Interreg North-West Europe RAWFILL

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I2.3.1 Deliverable - Design sampling plan

(Les Champs Jouault)

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BAV Bergischer Abfallwirtschaftsverband

British Geological Survey NATURAL ENVIRONMENT RESEARCH COUNCIL

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SUBJECT:	I2.3.1 Design sampling plan						
☒	report	☐	information	☐	consideration	☐	decision
To:	…			From:	ULiege & BGS		

D I2.3.1 Design the optimized sampling survey

In this deliverable we describe the sampling survey defined based on the geophysical results (see Deliverable I2.2.3).

Firstly, the magnetic mapping measurements were greatly disturbed by the infrastructure of the landfill, i.e. fences, pipes, fences, trucks. After the data processing and a high-pass filter to delete regional anomalies, still the four studied cells did not present any distinctive anomaly. Instead, the total magnetic field anomalies were homogeneously distributed in all cells.

Using the electromagnetic induction (EMI) method, it was possible to detect two large conductivity anomalies in cells 3 and 1 (see Figure 1). The first anomaly is located towards the south of cell 3 with conductivity increasing with depth and may potentially be due to a gravimetric accumulation of leachate due to topographic effect. This anomaly should have been sampled but as cell 3 is equipped with three lines of buried electrodes (Figure 2), drilling was not possible in that zone. Although of lower amplitude, the second anomaly of large conductivity northwards cell 1 also shows an increase of conductivity with depth and should be investigated in more details.

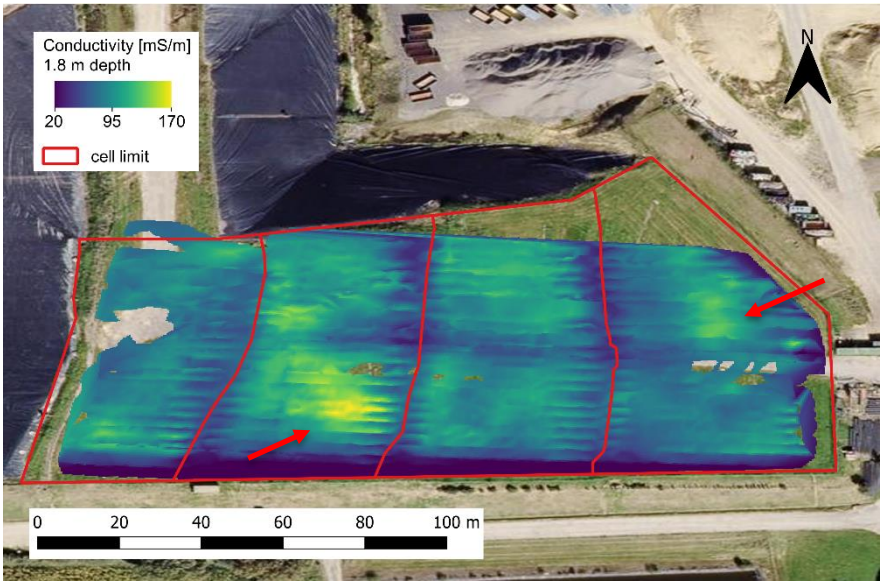

Figure 1: Apparent electrical conductivity obtained with EMI at an investigation depth of 1.8 m.

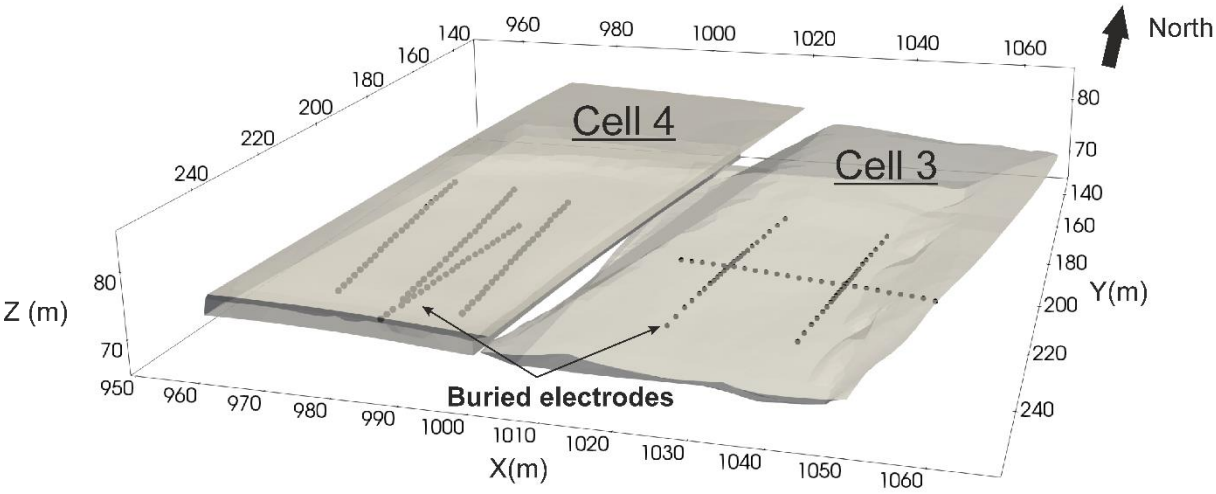

Figure 2: Electrode configuration in cells 3 and 4.

The ERT and IP models of cells 3 and 4 were kindly provided by IRSTEA. In general, these data are consistent with the electrical conductivity maps obtained by the EMI method and no extra features are detected.

For the active and passive seismic methods, we conducted two MASW profiles and set up several HVSNR stations along them (Figure 3). Because of the presence of geophysical material buried in cells 3 and 4, we are mostly interested in the northern MASW profiles (red dots Figure 3).

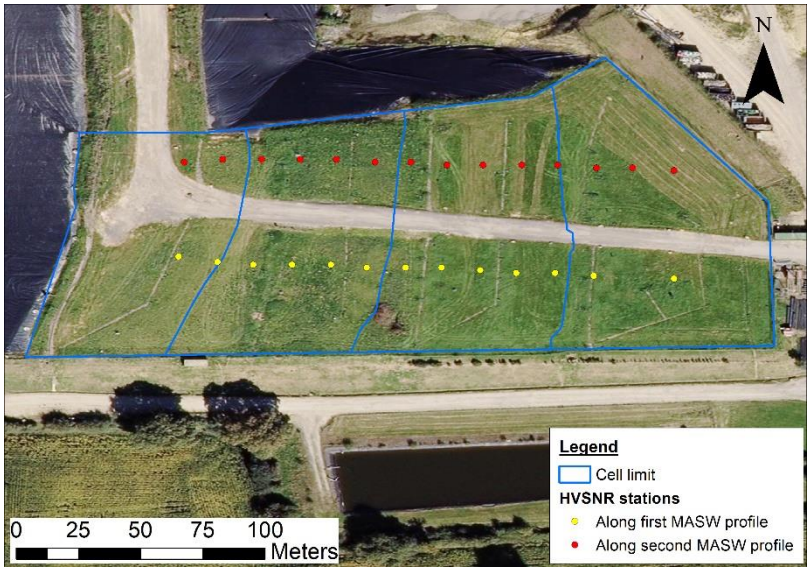

Figure 3: MASW profiles towards the north and south of the road. Dots represent the HVSNR stations.

As the sampling survey of the site was limited beforehand to 3 boreholes and 2 small trenches (15 m long each) and due to infrastructure constraints, we finally suggested the sampling plan presented in

Figure 4. Boreholes B1, B2 and B3 and trench T1 are located at the position of HVSNR stations and/or along part of the northern MASW profile to facilitate correlation analysis. The trench T2 and the borehole B3 are located in the vicinity of the second anomaly of large electrical conductivity (see Figure 1). Table 1 presents the coordinates in RGF93 of proposed boreholes and trenches. Boreholes should be conducted down to the base of the landfill whereas trenches should go down to around 5 m.

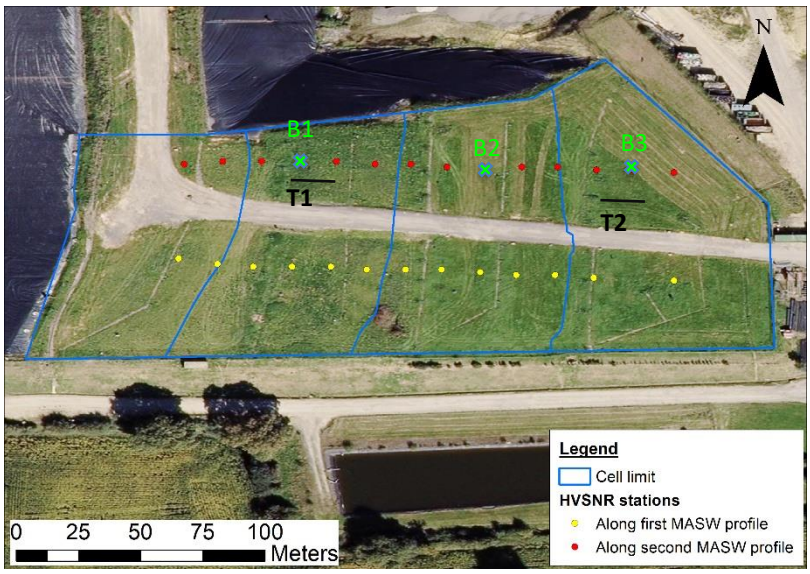

Figure 4: Sampling survey design. Green crosses represent boreholes and black lines the trenches.

	X start (m)	Y start (m)	X end (m)	Y end (m)
T1	1398879.63	8177332.50	1398886.98	8177332.10
T2	1398968.64	8177316.5	1398953.7	8177317.81
B1	1398874.56	8177335.74		
B2	1398923.03	8177331.27		
B3	1398962.64	8177328.02		

Table 1. Coordinates of the boreholes and trenches in RGG93

Contact

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