the areas, the Inkoo Archipelago. There are also many smaller conservation areas in the vicinity of the planned offshore pipeline, but most of these locate inside the borders of the Natura 2000 areas.

In Estonia, the sea area surrounding the whole Pakri Peninsula (except the aquatoria of harbours of Paldiski) is included in the special conservation area of Pakri Natura 2000. There are also two potential Natura areas onshore at the Pakri Peninsula in the vicinity of the planned pipeline. Project area in the vicinity of the pipeline is mainly dominated by forest lands and bosks on former agricultural lands.

IMPACTS TO BE STUDIED

The following impact themes will be included in the environmental impact assessment:

- impacts on the seabed and water quality
- impacts on natural organisms, such as animals, fish and plants
- impacts on protected areas and values and Natura 2000
- impacts on ship traffic and boating
- impacts on land use and land use planning
- impacts on human living conditions, fishing and safety
- impacts on landscape and cultural heritage
- impacts on tourism and recreational use of the areas
- impacts on utilization of natural resources
- impacts on air quality
- noise
- impacts on scientific heritage.

In the assessment, direct and indirect impacts will be assessed during construction, operation and decommissioning. Additionally, cumulative impacts of other related projects (i.e. Nord Stream natural gas pipelines, planned LNG terminal in Inkoo and in Paldiski and the planned onshore pipeline from Paldiski to Kiili) will be taken into account in the assessment.

EIA report will include a separate chapter about transboundary impacts (i.e. impacts on ship traffic). In that chapter likely significant transboundary impacts, which might extend to Baltic Sea region countries, will be described. Other relevant countries (e.g. Sweden, Latvia and Lithuania) to be notified will be decided by the Competent Authorities (ministries of environment) of Estonia and Finland.

The most significant impacts will probably be caused by the pipeline installation operations, such as dredging, blasting, filling and rock placement to even the seabed under the pipeline structures and prevent free-spans. In the operation phase, impacts caused by the project will probably be quite minor mainly including impacts on fishery and ship traffic. Impacts of decommissioning can be assessed after the methods for decommissioning are defined during the planning process. Current situation in the Gulf of Finland and in the project area is characterized in the EIA programme and it will be fulfilled in the EIA report.

The following methods are used to assess environmental impacts:

- analysis of existing data
- studying the results of existing geotechnical and physical studies
- new field studies (surveys) made along the pipeline corridor and around the points of landfall
- consultations with authorities and institutions
- modelling the distribution of environmental impacts
- expert opinions.

Assessments methods will be determined by the EIA consultant compiling the report, taking account the national requirements for assessment methods. Appropriate assessment of the impacts on Natura 2000 areas will be carried out during the EIA procedure. The report of this assessment will be attached to/part of the EIA report. Ramboll is developer`s consultant. The EIA report will be compiled by Pöyry Finland Oy (and its sub-contractors).

Proposed impact area to be studied is shown in the figure 7.

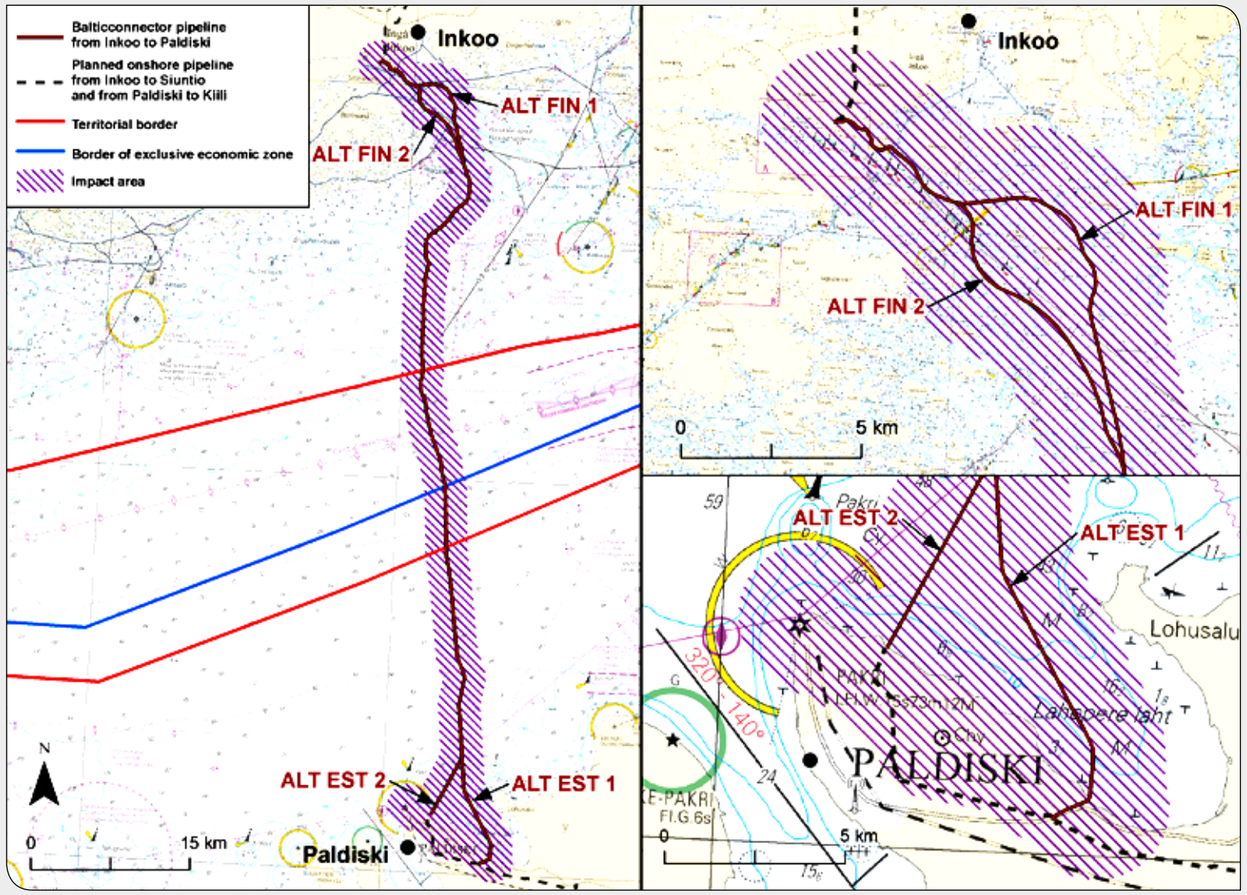


Figure 7. Proposed impact area to be studied

PERMITS NEEDED FOR THE PROJECT

Below is a summary (table 1) of licences and permits required in both countries regarding the alignment of the route, construction, operation and chemical and gas safety as well as the safety storage and use of the LNG facilities related to the project.

Table1. Permits needed for the Balticconnector pipeline project in Finland and Estonia

Activity	Permits in Estonia	Permits in Finland
Pipeline construction and pre-operational testing activities in territorial waters and EEZ	Special water usage permit according to Water Act § 8 section 2 points 1,7 and 9 from the Ministry of the Environment (MoE)	Water permit from the Southern Finland Regional State Administrative Agency, ESAVI (construction and use, Water Act)
Environmental surveys concerning pipeline route location	Consent from the Estonian Government, permission granted from the Ministry of Foreign Affairs (MFA) to conduct surveys in the Estonian territorial waters and EEZ until 30.12.2013	Consent from the Council of State via Ministry of Employment and the Economy (EEZ Act)
Pipeline route in EEZ's (right to use)	EEZ consent from the Estonian Government via MFA (EEZ Act); Superficies licence according to Water act § 22[5] from the Estonian Government (permit to burden Estonian sea area with a pipeline)	EEZ consent of the Council of State via Ministry of Employment and the Economy (EEZ Act)
Import and transmission of gas in Estonian territory	Activity permit and 'gas market' permit from the Estonian Competition Authority (ECA) (Natural Gas Act § 27, 29 and 47)	
The construction of the cross-border natural gas transmission pipeline	Permission from the Estonian Government (Natural Gas Act § 18[1])	Project license from the Ministry of Employment and the Economy (Natural Gas Market Act, 'gas market' permit)
Gaseous fuel safety in Estonian territory	Protection zone of the gas equipment determined by Estonian Government and registration by Estonian Technical Surveillance Authority (Gaseous Fuel Safety Act § 10 section 3 and § 19 section 2)	
Operating as service provider	Permission from the Estonian Competition Authority	
On-shore pipeline section from the point of landfall to the compressor station	Technical requirements for next steps and other relevant permits(e.g construction permit, etc) from the local municipality (Paldiski municipal government)	
Safe construction of the pipelines in Finnish territory (onshore, offshore)		Construction licence from the Safety Technology Authority (Tukes) according to the Chemical Security Act and the Decree on the Safety Processing of Natural Gas
The storage of natural gas in Finnish territory (onshore, offshore)		Construction licence from Tukes, the Chemical Security Act and the Decree on the Safety Processing of Natural Gas
Safe storage of gas in liquid form in Finnish territory		Construction licence from Tukes, Chemical Security Act and Dangerous Chemical Decree
State technical inspections	Estonian Technical Surveillance Authority(Gaseous Fuel Safety Act)	Private certified bodies (the Decree on the Safety Processing of Natural Gas Pressure Equipment Act)

EIA PROCEDURE FOR THE PROJECT

Because the project has an international dimension, there are two primary international procedures to be followed:

- The Espoo Convention (UNECE Convention on Environmental Impact Assessment in a Transboundary Context)
- The Bilateral Agreement on EIA between Finland and Estonia (Agreement between Finland and Estonia on Environmental Impact Assessment in a Transboundary Context).

The need for assessing the environmental impacts of the project for the part concerning Finland is based on the Finnish Act on Environmental Impact Assessment Procedure. In Estonia, the need for the assessment is based on the EIA and Environmental Management System Act.

The EIA procedure both in Finland and Estonia is divided into two phases:

- In the first phase, the assessment programme presents the impacts to be assessed and the methods to be used in assessing the impacts
- In the second phase, the actual impact assessment is carried out and the results are compiled in an environmental impact assessment report. The EIA report will be compiled according to national requirements (both Finnish and Estonian legislation).

The environmental impact assessment will be conducted in an interactive way with various interest groups and authorities. During the display of the assessment programme and report authorities,public and other non-governmental will have the opportunity to express their opinions. The assessment programme and report will be published in Estonian, Finnish, Swedish and in English. In Finland, the competent authority on EIA is the Uusimaa Centre for Economic Development, Transport and the Environment. In Estonia, the Ministry of Economic Affairs and Communications is the permitting authority (announces about the EIA publication in Estonian) and the Government of Estonia is the decision-maker concerning superficies license. The EIA supervisor in Estonia is the Ministry of Environment, as it is a case of transboundary EIA.

TIME SCHEDULE AND PARTICIPATION

The EIA is planned to start by delivering the EIA programme to the competent authority in Finland and by official initiation of EIA procedure by the Government of Estonia. The EIA report is planned to be issued for publication in autumn 2014.

After the EIA programme and report are completed, they will be set on public display in Estonia and in Finland. The summary of EIA programme will be sent to other Baltic Sea region countries with the notification. The summary of the EIA report will be sent for comments to those Parties of the Espoo Convention which have indicated their wish to participate in the EIA procedure.

In Finland, public meetings will be organised during the display of both the EIA programme and the EIA report. In Estonia, similar public meetings will be organised at the end of the display of the programme and the report. Public meetings will be organized in the communities of the impact area of the project, at least in Inkoo in Finland and in Paldiski/Tallinn in Estonia. The EIA procedure concludes in Finland with a statement of the coordinating authority (Uusimaa ELY Centre) and in Estonia with approval of the EIA report by the EIA supervisor (Ministry of Environment).

The preliminary time schedule of the EIA procedure and permitting is shown in the figure 8.

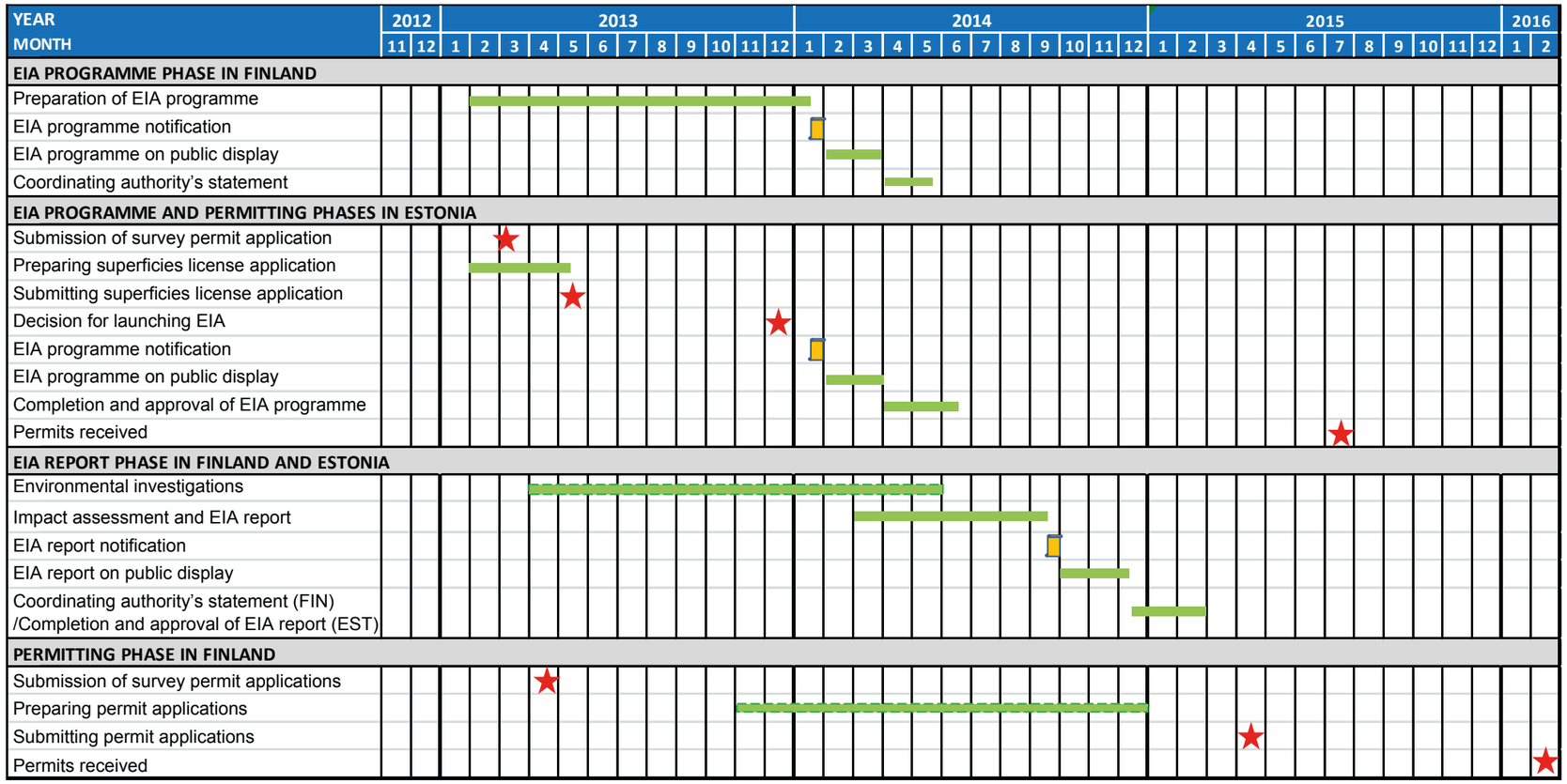


Figure 8. The preliminary time schedule of the Balticconnector EIA procedure and permitting

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