Consumer Protection and Technical Regulatory Authority

Endla 10a, 10122 Tallinn

[13.08.2024]

Application for a Superficies Licence to Install a Marine Power Cable in Public Waters

1. General Information

Elering AS (hereinafter Elering) submits an application to the Consumer Protection and Technical Regulatory Authority (hereinafter TTJA) for a superficies licence to install a high-voltage alternating current (hereinafter HVAC) transmission line in the marine area. The application has been prepared in accordance with the Building Code and the Water Act, using information and data obtained from previously conducted studies, analyses, and other relevant activities. The most important of these are the Estonian maritime spatial plan and its environmental impact assessment report.[1]

As the operator of Estonia's electricity transmission network, Elering considers it necessary to establish a fourth electricity connection between the Estonian and Latvian transmission networks. According to a preliminary assessment, the need for additional technical capacity is up to 1000 MW. Elering's analyses indicate that the most cost-effective solution is to construct the new connection in the western part of Estonia and Latvia, linking the two countries' electricity grids via a submarine cable between Southwest Saaremaa and the Kurzeme region in Latvia. This solution would allow the required transmission capacity to be built with the lowest financial cost and the most reliable alternating current (AC) technology.

The establishment of the fourth electricity connection between Estonia and Latvia via Saaremaa requires the construction of 330-kilovolt power lines on Saaremaa and their strong integration with the mainland's 330-kilovolt transmission network. Consequently, Elering submitted an application for a National Spatial Plan (hereinafter NSP) to the Ministry of Regional Affairs

[1] https://www.agri.ee/regionaalareng-planeeringud/ruumiline-planeerimine/mereala-planeering

and Agriculture on October 12, 2023. On February 15, 2024, the Government of the Republic initiated the NSP and the Strategic Environmental Assessment (SEA) for the Estonia-Latvia fourth electricity connection (hereinafter Estonia-Latvia 4) at Elering's request.

Since the NSP process will evaluate different route corridors, there are four possible submarine cable corridor options for the Estonia-Latvia fourth electricity connection:

1. **Southwest Saaremaa landing site**:
    - Possible route corridors: **Southwest Saaremaa – Ventspils** and **Southwest Saaremaa – Dundaga**.
    - Elering will submit two separate building permit applications for this alternative.
2. **Sõrve Peninsula landing site**:
    - Possible route corridors: **Sõrve – Ventspils** and **Sõrve – Dundaga**.
    - Elering will submit two separate building permit applications for this alternative.

Which of the four applications will proceed and which three will be rejected will be determined during the NSP process once the exact landing site for the submarine cable on Saaremaa is confirmed.

The Estonia-Latvia 4 submarine cable is necessary to create additional electricity transmission capacity between the two countries. It contributes to both the security of electricity supply and the decarbonization of the energy system by facilitating the transmission of additional renewable energy produced in Latvia to the Baltic region.

Additionally, the Estonia-Latvia 4 submarine cable supports the achievement of climate and energy policy goals and enhances market integration, ensuring the security of supply for both individual countries and the region as a whole.

Elering has a legal obligation to develop cross-border transmission capacities, which is also essential for ensuring security of supply in today's open energy market conditions. The Estonia-Latvia 4 submarine cable enables the transportation of energy to markets where it is needed. More interconnections create a more secure grid that is less vulnerable to third-party interference. The connection strengthens security of supply and facilitates additional renewable energy production in the region, positively impacting electricity prices by bringing them closer to Nordic electricity price levels.

2. Technical Information of the Application

Elering is legally obligated to develop cross-border transmission capacities. This is also essential for fulfilling the obligation to ensure supply security and energy security under today's open energy market conditions.

The Estonia-Latvia 4 submarine cable consists of up to three power cables and one fiber-optic communication cable. The distances between the cables depend on the seabed conditions and will be determined during the design phase.

The planned total operational capacity of the submarine cable is up to 1000 MW. The transmission line consists of up to three alternating current (AC) cables. Each cable comprises three phase cables and an optical cable, with a total diameter of approximately 20 cm. To prevent mechanical damage, the cable line will be at least partially buried in seabed sediments at a depth of approximately 1 meter and up to 1.5 meters near the shore.

The number of cables depends on the available technology and cost considerations. The specific type of submarine cable, installation method, and the need for burial beneath the seabed surface will be determined during the cable line design phase.

For electricity transmission via Estonia-Latvia 4, depending on the technology, up to four cables are required (which may consist of several sub-cables): 3 power cables and a fiber optic communication line.

The planned power of the marine cable is a maximum of 1000 MW.

The main technical specifications of the planned Estonia-Latvia 4 marine connection are as follows:

- Alternating voltage (up to 330 kV)
- Southwest Saaremaa-Ventspils length of about 100 kilometers, of which about 52 kilometers are in Estonia
- Southwest Saarema -Dundaga length of about 73 kilometers, of which about 55 kilometers are in Estonia
- Sõrve-Ventspils length of about 65 kilometers, of which about 23 kilometers are in Estonia

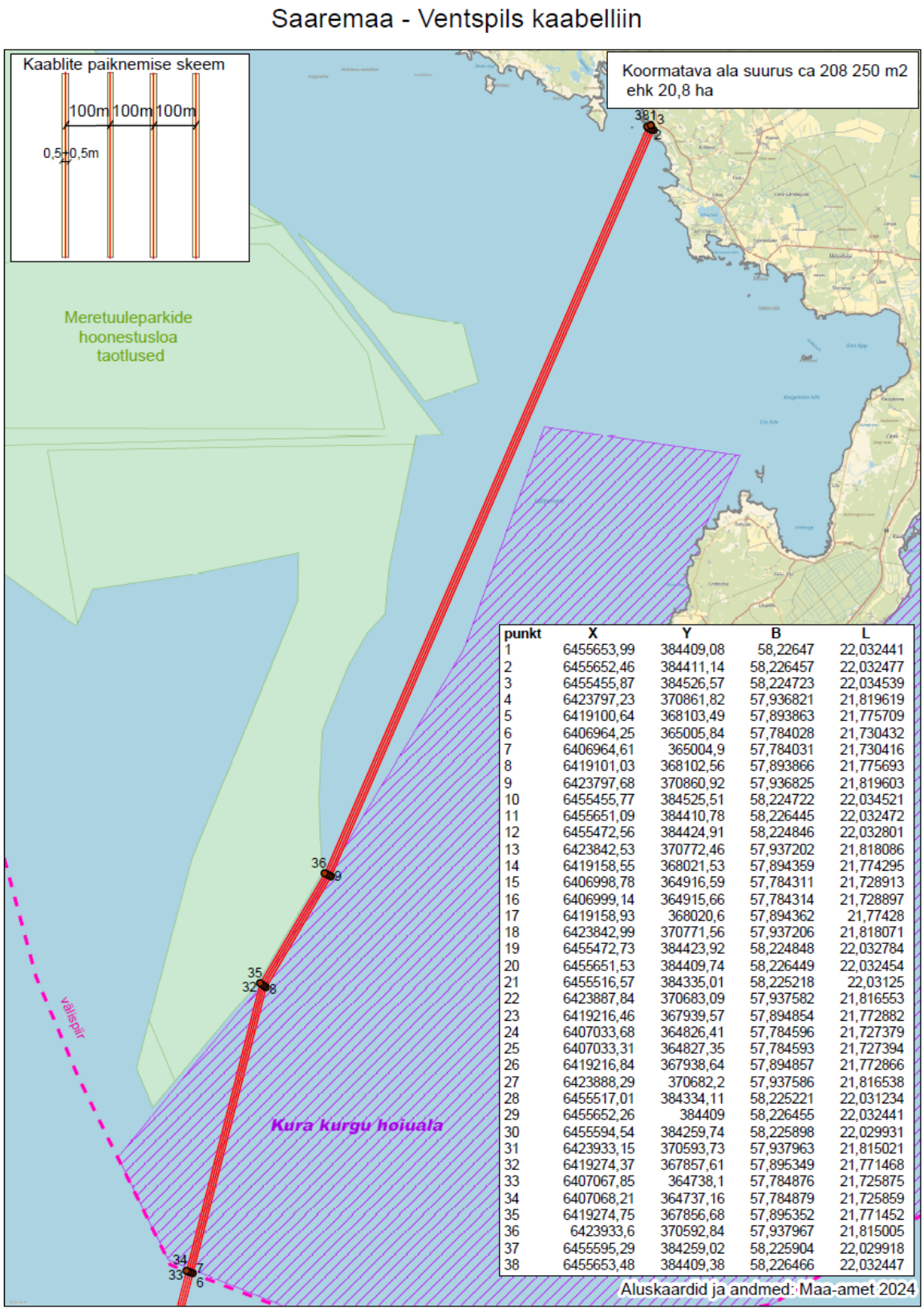
- Sõrve-Dundaga length of about 32 kilometers, of which about 16 kilometers are in Estonia
- Buried in seabed sediments (about 1-1.5 meters deep)

Variables affecting the amount of work to be done on the seabed, which will be determined during the project:

- Number of cables (depending on the technology, fewer cables may be needed; it is possible to create the connection with one cable)
- Composition of the seabed (the cross-sectional area of the trench decreases depending on the type of soil)
- Chosen technology (plowing or jetting would not involve soil removal; the technology for landing sites is not yet known and depends on geology and environmental conditions)
- Number of crossings and technical solutions for crossings must be coordinated with the crossing party (from the Balticconnector experience, the amount of backfill required for crossings is about 250 m^3 of stone for cable crossings and about 2,000 m^3 of stone for pipeline crossings)

3. ANNEXES

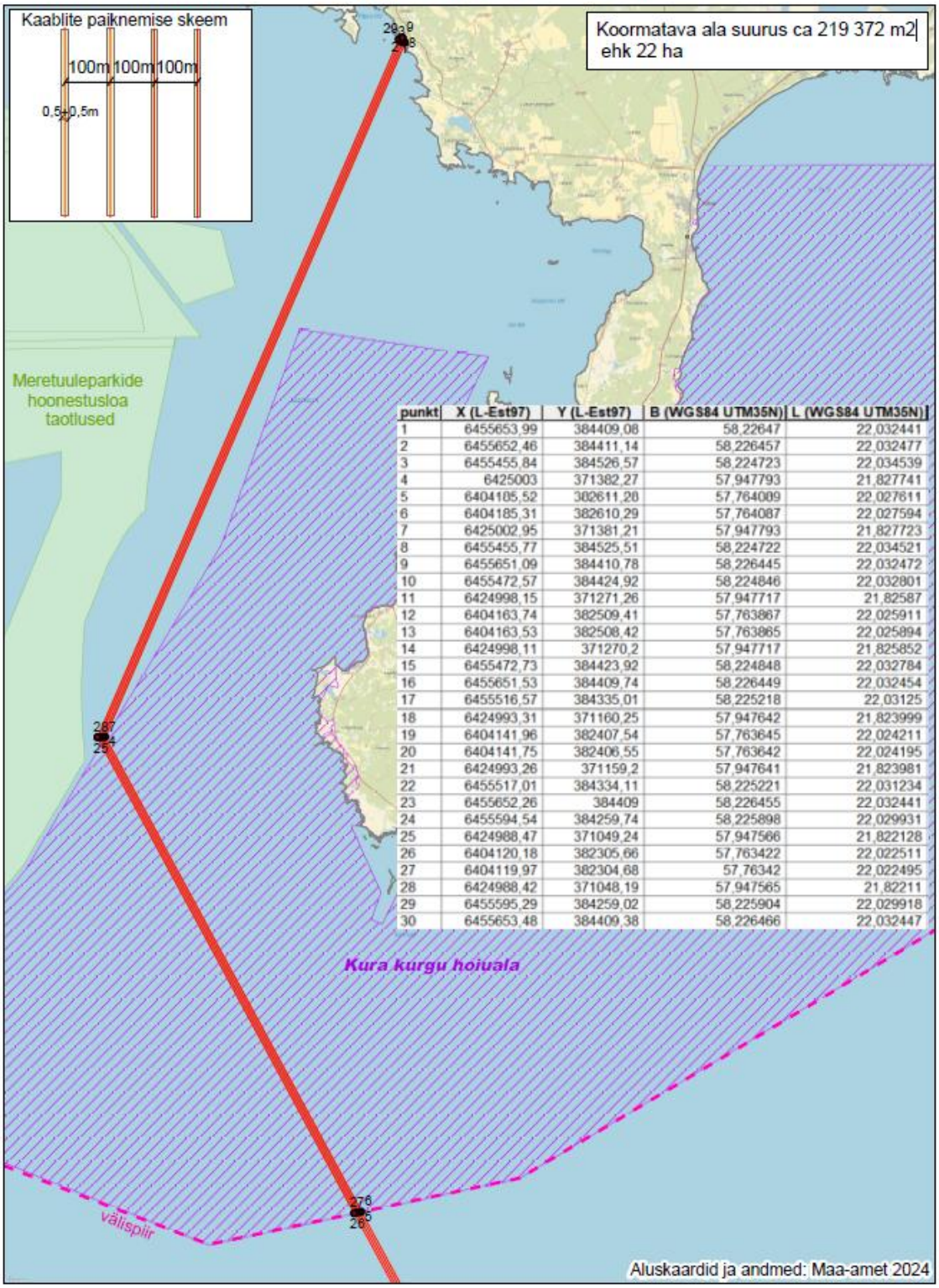
Annex 1. Southwest Saaremaa-Ventspils marine cable and land connection.



punkt	X	Y	B	L
1	6455653,99	384409,08	58,22647	22,032441
2	6455652,46	384411,14	58,226457	22,032477
3	6455455,87	384526,57	58,224723	22,034539
4	6423797,23	370861,82	57,936821	21,819619
5	6419100,64	368103,49	57,893863	21,775709
6	6406964,25	365005,84	57,784028	21,730432
7	6406964,61	365004,9	57,784031	21,730416
8	6419101,03	368102,56	57,893866	21,775693
9	6423797,68	370860,92	57,936825	21,819603
10	6455455,77	384525,51	58,224722	22,034521
11	6455651,09	384410,78	58,226445	22,032472
12	6455472,56	384424,91	58,224846	22,032801
13	6423842,53	370772,46	57,937202	21,818086
14	6419158,55	368021,53	57,894359	21,774295
15	6406998,78	364916,59	57,784311	21,728913
16	6406999,14	364915,66	57,784314	21,728897
17	6419158,93	368020,6	57,894362	21,77428
18	6423842,99	370771,56	57,937206	21,818071
19	6455472,73	384423,92	58,224848	22,032784
20	6455651,53	384409,74	58,226449	22,032454
21	6455516,57	384335,01	58,225218	22,03125
22	6423887,84	370683,09	57,937582	21,816553
23	6419216,46	367939,57	57,894854	21,772882
24	6407033,68	364826,41	57,784596	21,727379
25	6407033,31	364827,35	57,784593	21,727394
26	6419216,84	367938,64	57,894857	21,772866
27	6423888,29	370682,2	57,937586	21,816538
28	6455517,01	384334,11	58,225221	22,031234
29	6455652,26	384409	58,226455	22,032441
30	6455594,54	384259,74	58,225898	22,029931
31	6423933,15	370593,73	57,937963	21,815021
32	6419274,37	367857,61	57,895349	21,771468
33	6407067,85	364738,1	57,784876	21,725875
34	6407068,21	364737,16	57,784879	21,725859
35	6419274,75	367856,68	57,895352	21,771452
36	6423933,6	370592,84	57,937967	21,815005
37	6455595,29	384259,02	58,225904	22,029918
38	6455653,48	384409,38	58,226466	22,032447

Annex 2. Southwest Saarema -Dundaga marine cable and land connection.

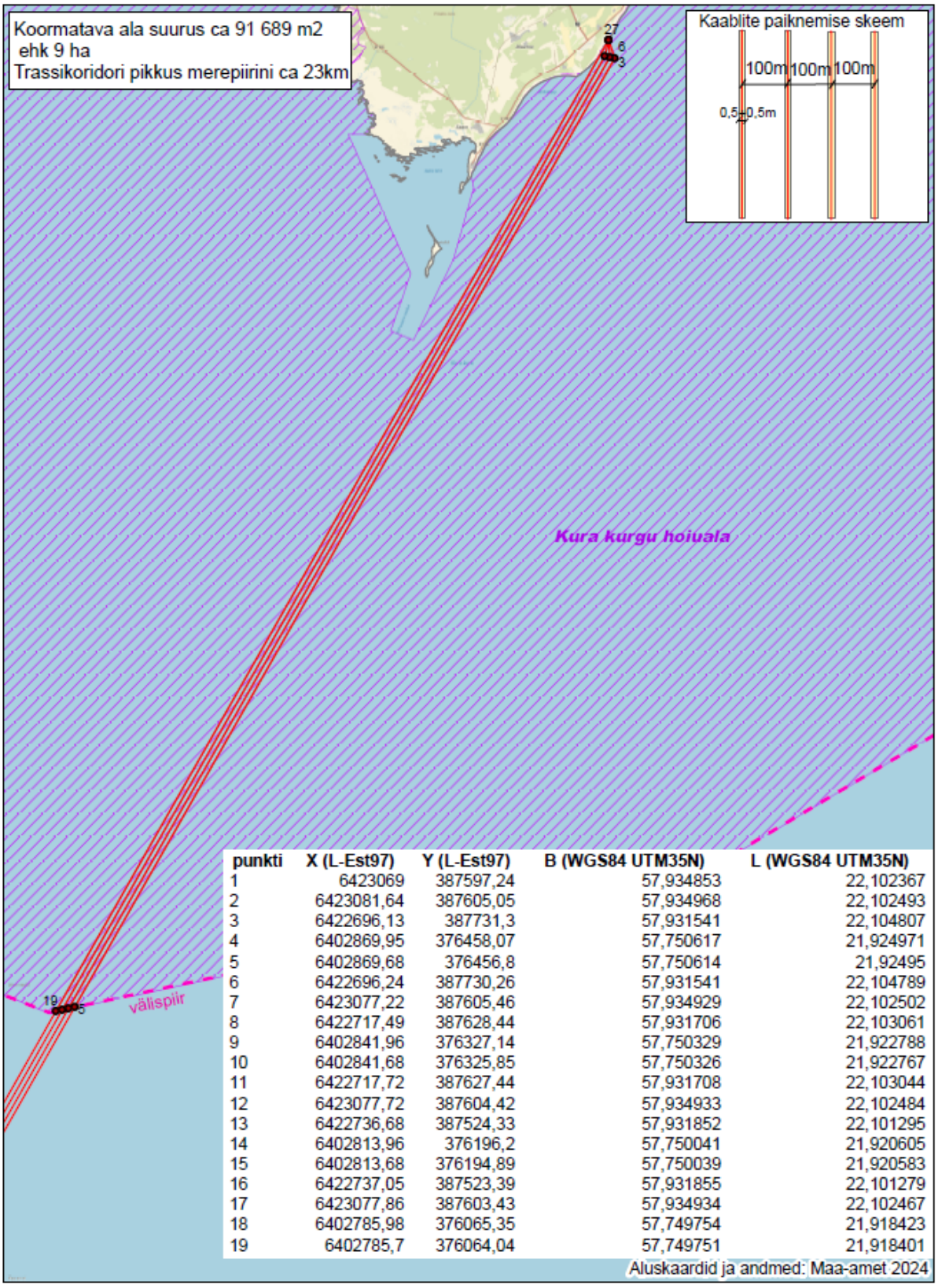
Saaremaa - Dundaga kaabelliin



punkt	X (L-Est97)	Y (L-Est97)	B (WGS84 UTM35N)	L (WGS84 UTM35N)
1	6455653,99	384409,08	58,22647	22,032441
2	6455652,46	384411,14	58,226457	22,032477
3	6455455,84	384526,57	58,224723	22,034539
4	6425003	371382,27	57,947793	21,827741
5	6404185,52	382611,28	57,764089	22,027611
6	6404185,31	382610,29	57,764087	22,027594
7	6425002,95	371381,21	57,947793	21,827723
8	6455455,77	384525,51	58,224722	22,034521
9	6455651,09	384410,78	58,226445	22,032472
10	6455472,57	384424,92	58,224846	22,032801
11	6424998,15	371271,26	57,947717	21,82587
12	6404163,74	382509,41	57,763867	22,025911
13	6404163,53	382508,42	57,763865	22,025894
14	6424998,11	371270,2	57,947717	21,825852
15	6455472,73	384423,92	58,224848	22,032784
16	6455651,53	384409,74	58,226449	22,032454
17	6455516,57	384335,01	58,225218	22,03125
18	6424993,31	371160,25	57,947642	21,823999
19	6404141,96	382407,54	57,763645	22,024211
20	6404141,75	382406,55	57,763642	22,024195
21	6424993,26	371159,2	57,947641	21,823981
22	6455517,01	384334,11	58,225221	22,031234
23	6455652,26	384409	58,226455	22,032441
24	6455594,54	384259,74	58,225898	22,029931
25	6424988,47	371049,24	57,947566	21,822128
26	6404120,18	382305,66	57,763422	22,022511
27	6404119,97	382304,68	57,76342	22,022495
28	6424988,42	371048,19	57,947565	21,82211
29	6455595,29	384259,02	58,225904	22,029918
30	6455653,48	384409,38	58,226466	22,032447

Annex 3. Sõrve-Ventspils marine cable and land connection.

Saaremaa (Sõrve ps) - Ventspils kaabelliin

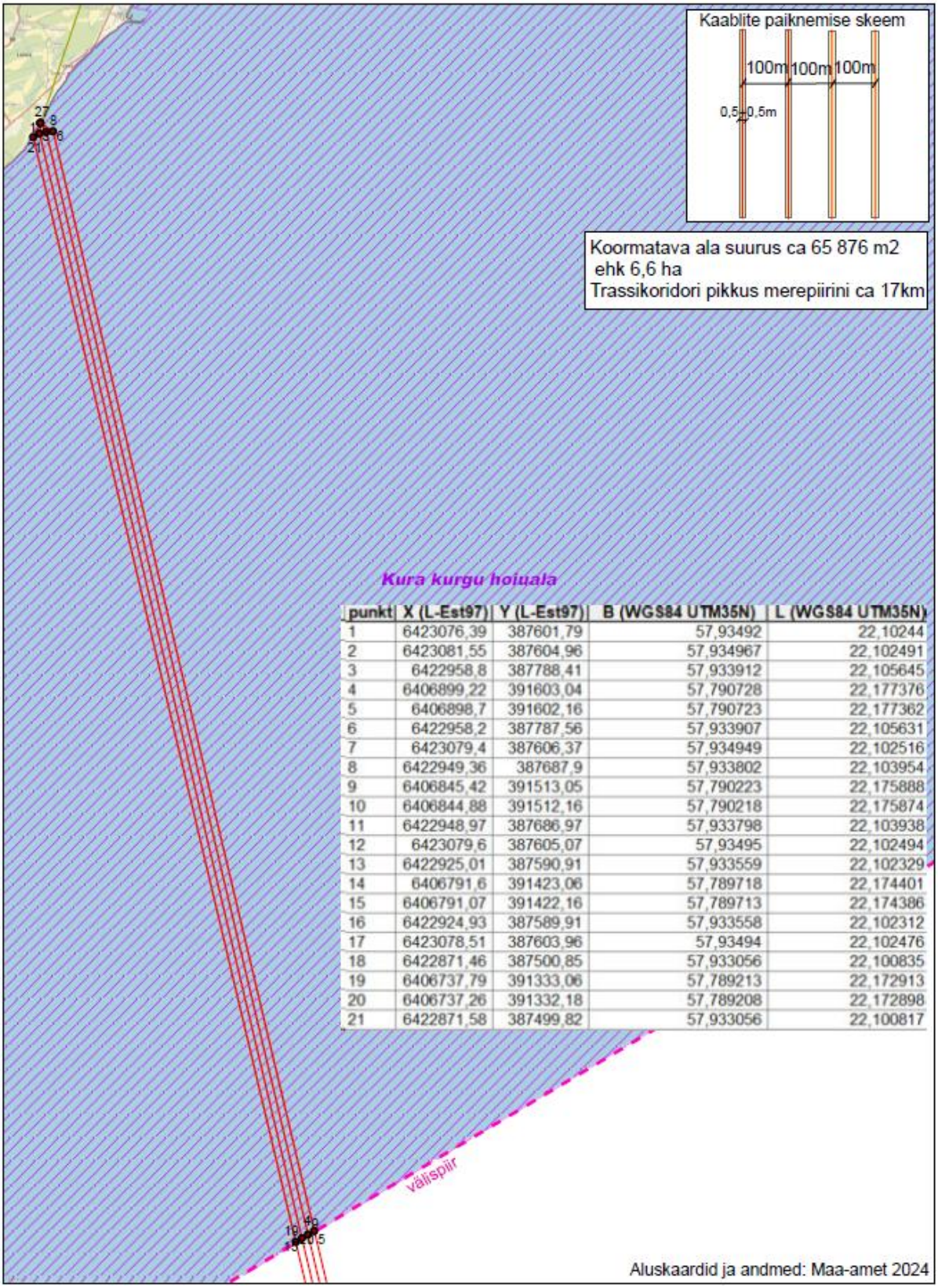


punkti	X (L-Est97)	Y (L-Est97)	B (WGS84 UTM35N)	L (WGS84 UTM35N)
1	6423069	387597,24	57,934853	22,102367
2	6423081,64	387605,05	57,934968	22,102493
3	6422696,13	387731,3	57,931541	22,104807
4	6402869,95	376458,07	57,750617	21,924971
5	6402869,68	376456,8	57,750614	21,92495
6	6422696,24	387730,26	57,931541	22,104789
7	6423077,22	387605,46	57,934929	22,102502
8	6422717,49	387628,44	57,931706	22,103061
9	6402841,96	376327,14	57,750329	21,922788
10	6402841,68	376325,85	57,750326	21,922767
11	6422717,72	387627,44	57,931708	22,103044
12	6423077,72	387604,42	57,934933	22,102484
13	6422736,68	387524,33	57,931852	22,101295
14	6402813,96	376196,2	57,750041	21,920605
15	6402813,68	376194,89	57,750039	21,920583
16	6422737,05	387523,39	57,931855	22,101279
17	6423077,86	387603,43	57,934934	22,102467
18	6402785,98	376065,35	57,749754	21,918423
19	6402785,7	376064,04	57,749751	21,918401

Aluskaardid ja andmed: Maa-amet 2024

Annex 4. Sõrve-Dundaga marine cable and land connection.

Saaremaa (Sõrve ps) - Dundaga kaabelliin



punkt	X (L-Est97)	Y (L-Est97)	B (WGS84 UTM35N)	L (WGS84 UTM35N)
1	6423076,39	387601,79	57,93492	22,10244
2	6423081,55	387604,96	57,934967	22,102491
3	6422958,8	387788,41	57,933912	22,105645
4	6406899,22	391603,04	57,790728	22,177376
5	6406898,7	391602,16	57,790723	22,177362
6	6422958,2	387787,56	57,933907	22,105631
7	6423079,4	387606,37	57,934949	22,102516
8	6422949,36	387687,9	57,933802	22,103954
9	6406845,42	391513,05	57,790223	22,175888
10	6406844,88	391512,16	57,790218	22,175874
11	6422948,97	387686,97	57,933798	22,103938
12	6423079,6	387605,07	57,93495	22,102494
13	6422925,01	387590,91	57,933559	22,102329
14	6406791,6	391423,06	57,789718	22,174401
15	6406791,07	391422,16	57,789713	22,174386
16	6422924,93	387589,91	57,933558	22,102312
17	6423078,51	387603,96	57,93494	22,102476
18	6422871,46	387500,85	57,933056	22,100835
19	6406737,79	391333,06	57,789213	22,172913
20	6406737,26	391332,18	57,789208	22,172898
21	6422871,58	387499,82	57,933056	22,100817