ORGANIZĒ LMSP ATBALSTS Latvijas Biozinātņu un tehnoloģiju universitāte · LBTU Meža un vides zinātņu fakultāte · ZEME VALSTS · SILAVA

3D MODEL OF HYDROLOGICAL IMPACTS OF PROPOSED PEAT EXTRACTION AT CENAS TĪRELIS, LATVIA

Lucija Kursite[1], Inga Grinfelde[1,2] and Jovita Pilecka-Ulcugaceva[1]

[1] Faculty of Forest and Environmental Sciences, Latvia University of Life Sciences and Technologies, Latvia
[1] Faculty of Environmental Engineering, Lietuvos Inzinerijos Kolegija Higher Education Institution, Lithuania

KEY RESULT **Modeled northwest influence extends approximately 12–58 m as ditch depth increases from 0.5 to 2.0 m. Local groundwater lowering near the Natura 2000 boundary requires monitoring and drainage controls.**

STUDY AREA



Proposed peat extraction extension in Olaine municipality. Magenta marks the project boundary. [1, Fig. 2]

DRAINAGE IN THE FIELD



78.99
ha
PROJECT AREA

29.31
km
PLANNED DITCH NETWORK

Existing ditch at the northwest boundary. [1, Fig. 14]
Planned network: 73 field ditches and 7 outlet ditches. [1, §7.1]

ASSESSMENT APPROACH

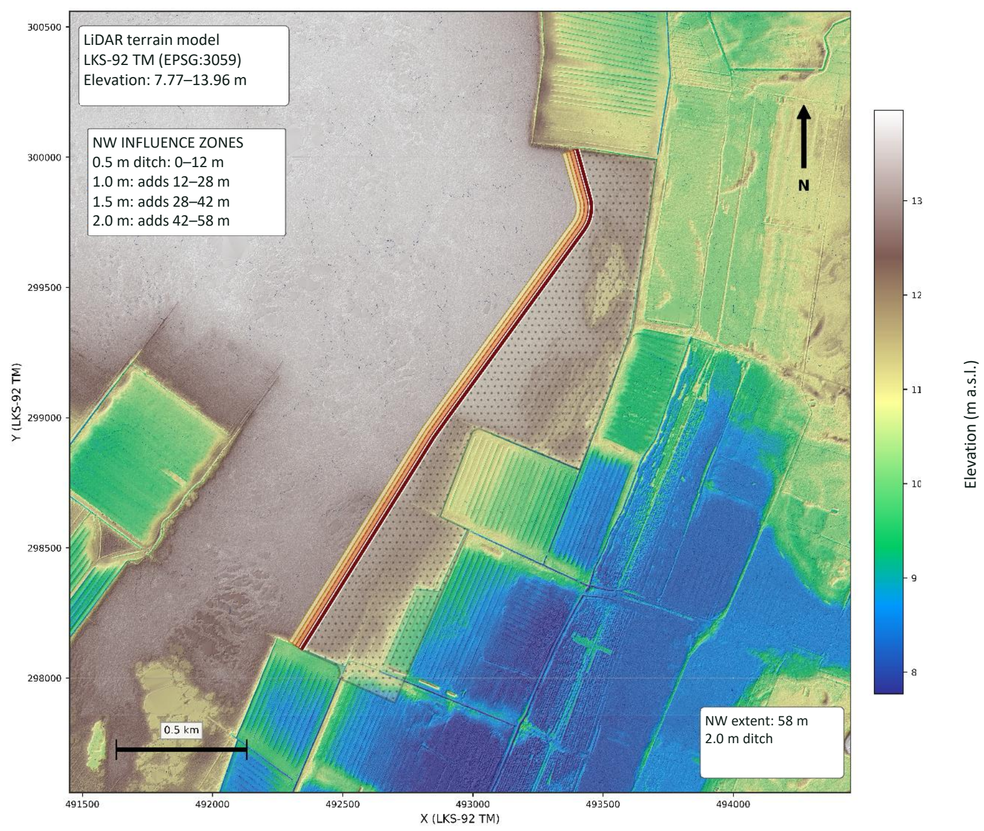
LiDAR terrain analysis and D8 routing identify flow paths and catchments. Field observations and drainage records support the spatial assessment.

METQ represents peatland and forest response units. Four scenarios use a 0.60 m ditch bed and 1:1 side slopes.

The report supplies no quantitative local model-fit statistics.

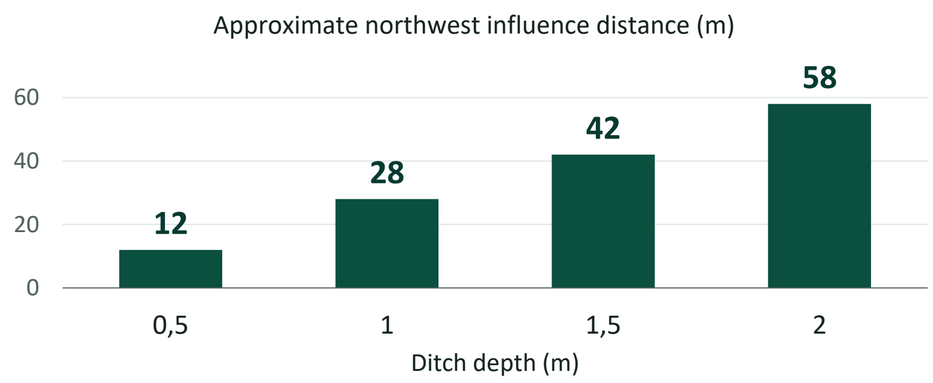
Scenario geometry is assumed.
[1, §§2–3, 7–8]

MODELED GROUNDWATER INFLUENCE



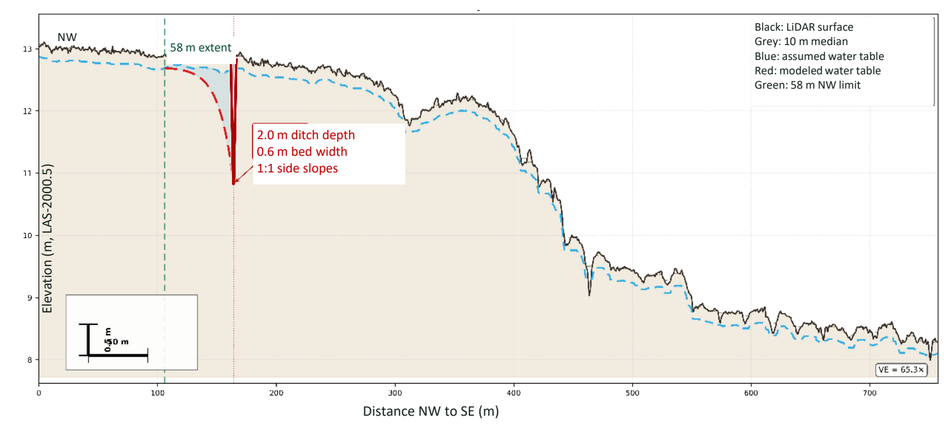
Colored bands show the additional modeled influence as the ditch deepens. The dark red line is the planned contour ditch. [1, Fig. 48]

DITCH DEPTH AND INFLUENCE DISTANCE



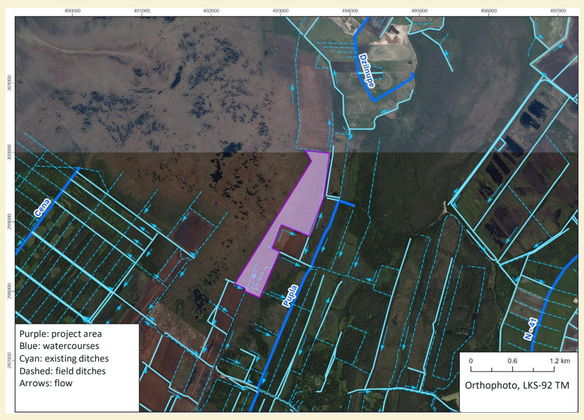
Comparative model scenarios. These distances do not define a universal safe buffer. [1, Table 14]

GROUNDWATER PROFILE: 2.0 m DITCH



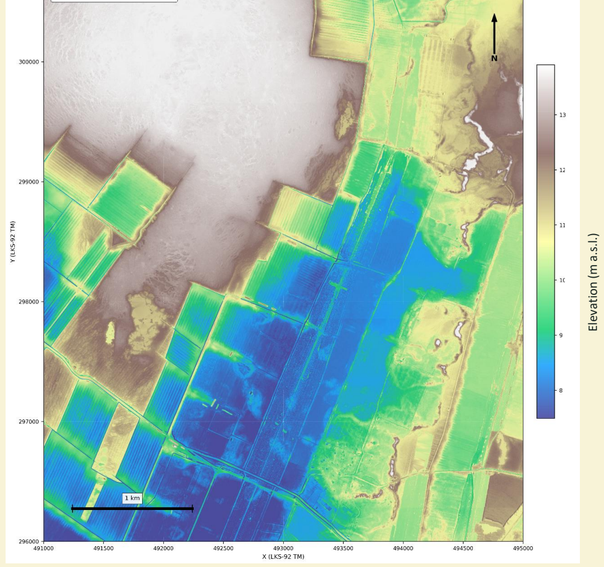
Blue line assumes groundwater 0.20 m below the 10 m median terrain surface. Red shows the modeled response. [1, Fig. 50]

RUNOFF CONNECTIONS



Drainage links the project area to Pupla and Dzilnupe. Main flow pathways remain in the modeled scenarios. [1, Fig. 47; §8.2]

LIDAR TERRAIN



The raised bog contrasts with lower drained peat fields. Terrain guides local flow routing. [1, Fig. 38]

PROTECTION AND MONITORING

Retain buffers and avoid excess ditch deepening. Control suspended peat particles.

Monitor groundwater at the northwest boundary, outlet levels and flows, and water quality before and during extraction.

INTERPRETATION LIMITS

Local lowering remains possible near the Natura 2000 boundary. Detailed ditch and culvert capacity checks are still required. [1, §8.5]