

Supplementary material for:

Early carbon recovery after cell-bunding rewetting is constrained by aerated microsites in a cutaway raised bog

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Table S1. Median (IQR) dark-chamber ecosystem respiration (R_{eco} , $\mu\text{mol m}^{-2} \text{s}^{-1}$) across microsites and seasonal periods for July 2024 to June 2025. Values are shown as medians with interquartile range (Q1–Q3), with sample sizes given in parentheses. Seasonal periods correspond to Jul–Oct (J–O), Mar–Jun (M–J) and Nov–Feb (N–F).

Period	Bare peat	Bund	Vegetation	Open water	Open water (exposed)
J–O	0.24 (0.19–0.37, n=94)	0.49 (0.29–1.02, n=77)	1.07 (0.54–1.45, n=50)	0.07 (0.07–0.40, n=14)	0.38 (0.24–0.62, n=46)
M–J	0.28 (0.20–0.38, n=46)	0.52 (0.39–0.73, n=45)	1.14 (0.83–1.81, n=23)	0.39 (0.10–0.88, n=5)	0.75 (0.51–0.90, n=3)
N–F	0.05 (0.05–0.05, n=33)	0.24 (0.10–0.37, n=64)	0.25 (0.13–0.39, n=22)	0.07 (0.06–0.07, n=30)	0.14 (0.09–0.18, n=3)

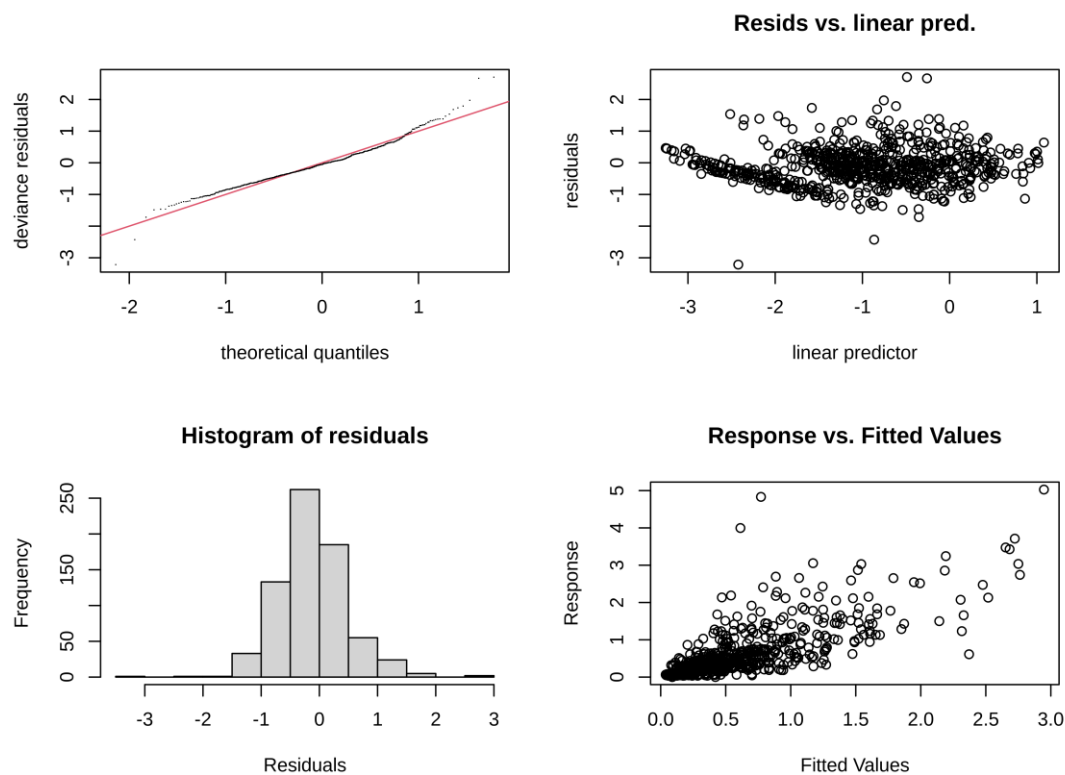


Figure. S1. Diagnostic plots for the final generalized additive model (GAM) of dark chamber ecosystem respiration (R_{eco}), showing the Q–Q plot, residuals versus linear predictor, histogram of residuals, and response versus fitted values.

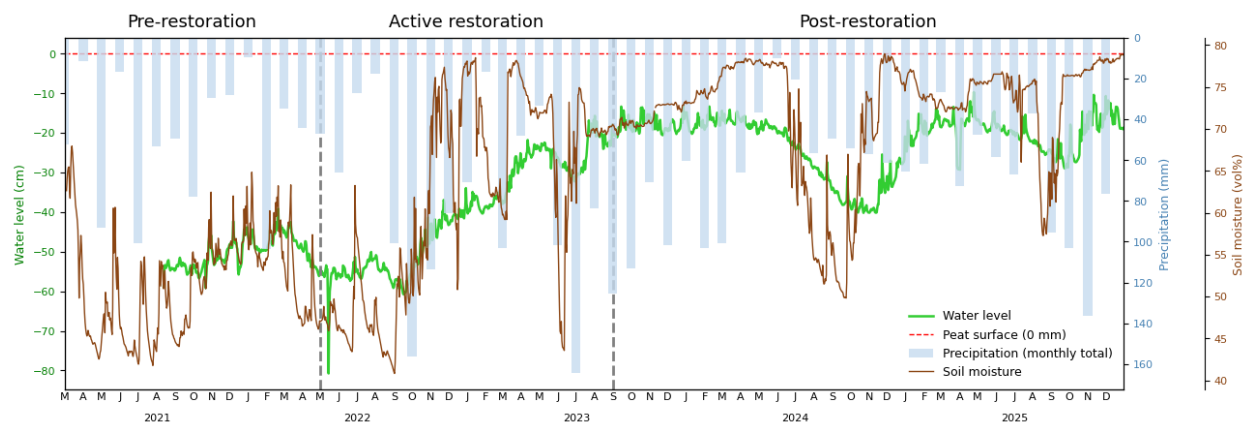


Figure S2. Long-term hydrological conditions at the Study Site from 2021 to 2025, showing water-table level, soil moisture, and monthly precipitation across the pre-restoration, active-restoration, and post-restoration periods. The vertical dashed lines indicate the different phases of restoration works.