Data Compilation Report

Skovlunde Byvej 96A, Ballerup, Denmark

The Capital Region of Denmark

October 9, 2017

Contents

Appendix

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1 Introduction

The test site at Skovlunde Byvej 96A, Ballerup is managed by the METAL-AID partner the Capital Region of Denmark. The site will be used as one of the field sites in the Metal-Aid project. The site is situated 7 km north-west of Copenhagen City centre.

The site is contaminated with oil products and chlorinated ethenes originating from use of PCE. This site has during the last 4-5 years primarily been used to host a number of remediation demonstration projects – and most projects have been focusing on the contamination in the clay till found from surface and down to approximately 8-10 m below ground. Little work has been done to investigate and test remediation methods for the deeper highly contaminated groundwater aquifer.

The Capital Region established an investigation well B501 in the central part of the polluted area in October 2016 dedicated to the scientific purposes of the Metal-Aid project. A master student Anders Jurin Hansen has used soil core samples, extracted water samples and used data in general for his thesis "Investigation of Aquifer Geochemistry and Modelling of Effects of In-situ Remediation" /ref. 1/ which is also available for the Metal-Aid project.

Early Stage Researchers affiliated to the METAL-AID project is working at the test site or using data from the site in their work. NIRAS will - as one of the consulting company partners – assist during field activities including the end goal of testing one or more of the groundwater remediation products developed by the University research partners.

Background information of the site is available at http://www.danishsoil.org/testsites/testsite.php?id=1.

2 Purpose

Prior to initiating any field implementation and testing of a new remediation product, a detailed conceptual understanding of the interplay between geology, mineralogy, hydrogeology, hydraulics, geochemistry, and contaminants is needed. Building this conceptual understanding is an ongoing process that will benefit from all the expertise in the METAL-AID consortium and from other groups that has special knowledge and complementary skills that we therefore could benefit from collaborating with.

The purpose of this data compilation report is to give an overview of available data facilitate easy access to data and ways to display figures and cross sections for data presentation for the benefit of the Metal-Aid project as well as other research projects in the future.

3 Investigation well B501

3.1 Location and planning

The investigation well B501 is situated in the central part of the polluted area at the test site (cadastral no. 13iæ) and within the catchment area of a nearby pump and treat (AFV1) well situated approximately 14 m SSW of B501, Figure 1.

Location of the new investigation well B501

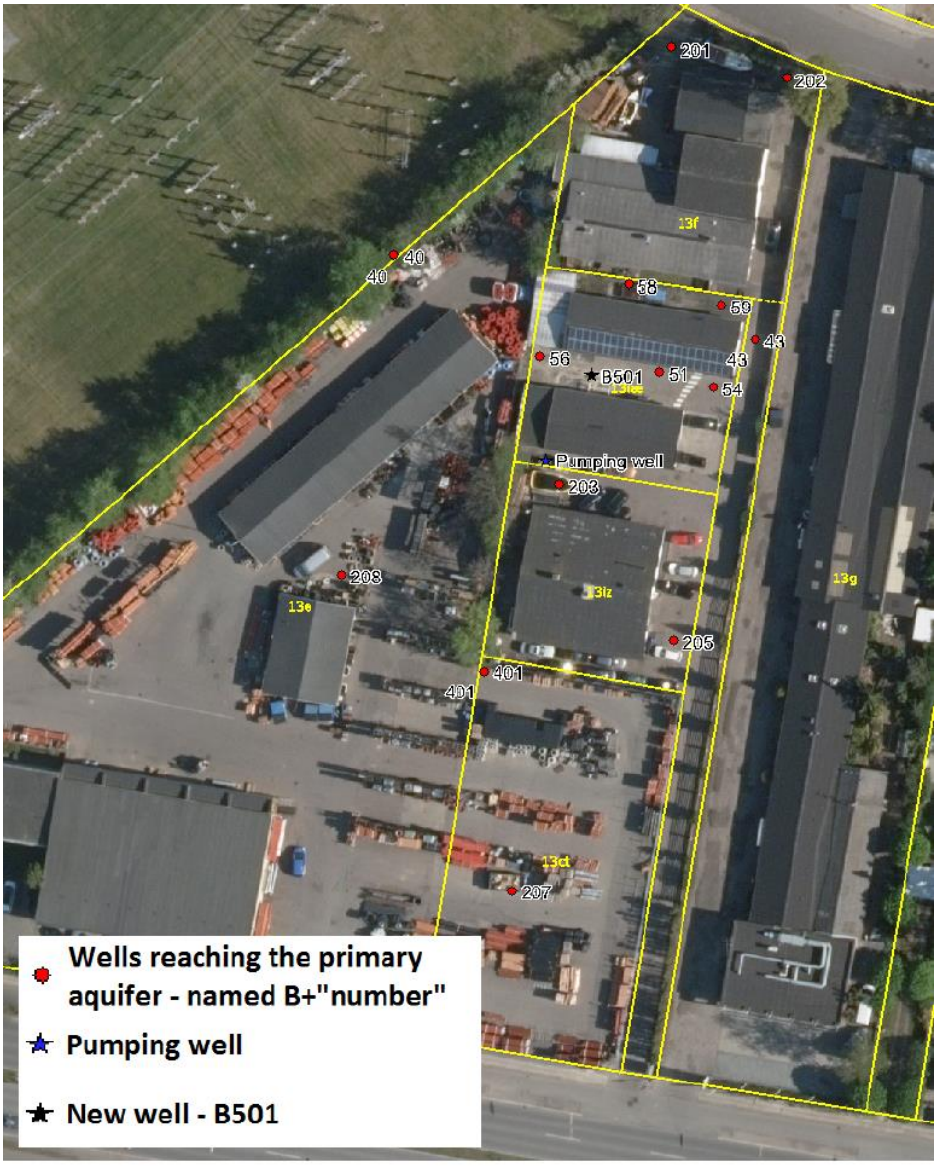


Figure 1 Location map with wells reaching the groundwater aquifer /ref. 1/

The well design was proposed by NIRAS in collaboration with the master thesis student and agreed by the Capital Region.

3.2 Well construction and design

The well was constructed by GEO with supervision from NIRAS during the period 6 – 10 October 2016. The well profile is included in Appendix 1.

The well is constructed using temporary steel casing in 8" (200 mm) diameter to a final depth of 18,0 m. Auger drilling was used through clay layers and unsaturated sand to 12,7 m below ground (b.g.) and percussion drilling in the saturated zone. Intact cores were taken in the saturated zone (see next section).

During the drilling work observations of layers, geology, colour and apparent humidity were registered.

A conceptual well lay out with core sampling and mini well screens is seen in Figure 2.

Four core soil samples K1-K4

Six small filter screens affiliated to levels for core samples.

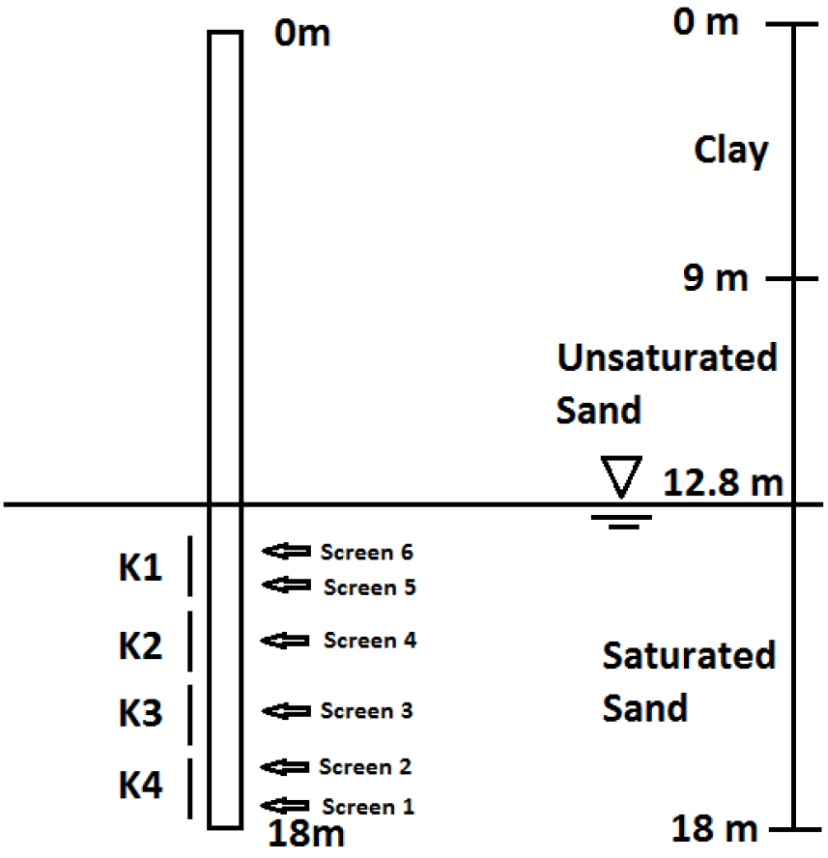


Figure 2 Conceptual drawing of well B501 with geology, water table and levels for core sampling and small well screens /ref. 1/

3.2.1 Soil sampling

Soil samples were taken as disturbed samples each 0.5 m throughout the clay formation and the unsaturated zone of sand. Core samples were taken out continuously from the saturated zone resulting in four core samples (K1 – K4) from the saturated sand formation. These cores were taken with the aim - as far as possible – to take out intact soil samples, however minor disturbance is unavoidable.

Levels for soil sampling is seen in the borehole profile, Appendix 1. The depth, length and recovery of the cores is shown in Table 1.

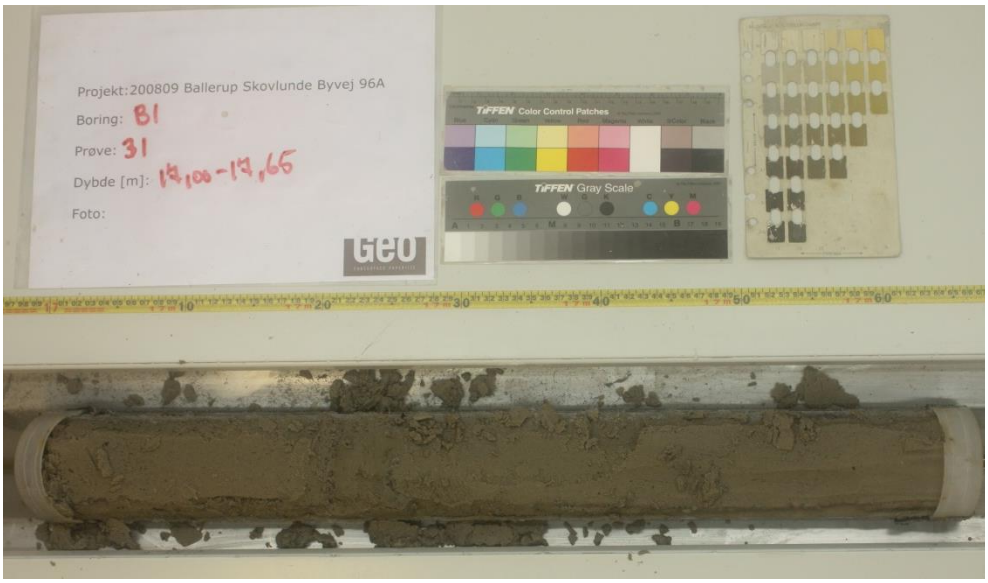
Core	Top	Bottom	Length	Depth interval to length ratio
[#]	[m b.g.]	[m b.g.]	[cm]	[-]
K1	13.50	14.20	51	1.37
K2	14.50	15.25	60	1.25
K3	15.50	16.10	60	1.00
K4	17.00	17.65	65	1.00

Table 1: Sediment core sampling; depths and sediment recovery

The core sampling was done using a hammer driven sampler system (Nordmeyer RKR). Each core was taken out in a PVC liner (d_i = 76 mm) inserted in the sampler tool and driven into the intact formation. The PVC liner was one meter long, but it was only possible to drive the sampler approx. 60-75 cm into the intact sand formation, which produced cores with 50 - 65 cm sediment recovery. Tap water was added to the borehole to allow the sampler tool to dig into the sediments.

The core samples K1 and K4 were opened and used for the master thesis project leaving K2 and K3 available for the Metal-Aid project. Four grain size analysis were conducted, Appendix 3. Photos of the opened cores K1 and K4 is depicted in Figure 3.

(a)



(b)

Figure 3 (a) Core K1 and (b) core K4. Notice that the sediment is more coarse grained in the top section of K1 (to the left on picture (a).

3.2.2 Filter screens and back filling

A filter screen arrangement was installed with six small diameter (d_i = 19 mm) PVC screens each 15 cm long and positioned along the core sampling intervals, see Figure 2.

Screen	MP b.g.	Water level below MP	Water level b.g.	Measured bottom below MP	Measured bottom b.g.	Bottom according to field log
#	[m]	[m]	[m]	[m]	[m]	[m]
B501-6	0.09	12.87	12,96	13,32	13.41	13.70
B501-5	0.11	12.85	12,96	13,77	13.88	14.15
B501-4	0.12	12.85	12,97	14,61	14.73	14.85
B501-3	0.13	12.84	12,97	15,57	15.70	15.85
B501-2	0.13	12.84	12,97	16,91	17.04	17.20
B501-1	0.14	12.84	12,98	17,34	17.48	17.65
MP - Measuring Point (edge of tupe)						

Table 2: Filter screens for groundwater sampling

Detailed levels for backfilling of sand and bentonite is seen in the borehole profile, Appendix 1.

Fine grained standard filter sand were used for backfilling along filter intervals. In the short intersections between the filter screens it was planned to use a so called "natural back filling" (formation falling back in annulus during withdrawal of the steel casing) to avoid interference from mineralogy of sealing materials. Natural back filling was successfully done between most of the filter screens. The borehole wall was however stable at some intervals, and because of that a normal bentonite sealing was used in these intervals. Natural back filling was used in the unsaturated sand formation up to 7,2 m b.g. A bentonite sealing was installed 6.2 – 7.2 m b.g. and a cement/bentonite sealing was installed in the upper clay formation 1.5 – 6.2 m b.g. A protection well with curb and cover stable for traffic was installed a little above the surrounding terrain to avoid run off water coming into the well.

The well is reported to The Geological Survey of Denmark and Greenland (GEUS) with the registration no. 200.8650.

3.3 Chemical analysis

3.3.1 Soil analysis

Soil samples were taken as double samples in Rilsan bags and glass vials. Soil samples in rilsan bags were screened for volatile organic compounds (VOC) with a photo ionization detector – PID in NIRAS laboratory the day after sampling. Representative samples were selected for further laboratory analysis at Eurofins laboratory based on the geological observations and the PID screening results.

Results in tables from the analytical report is enclosed in Appendix 2.

Soil samples were analyzed for benzene, toluene, ethylbenzene and xylenes (BTEX), naphthalene and groups of longer hydrocarbon chains (light, medium and heavy oil products) summing up to Total Hydrocarbon Content - THC. Further a range of chlorinated compounds were analyzed comprising typically mother

products like tri- and tetrachloroethylene and their daughter products like di-chloroethylenes and vinylchloride.

The PID screening results and the most important analytical results (in terms of toxicity and actual quantity) is compared in Table 3.

Depth	Dry matter	PID	Sum BTEX	Sum C_{10}-C_{20}	Sum THC (C_6H_6-C_{35})	Tetrachloret hene (PCE)	Vinylchlorid (VC)	Sum chlorinated compounds	Remarks on soil sample
m	% (vægt)	ppm			mg/kg TS	mg/kg TS	mg/kg TS	mg/kg TS	
1,0	81	57	0,25	18	48	1,6	< 0,01	1,6	
1,5	84	330	2,4	180	390	0,32	< 0,01	0,3	
2,5	85	1.300	96	590	1.500	320	< 0,01	353	
4,0	88	3.900	0,84	14	83	4,6	< 0,01	6,2	wet
5,0	87	2.100	0,34	6,1	22	92	< 0,01	92	wet
6,0	88	1.500	#	#	32	230	< 0,01	232	humid
7,5	86	680	#	#		6,7	< 0,01	6,9	humid
8,5	85	259	#	#		3,2	< 0,01	3,4	humid
9,5	92	273	0,16	#		0,93	< 0,01	0,9	slightly humid
10,0	92	193	0,42	#		6,6	< 0,01	6,6	dry
10,5	91	63	#	#		1,5	< 0,01	1,5	dry
11,0	90	143	#	#		0,73	< 0,01	0,7	dry
11,5	92	15	#	#		0,39	< 0,01	0,4	dry
13,0	81	3.110	1,5	20	91	180	0,018	192	wet
13,5	82	65	#	#		0,21	< 0,01	0,2	wet
15,5	79	37	#	#		0,6	< 0,01	0,6	wet
16,5	80	703	0,56	7,8	22	79	< 0,01	81	wet
18,0	82	63	#	#		1,8	< 0,01	1,9	wet
# - below detection limit									

Table 3: Summary of soil analysis compared to PID

3.3.2 Water sampling and analysis

Water samples from well B501 were taken as part of the master thesis project. Reference in general is made to /ref. 1/ but selected results of hydrocarbons and chlorinated solvents are enclosed in Appendix 5.

As part of the Metal-Aid project water levels were measured and water samples were taken in February 2017. The results are enclosed in Appendix 6 and Appendix 7.

Consider, if you use the water level measurements, that the reference heights given are often not clear. This could influence the results of any kind of modelling in the future. This is also the case for the groundwater potential presented in Appendix 9.

4 Data compilation methodology

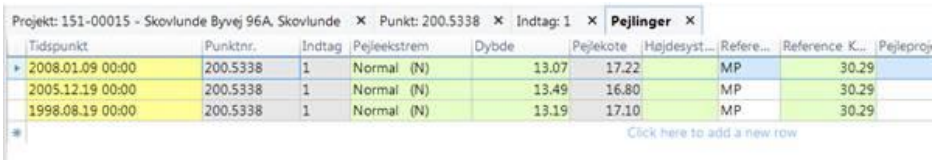
As a first step the great number of wells and drillings from earlier projects was evaluated. Therefore printed maps from the different sources were georeferenced in a GIS-software and all the points were digitalized. Thereafter a field survey was conducted to proof the existence of the wells. From all the existing wells an overview picture and detail picture was taken (Appendix 12). Generally, data was collected from the available sources (see reference list). This includes basic data (point ID, coordinates, depth well, reference heights, screen position and geology) and analytical data (water samples, soil samples and grain size analysis).

The data, which was digitally available in other databases (local NIRAS databases and Jupiter), was imported directly into the Regions database. The data, which was only available printed or as pdf, was digitalized and then manually added to the Regions database. Some preparation work was necessary to include geology strata data in English. The original well logs, where imported in a CAD-software and then correctly scaled. This allowed us to measure the exact layer thickness of every single layer. This was done for 56 wells and drillings. Furthermore the grainsize analysis from former thesis study (ref 1) were added as well manually.

As height information and coordinates were partly not available GPS measurements were undertaken using a Trimble R8 Rover with differential GPS-mode. The height error is around ± 3 cm. With the differential GPS it was not possible to fulfil the height precision of ±2 mm required by the Capital Region. This was done for the wells from one study (ref. 12). The height information of drillings and wells installed and drilled as part of former investigations (ref 8) was calculated in a GIS-software using a 0.4x0.04 DTM (ref. 7).

Data, which was obviously wrong in the Regions database, was corrected in a way that it make sense and based on original data found. A few examples of typical errors are listed below.

Example 1: Correct input



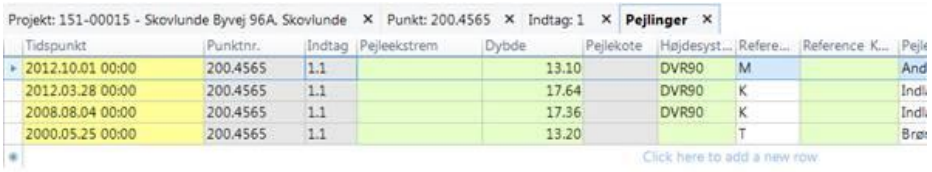
Projekt: 151-00015 - Skovlunde Byvej 96A, Skovlunde | Punkt: 200.5338 | Indtag: 1 | Pejlinger

Tidspunkt	Punktnr.	Indtag	Pejleekstrem	Dybde	Pejlekote	Højdesyst...	Refere...	Reference K...	Pejleproj
2008.01.09 00:00	200.5338	1	Normal (N)	13.07	17.22		MP	30.29	
2005.12.19 00:00	200.5338	1	Normal (N)	13.49	16.80		MP	30.29	
1998.08.19 00:00	200.5338	1	Normal (N)	13.19	17.10		MP	30.29	

Click here to add a new row

Example 1 shows, how data has to look like in the system correctly.

Example 2: Missing and mixed data



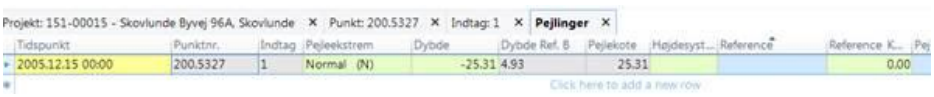
Projekt: 151-00015 - Skovlunde Byvej 96A, Skovlunde | Punkt: 200.4565 | Indtag: 1 | Pejlinger

Tidspunkt	Punktnr.	Indtag	Pejleekstrem	Dybde	Pejlekote	Højdesyst...	Refere...	Reference K...	Pejle
2012.10.01 00:00	200.4565	1.1		13.10		DVR90	M		And
2012.03.28 00:00	200.4565	1.1		17.64		DVR90	K		Indl
2008.08.04 00:00	200.4565	1.1		17.36		DVR90	K		Indl
2000.05.25 00:00	200.4565	1.1		13.20			T		Brø

Click here to add a new row

Fields are not completely filled and data is mixed. The example above shows in the column "Dybde" the measured depth (13.10 & 13.20) as well as the water level above sea level (17.64 & 17.36). The column "Dybde" is always referenced to the field measurement and not to the waterlevel above sea level (= column "Pejlekote"). Furthermore the reference height was not filled. It was possible to correct the data and to fill in the "Reference Kote" because the "Reference" (M = Målepunkt, K = Kote, T = Terræn) is specified.

Example 3: Missing and mixed data



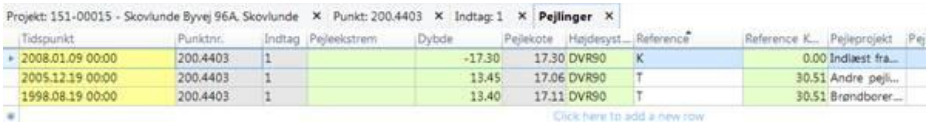
Projekt: 151-00015 - Skovlunde Byvej 96A, Skovlunde | Punkt: 200.5327 | Indtag: 1 | Pejlinger

Tidspunkt	Punktnr.	Indtag	Pejleekstrem	Dybde	Dybde Ref. B	Pejlekote	Højdesyst...	Reference	Reference K...	Pej
2005.12.15 00:00	200.5327	1	Normal (N)	-25.31	4.93	25.31			0.00	

Click here to add a new row

Reference kote and reference are not specified. The measured water level is given in this case in column "Dybde Ref. B" instead of "Dybe". But as the water level was given in this case in absolute height and depth below surface, it was possible to calculate back the reference kote.

Example 4: Partly missing data

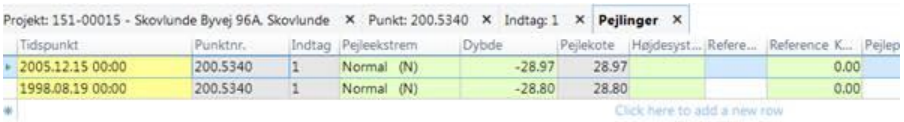

Projekt: 151-00015 - Skovlunde Byvej 96A, Skovlunde × Punkt: 200.4403 × Indtag: 1 × Pejlinger ×

Tidspunkt	Punktnr.	Indtag	Pejleekstrem	Dybde	Pejlekote	Højdesyst...	Reference	Reference K...	Pejleprojekt	Pej
2008.01.09 00:00	200.4403	1		-17.30	17.30	DVR90	K	0.00	Indlæst fra...	
2005.12.19 00:00	200.4403	1		13.45	17.06	DVR90	T	30.51	Andre pejli...	
1998.08.19 00:00	200.4403	1		13.40	17.11	DVR90	T	30.51	Brøndborer...	

Click here to add a new row

The reference kote in row 1 is not specified, what causes a wrong water level. As the reference itself is given, it was possible to fill in the reference kote.

Example 5: Missing data


Projekt: 151-00015 - Skovlunde Byvej 96A, Skovlunde × Punkt: 200.5340 × Indtag: 1 × Pejlinger ×

Tidspunkt	Punktnr.	Indtag	Pejleekstrem	Dybde	Pejlekote	Højdesyst...	Refere...	Reference K...	Pejlep
2005.12.15 00:00	200.5340	1	Normal (N)	-28.97	28.97			0.00	
1998.08.19 00:00	200.5340	1	Normal (N)	-28.80	28.80			0.00	

Click here to add a new row

The reference height as well as the reference point is not specified. So the system calculates a negative measured water level.

As discrepancies occurred concerning the reference and surface heights, the heights from the different sources were compared and partly also the height in the old DNN-system calculated using a correction factor of 0.066m (documented in ref 13). The result of these comparison is attached. Be aware of this discrepancies, if you use the attached data (Appendix 6) or the ground water potential of ref 1.

5 Results

5.1 Database

5.1.1 Content

After the import the amount of data increased dramatically. The situation is summarized in Table 4.

	AS OF 16.01.2017	AS OF 28.04.2017
Number of drillings and wells	71	133
Soil samples (geology)	121	1823
Stratigraphic units	88	545
Water level measurements	60	284
Chemical analysis	233	771
Total datasets	502	3423

Table 4: Overview of the amount of data in the Regions database at the test site at different dates.

Some data was imported by other institutions as well in the meanwhile. This summary includes the measuring points of the pump and treatment plant too as well as some older remains.

Not all of the identified wells and drillings are still available. The table below shows an overview how many deep and shallow wells are available and how many other boreholes were drilled.

	NUMBER OF WELLS
Existing shallow wells with screen (< 10 m)	28
Existing deep wells with screen	21
Shallow wells with screen (limited use)[1]	1
Deep wells with screen (limited use)[1]	3
Wells no longer existing	5
Uncertain wells[2]	14
Drillings without well screen installation	46

Table 5: Summary of the availability of wells with screen and drillings at the test site.

The table considers wells, which were not added to the database. [1] for the use of the well some construction work is maybe necessary or pumping is not possible; [2] the supposed place was not accessible, respectively no detailed information available.

A summary of the found wells and drillings is attached (**Error! Reference source not found.**). A few wells and drillings were not imported due to a lack of information. It wasn't possible to clearly identify the reference and surface heights of all wells (Appendix 11). All wells in the database have now a geology and stratigraphic units.

5.1.2 How to find and explore data

The data is stored in the Capital Region's GeoGis2020-database (http://ramserver.ramboll.dk/service.asmx" DBShort="GeoGIS2020RegionH2" DBType="SQL Server).

To get a password and username, it is necessary to send a request to the Capital Region (Email: geogis@regionh.dk). The GeoGIS software can be downloaded under http://www.geogis2005.ramboll.dk/Download.aspx. The GeoGis-projectno is 151-00015 - Skovlunde Byvej 96A, Ballerup.

For visualization purposes a local copy of the database as Access-database was made. This database was linked to a Geoscene-project. The data can now be viewed in 3D with the free available Geoscene-Viewer from I-GIS (http://www.i-gis.dk/Default.aspx?tabid=92). Be aware that for changes in the Geoscene-project a full licence is necessary.

To update the data in the Geoscene-project the local database can be synchronised with the Regions GeoGis2020-database. When you start Geoscene the first time then browse for your Geoscene-project (Figure 4).

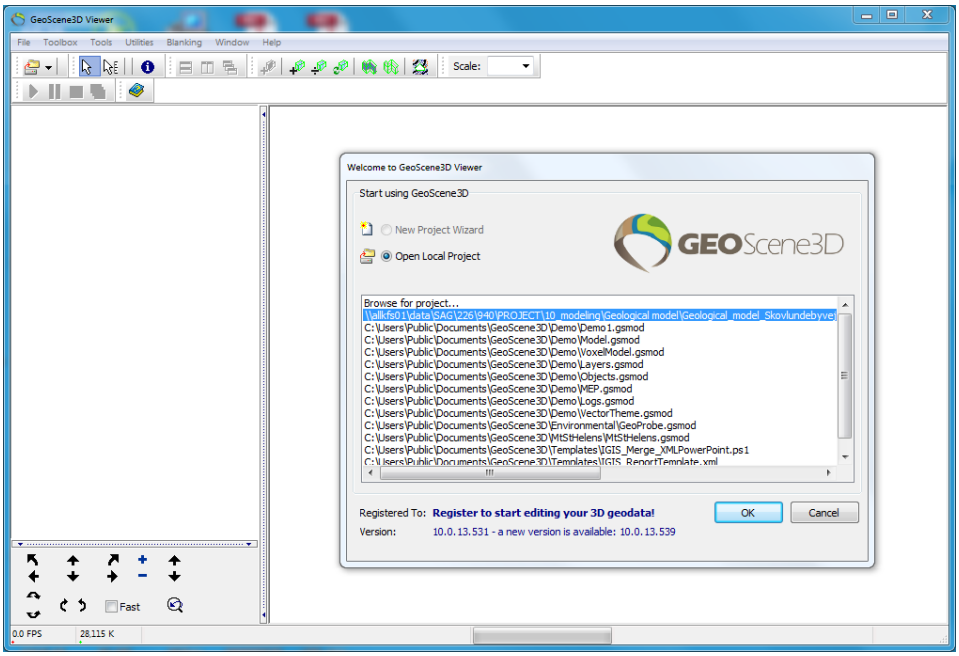


Figure 4. Starting window, after start of GeoScene3D Viewer

The Geoscene-project and the local database are handed in digitally to the Capital Region together with this document. Don't move the files within the handed in folder.

5.2 Conceptual model

The final GeoGIS-data was linked to Geoscene3D. Therein 3 cross-sections (N-S and E-W) were drawn (Appendix 10).

1. cross-section north – south showing the geology, PID-measurements and the water level measurements.
2. cross-section east – west, showing the geology and water level measurements
3. cross-section north – south showing the geology and the water level measurements.

The position of the cross sections is indicated in the attached map (Appendix 9).

5.2.1 Geology

Basis for the conceptual model are the stratigraphic units in the GeoGIS-database. For comparison the general "*Sealand model*" was included (ref 5). Generally the local geology follows the regional model. The main stratigraphic units are quaternary clay, clay till and sand.

Looking at profile for borehole B501 (Appendix 1) the geological strata is as follows;

- fill materials (Fy) of recent (Re) origin is found to 1,1 m b.g.
- alluvial (Sm) clay from the late glacial period (Sm) to 2,2 m b.g. deposited when the glacier had redrawn
- clay till (glacier deposit - Gl) from the glacial period (Gc) to 9,3 m b.g.

- alluvial (Sm) sand deposited during the last glacial period (Gc) to bottom of borehole.

The clay till is by nature a mixture of clay (likely 15 – 20 %), silt, sand, gravel and stones. Fractions of limestone and flint from the glaciers erosion of the deeper limestone bedrock was found in the clay matrix.

The alluvial sand formation is characterized as in general fine grained sand with minor content of silt and clays deposited by melting water under the icecap. The deeper part of the formation is sorted sand (narrow spectrum in sand particle size). Coal fragments were found near the bottom of the borehole. Coal fragments are light organic materials of tertiary age rinsed together with the sand.

Core sample	K1 0-11 cm	K1 11-20 cm	K1 20-50 cm	K4 0-65 cm
Median grain size ($d_{50\%}$)	0,24	0.10	0.13	0.14
Reading $d_{60\%}$	0,51	0,105	0.14	0.145
Reading $d_{10\%}$	(0,05)	-	0.062	0.088
Skewness ($U = d_{60\%}/d_{10\%}$)	10	-	2.3	1.6
Characterisation of grain size and sorting	Fine sand, unsorted	Very fine sand, -	Fine sand, sorted	Fine sand, well sorted

Table 6: Result from grain size analysis on subsamples taken from core K1 and K4, see Appendix 3.

Grain size analysis (Appendix 3) show grain size distribution for the four core samples K1 – K4 (sample no. 28, 30, 32 and 35 on the borehole profile). The results from the sieving analysis is shown in table 7.

5.2.2 Hydrogeology

Two different water tables can be recognized; the primary water table in the alluvial sand formation approximately 13.0 m b.g. and a secondary water table in the shallow clay formation. The shallow water table vary during the year depending on precipitation and can be found in different depths over the site depending on soil permeability.

In the past a pump test took place at well B20, which gave a relatively high transmissivity of 2*10-3 m^2 / s. This value is caused by a gravel deposit at the bottom of B20. With a saturated layer thickness of 13 m, the average hydraulic horizontal conductivity in the primary sand is 1.5 * 10-4 m / s. If the effective porosity is set to 0.25, a relatively low groundwater velocity is obtained in the primary magazine of approx. 20 m / year (ref 3) under natural conditions. At the moment the main aquifer is influenced by extraction of 1.8 m^3/h groundwater at well AFV-1 and infiltration of the same quantity at well INF-1.

6 Recommendations

We suggest following actions:

- creation of a "Lokaliseringsskema" of all existing wells. This simplifies the identification of the wells in the future as well the reference points and terrain heights are indicated on this sheet. Furthermore, this would avoid uncertainties in the future.
- an inspection with a borehole camera would be useful because the wells are partly up to 20 years old.
- a field survey measuring the reference heights, should also be conducted to be sure, that the reference heights are correct. With the small site even small uncertainties in reference heights have a great impact on the assessment of the groundwater flow.

7 References

1. Hansen A.J. (2017). Investigation of Aquifer Geochemistry and Modelling of Effects of In-situ Remediation. Master thesis 22 January 2017.

2. COWI (2005). Skovlunde Byvej, xls-file on Jupiter.

3. COWI (2011). Skovlunde Byvej 96a Lokalitets nr. 151-00015, Fastlæggelse af indsatsområde til afværgeforanstaltninger, Region Hovedstaden.

4. COWI (2015). Skovlunde Byvej 96a, anlægsdokumentation indkøring og første halve års drift.

5. The DK model - dkms_prerelease102014.

6. http://www.geus.dk/UK/data-maps/jupiter/Pages/default.aspx .

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8. Nellemann, Nielsen & Rauschenberger A/S (1998a). Affaldsdepot nr. 151-15, tidligere renseri. Skovlunde Byvej 96A, Ballerup kommune. Omfattende forureningsundersøgelser, Københavns Amt.

9. Nellemann, Nielsen & Rauschenberger A/S (1998b). Affaldsdepot nr. 151-15, tidligere renseri. Skovlunde Byvej 96A, Ballerup kommune. Supplerende Forureningsundersøgelser, Københavns Amt

10. Nellemann, Nielsen & Rauschenberger A/S (1998c). Affaldsdepot nr. 151-15, tidligere renseri. Skovlunde Byvej 96A, Ballerup kommune. Supplerende Forureningsundersøgelser, Fase II, Københavns Amt

11. NIRAS (2000). Affaldsdepot nr. 151-15, tidligere renseri. Skovlunde Byvej 96A, Ballerup kommune, Afværgeprojekt, Afslutningsrapport, Københavns Amt

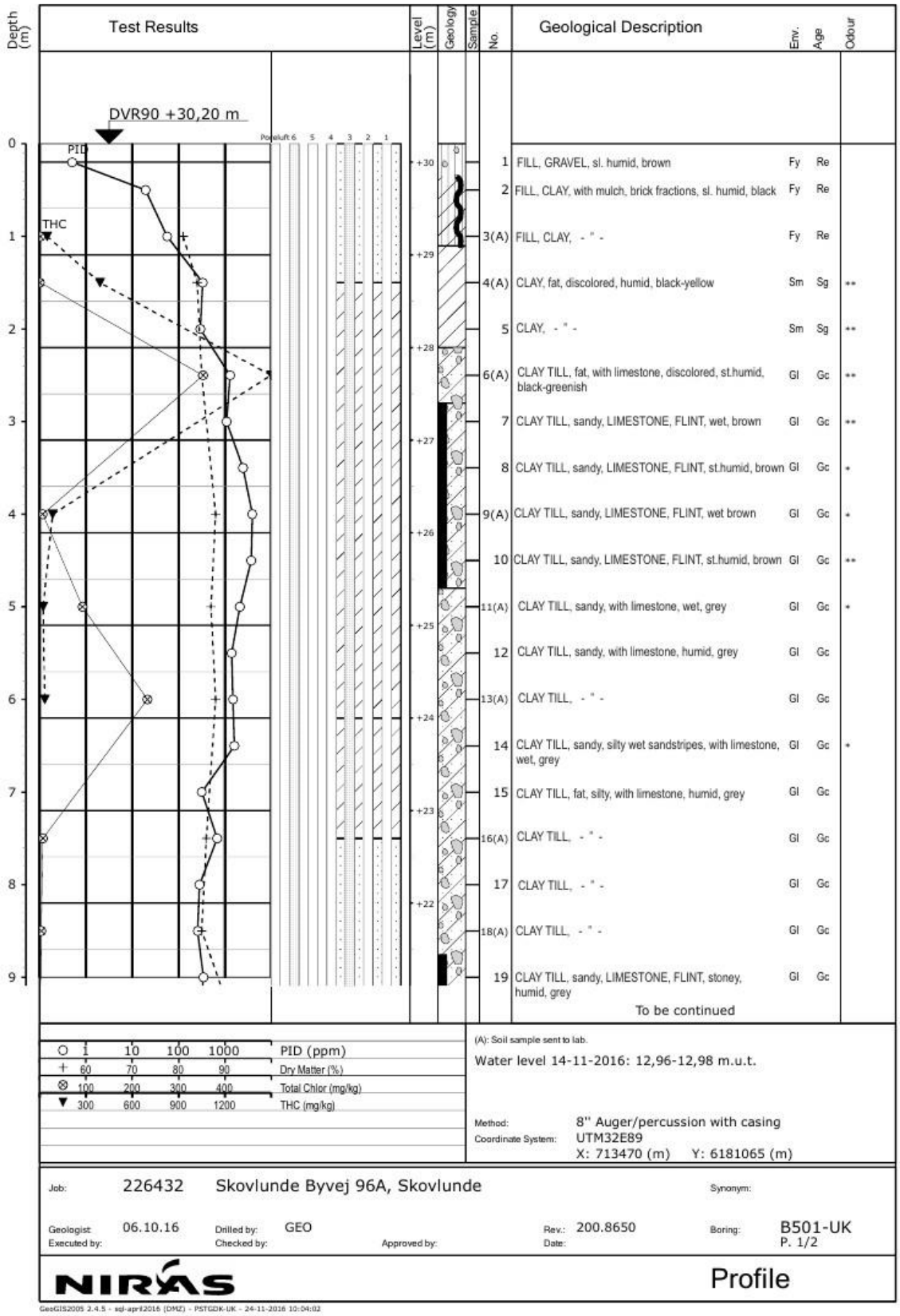
12. NIRAS (2016). Pilot test of Electrokinetically Delivered Thermally Activated Persulfate, EK-TAP™ Final Report, The Capital Region of Denmark

13. Miljøministeriet (2005). Vejledning om højdesystemet. Kort & Matrikelstyrelsen

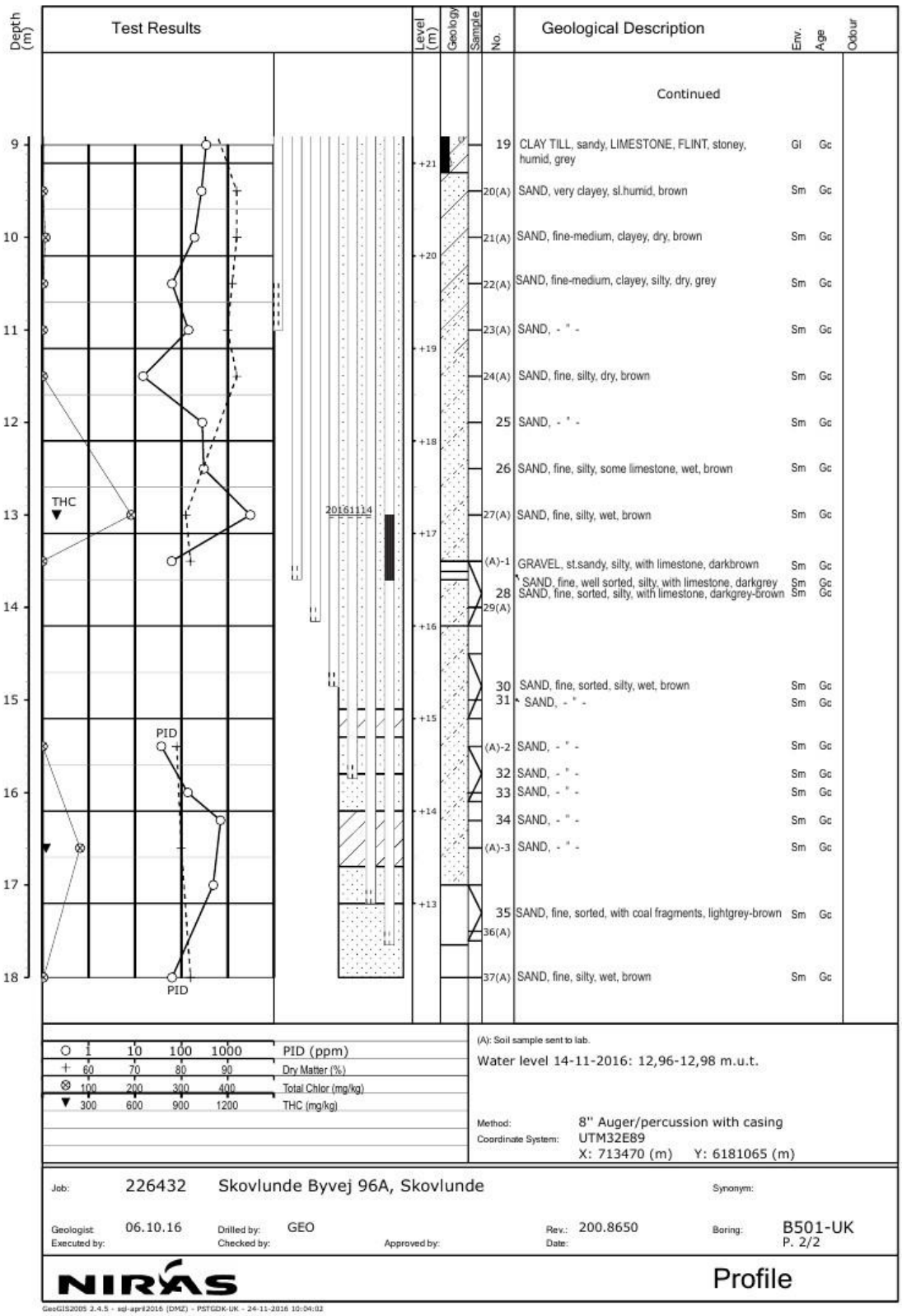
14. Personally by COWI provided database files

Appendix

Appendix 1: Borehole profile; Well B501



Continuation Appendix 1: Borehole profile; Well B501



Appendix 2: Analytical report on soil analysis well B501

eurofins — Eurofins fralægger sig ethvert ansvar for anden parts brug af resultater og klassificering fremkommet ved anvendelsen af denne software.

Udskriv — Region Hovedstaden , 226432, Skovlundebyvej 96a, Ballerup

Vejledning Sjælland | GulToner

Parameter▼	Enhed	<=	<=	<=	<=	>	"Jordklasse"	Klasse 4	Klasse 4	Klasse 4	Klasse 4	Klasse 4	Klasse 4	Klasse 3	Klasse 2	Klasse 4	Klasse 4	Klasse 2	Klasse 2	Klasse 2	Klasse 4	Klasse 2	Klasse 2	Klasse 4	Klasse 2
							Prøve-nummer ►	835-2016-47567601	835-2016-47567602	835-2016-47567603	835-2016-47567604	835-2016-47567605	835-2016-47567606	835-2016-47567607	835-2016-47567608	835-2016-47567609	835-2016-47567610	835-2016-47567611	835-2016-47567612	835-2016-47567613	835-2016-47567614	835-2016-47567615	835-2016-47567616	835-2016-47567617	835-2016-47567618
							Prøve-mærkning ►	B501	B501	B501	B501	B501	B501	B501	B501	B501	B501	B501	B501	B501	B501	B501	B501	B501	B501
		Klasse 0	Klasse 1	Klasse 2	Klasse 3	Klasse 4																			
Tørstof	%	-	-	-	-	-		81	84	85	88	87	88	86	85	92	92	91	90	92	81	82	79	80	82
Benzen	mg/kg ts.	0.1	0.1	1.5	2.5	2.5		< 0,2	< 0,1	< 0,2	< 0,2	< 0,1	< 0,3	< 0,2	< 0,1	< 0,1	< 0,2	< 0,1	< 0,1	< 0,1	< 0,1	< 0,1	< 0,1	< 0,1	< 0,1
Toluen	mg/kg ts.	-	-	-	-	-		< 0,2	< 0,1	< 0,2	< 0,2	< 0,1	< 0,3	< 0,2	< 0,1	< 0,1	< 0,2	< 0,1	< 0,1	< 0,1	< 0,1	< 0,1	< 0,1	< 0,1	< 0,1
Ethylbenzen	mg/kg ts.	-	-	-	-	-		0,25	1,0	6,7	< 0,2	< 0,1	< 0,3	< 0,2	< 0,1	< 0,1	< 0,2	< 0,1	< 0,1	< 0,1	< 0,1	< 0,1	< 0,1	< 0,1	< 0,1
o-Xylen	mg/kg ts.	-	-	-	-	-		< 0,2	1,1	87	0,84	0,34	< 0,3	< 0,2	< 0,1	0,16	0,42	< 0,1	< 0,1	< 0,1	1,5	< 0,1	< 0,1	0,56	< 0,1
m/p-Xylen	mg/kg ts.	-	-	-	-	-		< 0,2	0,29	2,2	< 0,2	< 0,1	< 0,3	< 0,2	< 0,1	< 0,1	< 0,2	< 0,1	< 0,1	< 0,1	< 0,1	< 0,1	< 0,1	< 0,1	< 0,1
Sum af xylener	mg/kg ts.	-	-	-	-	-		0,25	2,4	96	0,84	0,34	#	#	#	0,16	0,42	#	#	#	1,5	#	#	0,56	#
BTEX (sum)	mg/kg ts.	0.6	0.6	10	15	15		0,25	2,4	96	0,84	0,34	#	#	#	0,16	0,42	#	#	#	1,5	#	#	0,56	#
C9H6-C10	mg/kg ts.	25	25	35	50	50		30	170	900	69	16	32	< 4	< 2	< 2	< 4	< 2	< 2	< 2	71	< 2	< 2	15	< 2
C10-C15	mg/kg ts.	40	40	60	80	80		18	180	590	14	6,1	< 15	< 10	< 5	< 5	< 10	< 5	< 5	< 5	20	< 5	< 5	7,8	< 5
C15-C20	mg/kg ts.	55	55	83	110	110		< 10	< 5	< 10	< 10	< 5	< 15	< 10	< 5	< 5	< 10	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
C20-C35	mg/kg ts.	100	100	200	300	300		< 40	40	< 40	< 40	< 20	< 60	< 40	< 20	< 20	< 40	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Sum (C10-C20)	mg/kg ts.	55	55	83	110	110		18	180	590	14	6,1	#	#	#	#	#	#	#	#	20	#	#	7,8	#
Sum (C9H6-C35)	mg/kg ts.	100	100	200	300	300		48	350	1500	83	22	92	#	#	#	#	#	#	#	91	#	#	22	#
Naphthalen	mg/kg ts.							0,2	0,32	0,80	0,2	< 0,3	< 0,3	< 0,2	< 0,1	< 0,1	< 0,2	< 0,1	< 0,1	< 0,1	0,27	< 0,1	< 0,1	< 0,1	< 0,3
Chloroform (Trichloromethan)	mg/kg ts.	-	-	-	-	-		< 0,01	< 0,005	< 0,01	< 0,01	< 0,005	< 0,015	< 0,01	< 0,005	< 0,005	< 0,01	< 0,005	< 0,005	< 0,005	< 0,005	< 0,005	< 0,005	< 0,005	< 0,005
1,1,1-trichlorethan	mg/kg ts.	-	-	-	-	-		< 0,01	< 0,005	< 0,01	< 0,01	< 0,005	< 0,015	< 0,01	< 0,005	< 0,005	< 0,01	< 0,005	< 0,005	< 0,005	< 0,005	< 0,005	< 0,005	< 0,005	< 0,005
Tetrachlormethan	mg/kg ts.	-	-	-	-	-		< 0,01	< 0,005	< 0,01	< 0,01	< 0,005	< 0,015	< 0,01	< 0,005	< 0,005	< 0,01	< 0,005	< 0,005	< 0,005	< 0,005	< 0,005	< 0,005	< 0,005	< 0,005
Trichlorethen	mg/kg ts.	-	-	-	-	-		0,025	< 0,005	33	1,6	0,37	2,4	0,11	0,17	0,008	0,026	0,023	0,014	0,014	10	0,011	0,011	1,7	0,039
Tetrachlorethen	mg/kg ts.	-	-	-	-	-		1,6	0,32	320	4,6	92	230	6,7	3,2	0,93	6,6	1,5	0,73	0,39	180	0,21	0,60	79	1,8
1,1-dichlorethen	mg/kg ts.	-	-	-	-	-		< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	0,012	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01
trans-1,2-dichlorethen	mg/kg ts.	-	-	-	-	-		< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01
cis-1,2-dichlorethen	mg/kg ts.							0,01	< 0,01	0,023	0,016	0,27	0,068	0,078	0,012	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	1,7	< 0,01	< 0,01	0,21	0,021
1,1-dichlorethan	mg/kg ts.	-	-	-	-	-		< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01
Vinylchlorid	mg/kg ts.	-	-	-	-	-		< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01	0,018	< 0,01	< 0,01	< 0,01	< 0,01
Chlorethan	mg/kg ts.	-	-	-	-	-		< 0,03	< 0,03	< 0,03	< 0,03	< 0,03	< 0,03	< 0,03	< 0,03	< 0,03	< 0,03	< 0,03	< 0,03	< 0,03	< 0,03	< 0,03	< 0,03	< 0,03	< 0,03
Prøvedybde	m	-	-	-	-	-		1,0	1,5	2,5	4,0	5,0	6,0	7,5	8,5	9,5	10,0	10,5	11,0	11,5	13,0	13,5	15,5	16,5	18,0

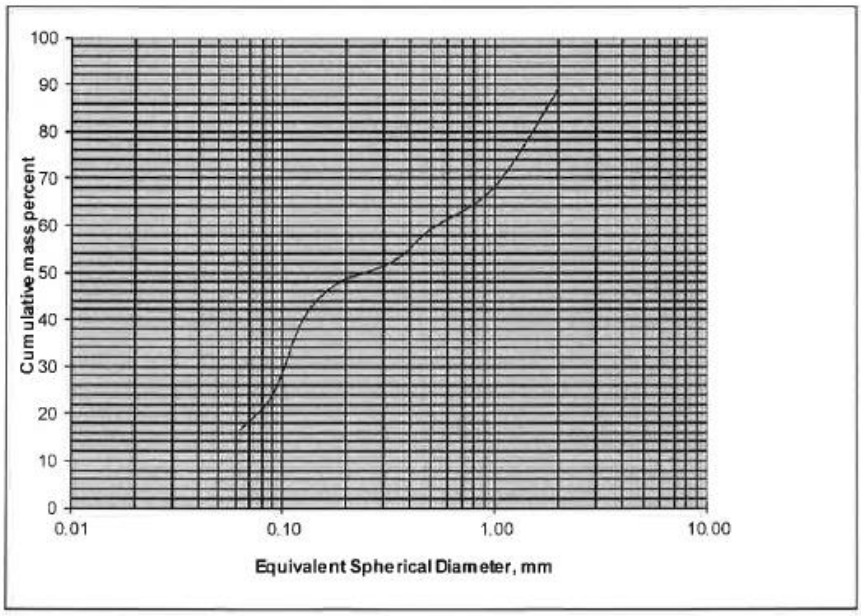
Appendix 3: Grain size analysis, well B501

Particle-size analysis

Sample 2016

Sample no	K1 0-11	Date	~~12. april~~	Sign
Sample weight		195.09	gram	
Lost % in sievi	0.09			

Mash size d mmm	sieve+fraction (g)	sieve (g)	weight in sieve (g)	mass procentages	Cumulative mass on curve	Cumulative mass procentages
				0.00		
			0	0.00		100.00
			0	0.00		100.00
2.000	156.82	135.98	20.84	10.69		100.00
1.000	159.55	118.71	40.84	20.95	2.000	89.31
0.500	134.93	117.21	17.72	9.09	1.000	68.35
0.355	118.62	106.85	11.77	6.04	0.500	59.26
0.250	111.79	105.57	6.22	3.19	0.355	53.22
0.180	108.95	104.24	4.71	2.42	0.250	50.03
0.125	118.06	103.57	14.49	7.43	0.180	47.62
0.900	133.76	102.41	31.35	16.08	0.125	40.18
0.063	118.87	104.03	14.84	7.61	0.090	24.10
Pan	106.73	74.6	32.13	16.48	0.063	16.48
Sum			194.91	100.00		



Median grain size (at 50%)		d 50	0.125 — 0,24
Reading grain size diameter at 60 %		d 60	0.15 — 0,51
Reading grain size diameter at 10 %		d 10	0.075 — (0,05)
Coefficient of skewness	u=d 60% / d 10%		~~2.0~~ — 10,2 ⇒ (Unsorted)
Sorting degree	So =SQRT(% d 75 /% d		~~1.3~~
Reading		d 75	~~0.18~~
		d 25	~~0.1~~

/kwe

Coresample K1, 0 – 11 cm; unsorted sand

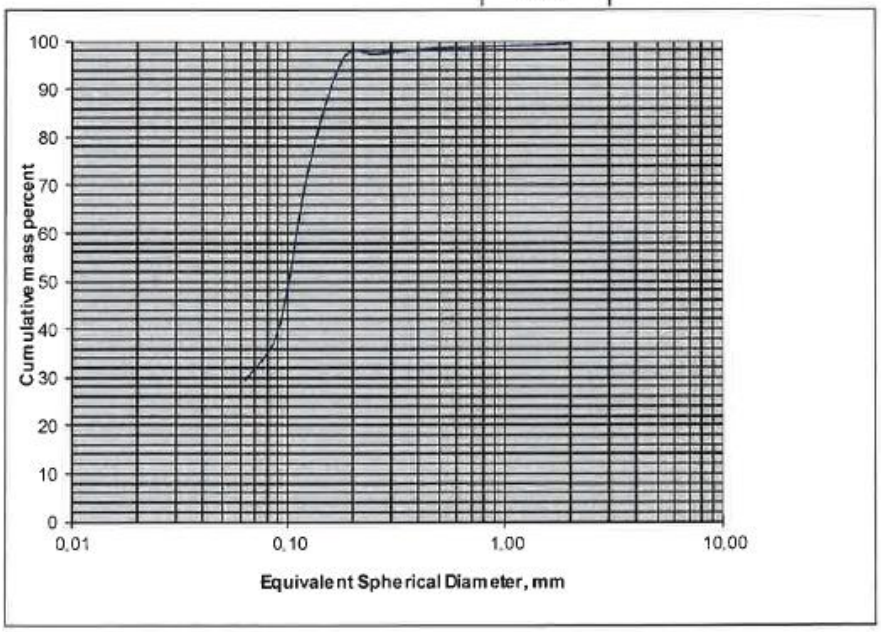
Continuation Appendix 3: Grain size analysis, well B501

Particle-size analysis

Sample 2016

Sample no K1 11-20	Date ~~12. april~~	Sign
Sample weight	166.41 gram	
Lost % in sievi 0.30		

Mash size d mmm	sieve+fraction (g)	sieve (g)	weight in sieve (g)	mass procentages	Cumulative mass on curve	Cumulative mass procentages
				0.00		
			0	0.00		100.00
			0	0.00		100.00
2.000	136.94	135.99	0.95	0.57		100.00
1.000	119.53	118.72	0.81	0.49	2.000	99.43
0.500	117.89	117.22	0.67	0.40	1.000	98.94
0.355	107.77	106.85	0.92	0.55	0.500	98.54
0.250	106.68	105.59	1.09	0.66	0.355	97.98
0.180	105.45	104.27	1.18	0.71	0.250	97.32
0.125	140.22	103.59	36.63	22.08	0.180	96.61
0.900	159.69	102.44	57.25	34.51	0.125	74.53
0.063	121.79	104.07	17.72	10.68	0.090	40.03
Pan	123.31	74.62	48.69	29.35	0.063	29.35
Sum			165.91	100.00		
				0.00		



Median grain size (at 50%)		d 50	~~0.125~~ — 0,10
Reading grain size diameter at 60 %		d 60	~~0.15~~ — 0,11
Reading grain size diameter at 10 %		d 10	~~0.075~~ — —
Coefficient of skewness	u=d 60% / d 10%		~~2.0~~ — —
Sorting degree	So =SQRT(% d 75 /% d		~~1.5~~
Reading		d 75	~~0.18~~
		d 25	~~0.1~~

/kwe

Coresample K1, 11 – 20 cm; anticipated sorted sand (no d_{10} reading)

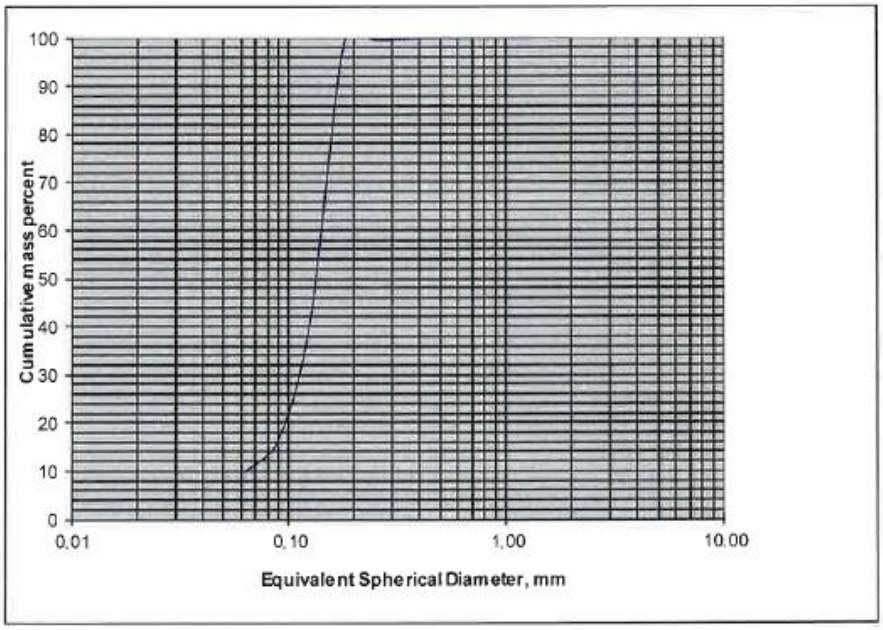
Continuation Appendix 3: Grain size analysis, well B501

Particle-size analysis

Sample 2016

Sample no	K1 20-50	Date	12. april	Sign
Sample weight		151.27	gram	
Lost % in sievi	0.01			

Mash size d mmm	sieve+fraction (g)	sieve (g)	weight in sieve (g)	mass procentages	Cumulative mass on curve	Cumulative mass procentages
				0.00		
			0	0.00		100.00
			0	0.00		100.00
2.000	136.01	135.98	0.03	0.02		100.00
1.000	118.8	118.71	0.09	0.06	2.000	99.98
0.500	117.27	117.21	0.06	0.04	1.000	99.92
0.355	106.94	106.85	0.09	0.06	0.500	99.88
0.250	105.9	105.56	0.34	0.22	0.355	99.82
0.180	104.43	104.25	0.18	0.12	0.250	99.60
0.125	192.08	103.57	88.51	58.52	0.180	99.48
0.900	139.09	102.42	36.67	24.24	0.125	40.96
0.063	114.41	104.04	10.37	6.86	0.090	16.71
Pan	89.5	74.59	14.91	9.86	0.063	9.86
Sum			151.25	100.00		



Median grain size (at 50%)		d 50	~~0.125~~ – 0,13
Reading grain size diameter at 60 %		d 60	~~0.15~~ – 0,14
Reading grain size diameter at 10 %		d 10	~~0.075~~ – 0,062
Coefficient of skewness	u=d 60% / d 10%		~~2.0~~ – 2,3 ⇒ (Sorted)
Sorting degree	So =SQRT(% d 75 /% d		~~1.5~~
Reading		d 75	~~0.18~~
		d 25	~~0.1~~

Tkwe

Coresample K1, 20 – 50 cm; sorted sand

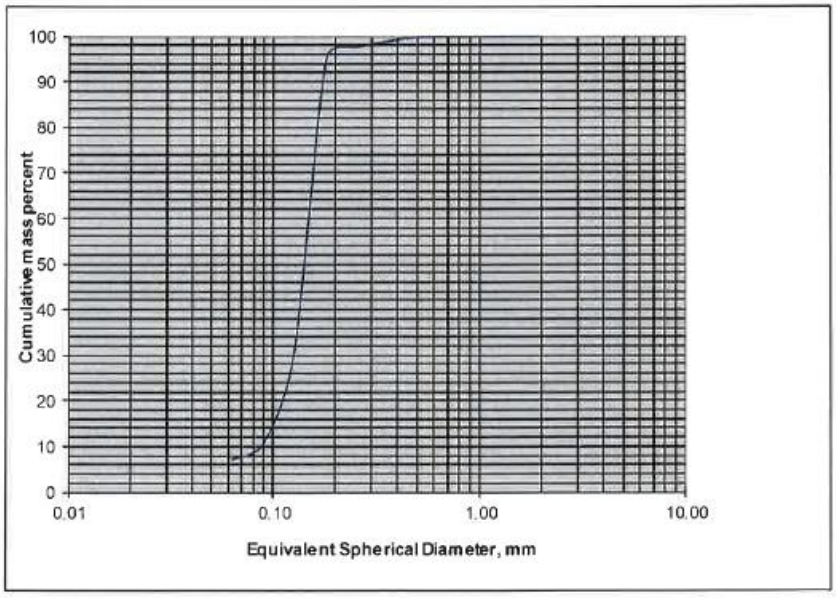
Continuation Appendix 3: Grain size analysis, well B501

Particle-size analysis

Sample 2016

Sample no K4 0-65	Date ~~12. april~~	Sign
Sample weight	176.14 gram	
Lost % in sievi 0.04		

Mash size d mmm	sieve+fraction (g)	sieve (g)	weight in sieve (g)	mass procentages	Cumulative mass on curve	Cumulative mass procentages
				0.00		
			0	0.00		100.00
			0	0.00		100.00
2.000	136.01	135.99	0.02	0.01		100.00
1.000	118.82	118.72	0.10	0.06	2.000	99.99
0.500	117.59	117.21	0.38	0.22	1.000	99.93
0.355	108.37	106.85	1.52	0.86	0.500	99.72
0.250	107.83	105.56	2.27	1.29	0.355	98.85
0.180	107.97	104.26	3.71	2.11	0.250	97.56
0.125	218.97	103.58	115.39	65.54	0.180	95.46
0.090	136.02	102.43	33.59	19.08	0.125	29.92
0.063	110.59	104.04	6.55	3.72	0.090	10.84
Pan	87.14	74.6	12.54	7.12	0.063	7.12
Sum			176.07	100.00		



Median grain size (at 50%)		d 50	~~0.125~~ — 0,14
Reading grain size diameter at 60 %		d 60	~~0.15~~ — 0,145
Reading grain size diameter at 10 %		d 10	~~0.075~~ — 0,088
Coefficient of skewness	u=d 60% / d 10%		~~2.0~~ — 1,6 ⇒ (well sorted)
Sorting degree	So =SQRT(% d 75 /% d		~~1.8~~
Reading		d 75	~~0.18~~
		d 25	~~0.1~~

Coresample K4, 0 – 65 cm; well sorted sand

Appendix 4: Analytical report inorganic chemistry well B501

eurofins

Batch	EUDKVE-00489699						
Sagsnavn	Skovlund Byvej 96A, Ballerup						
Sagsnummer/lokalitetsnr	226432						
Udtagningsdato	16/11/2016 00:00						
Modtaget på laboratoriet	18/11/2016						
Rapport (seneste rapportrevision)	02-12-2016/AR-16-CA-00489699-01						
Prøvenummer		80409904	80409905	80409906	80409907	80409908	80409909
Prøve mærke		B501-1	B501-2	B501-3	B501-4	B501-5	B501-6
DGUnr							

Komponent	Enhed	Resultat	Resultat	Resultat	Resultat	Resultat	Resultat
pH	pH	7.6	7.5	7.5	7.8	7.7	7.1
Inddampningsrest	mg/l	490	490	620	580	660	1300
Konduktivitet (Ledningsevne)	mS/m	67	69	67	76	82	150
Ammonium	mg/l	0.031	0.053	0.036	0.12	0.13	0.3
Nitrit	mg/l	< 0,001	< 0,001	< 0,001	< 0,001	< 0,001	0.003
Nitrat	mg/l	< 0,3	< 0,3	< 0,3	< 0,3	< 0,3	< 0,3
Total-P	mg/l	0.32	1.5	0.094	0.6	0.79	0.8
Chlorid	mg/l	22	22	23	32	30	47
Fluorid (F)	mg/l	0.36	0.36	0.34	0.39	0.36	
Fluorid (F)	mg/l						0.17
Sulfat	mg/l	73	88	99	190	200	520
Aggressiv kuldioxid	mg/l	< 5	< 5	< 5	< 5	< 5	< 5
Hydrogencarbonat	mg/l	365	365	327	250	300	452
Sulfid-S	mg/l	< 0,04	< 0,04	< 0,02	< 0,02	< 0,04	< 0,04
NVOC, ikke flygt.org.carbon	mg/l	1.6	1.7	5.1	11	5.9	1.8
Arsen (As)	µg/l	2.8	6.8	1.6	2.4	2.1	3.6
Barium (Ba)	µg/l	90	170	47	88	130	120
Bor (B)	µg/l	13	21	20	40	38	37
Calcium (Ca)	mg/l	230	320	120	170	210	530
Jern (Fe)	mg/l	27	75	12	26	15	36
Jern (Fe) feltfiltreret	mg/l	9.5	13	8.2	2.4	0.37	19
Jern ferri (Fe3)	mg/l	17	62	4	24	14	18
Kalium (K)	mg/l	2.1	3.5	4.4	11	9.9	5
Magnesium (Mg)	mg/l	19	20	12	18	25	49
Mangan (Mn)	mg/l	0.64	1.7	0.43	0.72	0.62	2
Natrium (Na)	mg/l	13	18	17	20	17	17
Nikkel (Ni)	µg/l	85	170	15	70	64	110
Methan	mg/l	0.038	0.035	0.022	0.014	< 0,005	< 0,005

Appendix 5: Analytical report chlorinated solvents at well B501

Batch	EUDKVE-00498148						
Sagsnavn	Skovlunde Byvej 96A						
Sagsnummer/lokalitetsnr	226432						
Udtagningsdato	13/12/2016 00:00						
Modtaget på laboratoriet	13/12/2016						
Rapport (seneste rapportrevision)	14-12-2016/AR-16-CA-00498148-01						
Prøvenummer		80409201	80409202	80409203	80409204	80409205	80409206
Prøve mærke		B 501-1	B 501-2	B 501-3	B 501-4	B 501-5	B 501-6
DGUnr							

Komponent	Enhed	Resultat	Resultat	Resultat	Resultat	Resultat	Resultat
Benzen	µg/l	< 0,02	< 0,02	< 0,02	< 0,02	0.072	0.047
Toluen	µg/l	0.12	0.32	0.12	0.28	0.81	1.2
Ethylbenzen	µg/l	0.028	0.032	0.039	0.11	0.23	0.084
o-Xylen	µg/l	0.041	0.038	0.045	0.073	0.2	0.14
m+p-Xylen	µg/l	0.12	0.12	0.12	0.29	0.64	0.34
Sum af xylener	µg/l	0.19	0.19	0.2	0.47	1.1	0.56
BTEX (sum)	µg/l	0.31	0.51	0.32	0.75	2	1.8
Naphthalen	µg/l	0.039	0.047	0.073	0.23	0.22	0.063
C6H6-C10	µg/l	3.3	< 2	< 2	< 2	< 2	< 2
C10-C25	µg/l	< 8	< 8	< 8	< 8	< 8	< 8
C25-C35	µg/l	< 9	< 9	< 9	< 9	< 9	< 9
Sum (C6H6-C35)	µg/l	< 9	< 9	< 9	< 9	< 9	< 9
1,2-dichlorethan	µg/l	< 0,02	< 0,02	< 0,02	< 0,02	< 0,04	< 0,02
Chloroform (Trichloromethan)	µg/l	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02
Trichlorethen	µg/l	2.1	8.7	4	44	300	31
1,1,1-trichlorethan	µg/l	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02
Tetrachlorethen	µg/l	10	24	27	47	190	23
Tetrachlormethan	µg/l	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02
Chlorethan	µg/l	< 0,02	< 0,02	< 0,02	< 0,02	0.089	0.056
1,1-dichlorethen	µg/l	< 0,02	0.025	< 0,02	0.1	0.27	0.12
trans-1,2-dichlorethen	µg/l	< 0,02	< 0,02	< 0,02	0.057	0.098	0.78
cis-1,2-dichlorethen	µg/l	1.3	8.5	6.1	19	68	170
1,1-dichlorethan	µg/l	< 0,02	< 0,02	< 0,02	< 0,02	< 0,04	< 0,02
Vinylchlorid	µg/l	< 0,02	0.028	0.028	0.42	0.37	0.26

Appendix 6: Field parameters from groundwater sampling 22. & 23.02.2017

DGU	internal no	screen	date	parameter								
				WL	WL asl DVR90	Reference	Reference	Temperature	EC	pH	redox	O2
				[m]	[m]	point	height (DVR90)	[C]	[µS/cm]		[mV]	[%]
	B13_east	1	23/02/2017	13		Top af rør						
200.5338	B20	1	23/02/2017	12.88	17.33	Top af rør	30.21	12.24	2285	6.94	-94	-0.15
200.5330	B201	1	23/02/2017	12.71	17.53	Top af rør	30.24	11.67	2111	6.96	-33	-0.02
200.5331	B202	1	23/02/2017	12.75	17.53	Top af rør	30.28					
200.5332	B203	1	23/02/2017	13.08	17.09	Top af rør	30.17	12.23	2720	6.94	-80	-0.16
200.5334	B205	1	23/02/2017	13.33	16.76	Top af rør	30.09					
200.5394	B207	1	23/02/2017	12.3	17.53	Top af rør	29.83					
200.5395	B208	1	23/02/2017	12.24	17.56	Top af rør	29.80	11.37	3171	6.99	-0.78	-0.16
200.4404	B40 (nedre - north)	1	23/02/2017	12.61	17.43	Top af rør	30.04	11.28	2736	7.01	-61	-0.17
200.6243	B401 (øvre- south)	1	23/02/2017	12.43	17.74	Top af rør	30.17	11.63	2652	7.09	-103	-0.18
200.4403	B43 (nedre - west)	1	23/02/2017	12.88	17.40	Top af rør	30.28	12.46	2491	7	-36	-0.18
200.5344	B51 (middle - nedre)	1	22/02/2017	12.22	17.33	Top af rør	29.55	13.09	2354	6.86	-81	-0.14
200.4529	B54	1	22/02/2017	12.8	17.43	Top af rør	30.23	13.93	2313	6.77	-83	-0.16
200.4530	B55	1	22/02/2017	12.68	17.43	Top af rør	30.11	13.03	2623	6.63	-67	-0.13
200.4531	B56	1	22/02/2017	12.7	17.33	Top af rør	30.03	12.39	2175	6.62	-81	-0.1
200.4533	B58	1	22/02/2017	12.86	17.26	Top af rør	30.12					
200.4534	B59	1	22/02/2017	12.91	17.25	Top af rør	30.16	12.9	3107	6.75	-67	-0.13

Appendix 7: Analytical report on water samples; 22. & 23.02.2017

eurofins

Batch	EUDKVE-00519791
Sagsnavn	Metal-Aid
Sagsnummer/lokalitetsnr	226940/151-00015
Udtagningsdato	22/02/2017 00:00
Modtaget på laboratoriet	01/03/2017
Rapport (seneste rapportrevision)	10-03-2017/AR-17-CA-00519791-02

Komponent	Enhed	Prøvenummer	80444607	80444608	80444609	80444610	80444611	80444612	80444613	80444614	80444615	80444616	80444617	80444618
		Prøve mærke	B20 (200.5338)	B201 (200.5330)	B203 (200.5332)	B208 (200.5395)	B40-nedre (200.4404)	B401 (øvre) (200.6243)	B43-nedre (200.4403)	B51 - nedre (200.5344)	B54 (200.4529)	B55 (200.4530)	B56 (200.4531)	B59 (200.4534)
		DGUnr	200.5338-1	200.5330-1	200.5332-1	200.5395-1	200.4404-1	200.6243-1	200.4403-1	200.5344-1	200.4529-1	200.4530-1	200.4531-1	200.4534-1
pH	pH		7.3	7.4	7.3	7.3	7.3	7.4	7.4	7.2	7.2	7	7	7
Inddampningsrest	mg/l		470	510	690	750	630	670	530	780	910	1300	1300	1500
Konduktivitet (Ledningsevne)	mS/m		75	78	97	110	92	87	81	110	120	160	160	140
Ammonium	mg/l		0.16	0.05	0.049	0.12	0.054	0.16	0.11	0.083	0.099	0.076	0.089	0.11
Nitrit	mg/l		0.003	< 0,001	< 0,001	< 0,001	0.005	< 0,001	< 0,001	< 0,001	< 0,001	< 0,001	< 0,001	< 0,001
Nitrat	mg/l		0.48	< 0,3	< 0,3	< 0,3	< 0,3	< 0,3	< 0,3	< 0,3	< 0,3	< 0,3	< 0,3	< 0,3
Total-P	mg/l		0.11	0.025	0.21	0.21	0.024	0.22	0.022	0.027	0.14	0.023	0.067	0.14
Chlorid	mg/l		40	26	49	92	37	36	40	34	78	47	39	33
Fluorid (F)	mg/l		0.38		0.35	0.28	0.31	0.28	0.33	0.32				
Fluorid (F)	mg/l			0.33							0.24	0.2	0.11	0.21
Sulfat	mg/l		34	130	160	120	180	130	94	250	200	470	480	470
Aggressiv kuldioxid	mg/l		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	7	< 5	< 5	< 5
Hydrogencarbonat	mg/l		381	316	372	401	339	351	352	409	453	469	485	438
NVOC, ikke flygt.org.carbon	mg/l		2.6	1.6	1.7	2	1.5	2	2.1	3.3	5.9	2.5	2.6	6.8
Arsen (As)	µg/l		1.4	0.84	1.4	2.8	1.1	2.3	2.5	1.5	1.2	1.3	1.3	1.3
Barium (Ba)	µg/l		73	79	100	150	78	130	120	67	87	36	56	70
Bor (B)	µg/l		27	14	13	13	13	12	19	21	28	22	24	28
Calcium (Ca)	mg/l		130	140	180	190	170	160	150	220	230	340	340	290
Jern (Fe)	mg/l		3.7	0.51	3.3	4	2.3	4.1	0.36	4.7	6.1	7.9	11	8
Kalium (K)	mg/l		2.1	1.5	1.7	2.1	1.8	2.5	1.7	1.9	2	2.3	2.7	2.2
Magnesium (Mg)	mg/l		13	12	15	14	14	12	13	18	20	26	27	25
Mangan (Mn)	mg/l		0.092	0.084	0.11	0.16	0.1	0.18	0.24	0.19	0.16	0.56	0.44	0.22
Natrium (Na)	mg/l		14	16	17	29	18	19	15	20	21	22	22	23
Nikkel (Ni)	µg/l		0.36	0.79	0.52	0.63	0.82	0.72	2.8	0.54	1	1.4	2.5	0.76
Benzen	µg/l		< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	0.03	0.034	< 0,02
Toluen	µg/l		< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02
Ethylbenzen	µg/l		< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02
o-Xylen	µg/l		< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02
m+p-Xylen	µg/l		< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02
Sum af xylener	µg/l		#	#	#	#	#	#	#	#	#	#	#	#
BTEX (sum)	µg/l		#	#	#	#	#	#	#	#	#	0.03	0.034	#
Naphthalen	µg/l		< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02
C6H6-C10	µg/l		< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	45	< 2
C10-C25	µg/l		< 8	< 8	< 8	< 8	< 8	< 8	< 8	< 8	< 8	< 8	< 8	< 8
C25-C35	µg/l		12	< 9	16	< 9	< 9	< 9	< 9	< 9	< 9	11	< 9	< 9
Sum (C6H6-C35)	µg/l		12	< 9	16	< 9	< 9	< 9	< 9	< 9	< 9	11	45	< 9
1,2-dichlorethan	µg/l		< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,04	< 0,02
Chloroform (Trichloromethan)	µg/l		< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02
Trichlorethen	µg/l		0.76	< 0,02	0.69	< 0,02	0.33	< 0,02	0.61	0.19	0.1	6.3	150	0.62
1,1,1-trichlorethan	µg/l		< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02
Tetrachlorethen	µg/l		0.7	0.044	1.7	0.022	3.3	< 0,02	3.7	2.8	0.21	2	89	3.4
Tetrachlormethan	µg/l		< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02
Chlorethan	µg/l		< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,04	< 0,02
1,1-dichlorethen	µg/l		< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	0.021	0.13	0.045	0.11	0.042
trans-1,2-dichlorethen	µg/l		0.026	< 0,02	0.022	< 0,02	< 0,02	< 0,02	0.029	< 0,02	0.057	0.25	1.2	< 0,02
cis-1,2-dichlorethen	µg/l		1	< 0,02	1.1	< 0,02	0.055	< 0,02	4.2	1.2	10	3.8	110	1.6
1,1-dichlorethan	µg/l		< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,02	< 0,04	< 0,02
Vinylchlorid	µg/l		< 0,02	< 0,02	0.042	< 0,02	< 0,02	< 0,02	0.041	0.14	0.64	0.072	< 0,04	0.2

Appendix 8: Overview table summarizing all wells & drillings

existence	DGU	internal no	screen	drilling type	depth	screen below surface			coordinates							Comment
						top	botto m	length	X	Y	height sy	z (surface)	Z (reference)	reference point	height finding	
2	200.6903	AFV1	1	extraction	21	12	21	9	713464	6181053	DVR90	30.33	30.33	Terræn		Coordinates were changed based on results of field mapping and taken from map
2	AW	AW	1	shallow	6.5	4	6	2	713470	6181064	DVR90	30.28	30.28	Top af rør	differential GPS	information was added from NIRAS-database
2	200.5318	B101	1	shallow	8	5	8	3	713486	6181061	DVR90	30.36	30.27	Top af rør		information was added from Jupiter
2	200.5319	B102	1	shallow	7	3	7	4	713460	6181072	DVR90	30.14	29.97	Top af rør		information was added from Jupiter
1	200.5320	B103	1	shallow	6	3	6	3	713462	6181082	DVR90	30.13	29.96	Top af rør		information was added from Jupiter
2	200.5321	B104	1	shallow	5	2	5	3	713478	6181077	DVR90	30.38	30.28	Top af rør		information was added from Jupiter
2	200.5322	B105	1	shallow	4	2	4	2	713482	6181076	DVR90	30.38	30.25	Top af rør		
2	200.5323	B106	1	shallow	7	3	7	4	713497	6181090	DVR90	30.34	30.17	Top af rør		information was added from Jupiter
2	200.5324	B107	1	shallow	7	3	7	4	713495	6181079	DVR90	30.36	30.24	Top af rør		information was added from Jupiter
2	200.5325	B108	1	shallow	4.5	1.5	4.5	3	713476	6181064	DVR90	30.21	30.11	Top af rør		
2	200.5326	B109	1	shallow	6	3	6	3	713492	6181064	DVR90	30.41	30.29	Top af rør		
2	200.5350	B11	1	shallow	3	1	3	2	713465	6181074	DVR90	30.37	30.27	Top af rør		information was added from Jupiter
1	200.5327	B110	1	shallow	7	2	7	5	713462	6181068	DVR90	30.24	30.18	Top af rør		
2	200.5328	B111	1	shallow	3.5	1.5	3.5	2	713468	6181067	DVR90	30.28	30.18	Top af rør		
3	200.5329	B112	1	shallow	5	2	5	3	713470	6181079	DVR90	30.17	30.26	Top af rør		information was added from Jupiter
2	200.5335	B12	1	shallow	3.9	1.9	3.9	2	713477	6181077	DVR90	30.39	30.39	Terræn		
2	200.5336	B13	1	shallow	4	2	4	2	713463	6181065	DVR90	30.26	30.26	Terræn		
2	200.5337	B14	1	shallow	4.5	1.5	4.5	3	713485	6181064	DVR90	30.35	30.35	Terræn		
?	200.5347	B15	1	shallow	3	1.5	3	1.5	713472	6181070	DVR90	30.45	30.35	Top af rør		information was added from Jupiter
3	200.5348	B16	1	shallow	4	3.5	4	0.5	713479	6181080	DVR90	30.10				information was added from Jupiter
?	200.5349	B17	1	shallow	3.6	2.6	3.6	1	713471	6181075	DVR90	30.36	30.46	Top af rør		information was added from Jupiter
3	200.4342	B20	1	deep	25	13	25	12	713488	6181052	DVR90	30.31	30.29	Top af rør		is maybe the same than 2.5338
2	200.5338	B20	1	deep	25	13	25	12	713483	6181051	DVR90	30.34	30.29	Dækselkarm		
2	200.5330	B201	1	deep	18	13	18	5	713482	6181111	DVR90	30.35	30.24	Top af rør		
2	200.5331	B202	1	deep	19	12	19	7	713498	6181107	DVR90	30.36	30.28	Top af rør		
2	200.5332	B203	1	deep	19	12	19	7	713466	6181050	DVR90	30.26	30.17	Top af rør		
?	200.5333	B204	1	deep	18.5	12.5	18.5	6	713458	6181091	DVR90	30.06	29.78	Top af rør		
2	200.5334	B205	1	deep	19	12	19	7	713482	6181027	DVR90	30.25	30.09	Top af rør		
2	200.5393	B206	1	deep	12	10	12	2	713437	6181047	DVR90	30.00	29.79	Top af rør		
2	200.5393	B206	2	shallow	8.5	6.5	8.5	2	713437	6181047	DVR90	30.00	29.80	Top af rør		
2	200.5394	B207	1	deep	19	12	19	7	713459	6180992	DVR90	29.90	29.80	Top af rør		
2	200.5395	B208	1	deep	19	11.5	19	7.5	713435	6181037	DVR90	29.80	29.70	Top af rør		
3	200.2404	B26	1	shallow				0	713481	6181133	DVR90	29.38				information was added from Jupiter
3	B301	B301	0	shallow					713471	6181100	DVR90	30.33			Z was calculated in GIS using a	information was added manually from ref 2
3	B302	B302	0	shallow					713473	6181085	DVR90	30.37			Z was calculated in GIS using a	information was added manually from ref 2
3	B303	B303	0	shallow					713482	6181086	DVR90	30.35			Z was calculated in GIS using a	information was added manually from ref 2
2	B304	B304	1	shallow	7.1	6.1	7.1	1	713489	6181084	DVR90	30.35	30.35	Terræn	Z was calculated in GIS using a	DTM
3	B305	B305	0	shallow					713473	6181080	DVR90	30.38			Z was calculated in GIS using a	information was added manually from ref 2
3	B306	B306	0	shallow					713483	6181078	DVR90	30.39			Z was calculated in GIS using a	information was added manually from ref 2
3	B307	B307	0	shallow					713491	6181077	DVR90	30.42			Z was calculated in GIS using a	information was added manually from ref 2
3	B308	B308	0	shallow					713464	6181074	DVR90	30.26			Z was calculated in GIS using a	information was added manually from ref 2
1	200.5339	B31	1	shallow	4	1	4	3	713453	6181062	DVR90	30.07	29.92	Top af rør		

Continuation Error! Reference source not found.

existence	DGU	internal no	screen	drilling type	depth	screen below surface			coordinates							Comment
						top	botto m	length	X	Y	height sy	z (surface)	Z (reference)	reference point	height finding	
?	B310	B310	1	shallow	9.4	8.4	9.4	1	713472	6181071	DVR90	30.41	30.41	Terræn	Z was calculated in GIS using a DTM	
?	B311	B311	1	shallow	8.6	7.6	8.6	1	713480	6181069	DVR90	30.35	30.35	Terræn	Z was calculated in GIS using a DTM	
3	B312	B312	0	shallow					713493	6181069	DVR90	30.45			Z was calculated in GIS using a t	information was added manually from ref 2
3	B313	B313	0	shallow					713468	6181063	DVR90	30.32			Z was calculated in GIS using a t	information was added manually from ref 2
3	B314	B314	0	shallow					713487	6181064	DVR90	30.42			Z was calculated in GIS using a t	information was added manually from ref 2
3	B315	B315	0	shallow					713492	6181062	DVR90	30.43			Z was calculated in GIS using a t	information was added manually from ref 2
3	B316	B316	0	shallow					713478	6181062	DVR90	30.24			Z was calculated in GIS using a t	information was added manually from ref 2
3	B317	B317	0	shallow					713467	6181058	DVR90	30.32			Z was calculated in GIS using a t	information was added manually from ref 2
3	B318	B318	0	shallow					713473	6181057	DVR90	30.31			Z was calculated in GIS using a t	information was added manually from ref 2
3	B319	B319	0	shallow					713486	6181056	DVR90	30.35			Z was calculated in GIS using a t	information was added manually from ref 2
?	200.5340	B32	1	shallow	3	1	3	2	713459	6181091	DVR90	30.03	29.92	Top af rør		
3	B320	B320	0	shallow					713465	6181053	DVR90	30.41			Z was calculated in GIS using a t	information was added manually from ref 2
3	B321	B321	0	shallow					713473	6181051	DVR90	30.34			Z was calculated in GIS using a t	information was added manually from ref 2
3	B322	B322	0	shallow					713468	6181048	DVR90	30.28			Z was calculated in GIS using a t	information was added manually from ref 2
3	B323	B323	0	shallow					713480	6181045	DVR90	30.36			Z was calculated in GIS using a t	information was added manually from ref 2
3	B324	B324	0	shallow					713458	6181051	DVR90	30.35			Z was calculated in GIS using a t	information was added manually from ref 2
3	B325	B325	0	shallow					713452	6181058	DVR90	30.04			Z was calculated in GIS using a t	information was added manually from ref 2
3	B326	B326	0	shallow					713461	6181064	DVR90	30.26			Z was calculated in GIS using a t	information was added manually from ref 2
3	B327	B327	0	shallow					713456	6181071	DVR90	30.22			Z was calculated in GIS using a t	information was added manually from ref 2
3	B328	B328	0	shallow					713461	6181074	DVR90	30.22			Z was calculated in GIS using a t	information was added manually from ref 2
3	B329	B329	0	shallow					713457	6181079	DVR90	30.20			Z was calculated in GIS using a t	information was added manually from ref 2
1	200.5341	B33	1	shallow	3.5	1.5	3.5	2	713480	6181087	DVR90	30.41	30.30	Top af rør		
3	B330	B330	0	shallow					713462	6181085	DVR90	30.16			Z was calculated in GIS using a t	information was added manually from ref 2
3	B331	B331	0	shallow					713463	6181094	DVR90	30.17			Z was calculated in GIS using a t	information was added manually from ref 2
3	B332	B332	0	shallow					713507	6181085	DVR90	30.15			Z was calculated in GIS using a t	information was added manually from ref 2
3	B333	B333	0	shallow					713504	6181069	DVR90	30.31			Z was calculated in GIS using a t	information was added manually from ref 2
3	B334	B334	0	shallow					713502	6181057	DVR90	30.25			Z was calculated in GIS using a t	information was added manually from ref 2
3	B335	B335	0	shallow					713500	6181045	DVR90	30.25			Z was calculated in GIS using a t	information was added manually from ref 2
3	B336	B336	0	shallow					713492	6181033	DVR90	30.37			Z was calculated in GIS using a t	information was added manually from ref 2
3	B337	B337	0	shallow					713452	6181080	DVR90	30.19			Z was calculated in GIS using a t	information was added manually from ref 2
3	B338	B338	0	shallow					713453	6181040	DVR90	30.04			Z was calculated in GIS using a t	information was added manually from ref 2
3	B339	B339	0	shallow					713481	6181017	DVR90	30.21			Z was calculated in GIS using a t	information was added manually from ref 2
3	200.5346	B34	1	shallow	3.5	1.5	3.5	2	713493	6181086	DVR90	30.41				information was added from Jupiter
2	200.4404	B40 (nedre - north)	1	deep	17	16	17	1	713453	6181076	DVR90	30.23	30.06	Top af rør		Coordinates were changed based on results of field mapping and taken from provided db-files
2	200.4404	B40 (øvre - south)	2	deep	13.5	12.5	13.5	1	713453	6181076	DVR90	30.23	30.08	Top af rør		Coordinates were changed based on results of field mapping and taken from provided db-files
2	200.6243	B401 (nedre - north)	2	deep	14.2	12.2	14.2	2	713455	6181023	DVR90	30.24	30.17	Top af rør		
2	200.6243	B401 (øvre- south)	1	deep	18	16	18	2	713455	6181023	DVR90	30.24	30.17	Top af rør		
2	200.5342	B41	1	shallow	6	2	6	4	713444	6181052	DVR90	30.34	29.92	Top af rør		
2	200.5343	B42 (nedre - south)	2	shallow	2.5	1.5	2.5	1	713456	6181080	DVR90	30.15	30.03	Top af rør		information was added from Jupiter
2	200.5343	B42 (øvre - north)	1	shallow	8	7	8	1	713456	6181080	DVR90	30.15	30.02	Top af rør		information was added from Jupiter
2	200.4403	B43 (nedre - west)	1	deep	17	16	17	1	713494	6181070	DVR90	30.51	36.00	Top af rør		
2	200.4403	B43 (øvre - east)	2	deep	14.5	12.5	14.5	2	713494	6181070	DVR90	30.51	33.00	Top af rør		

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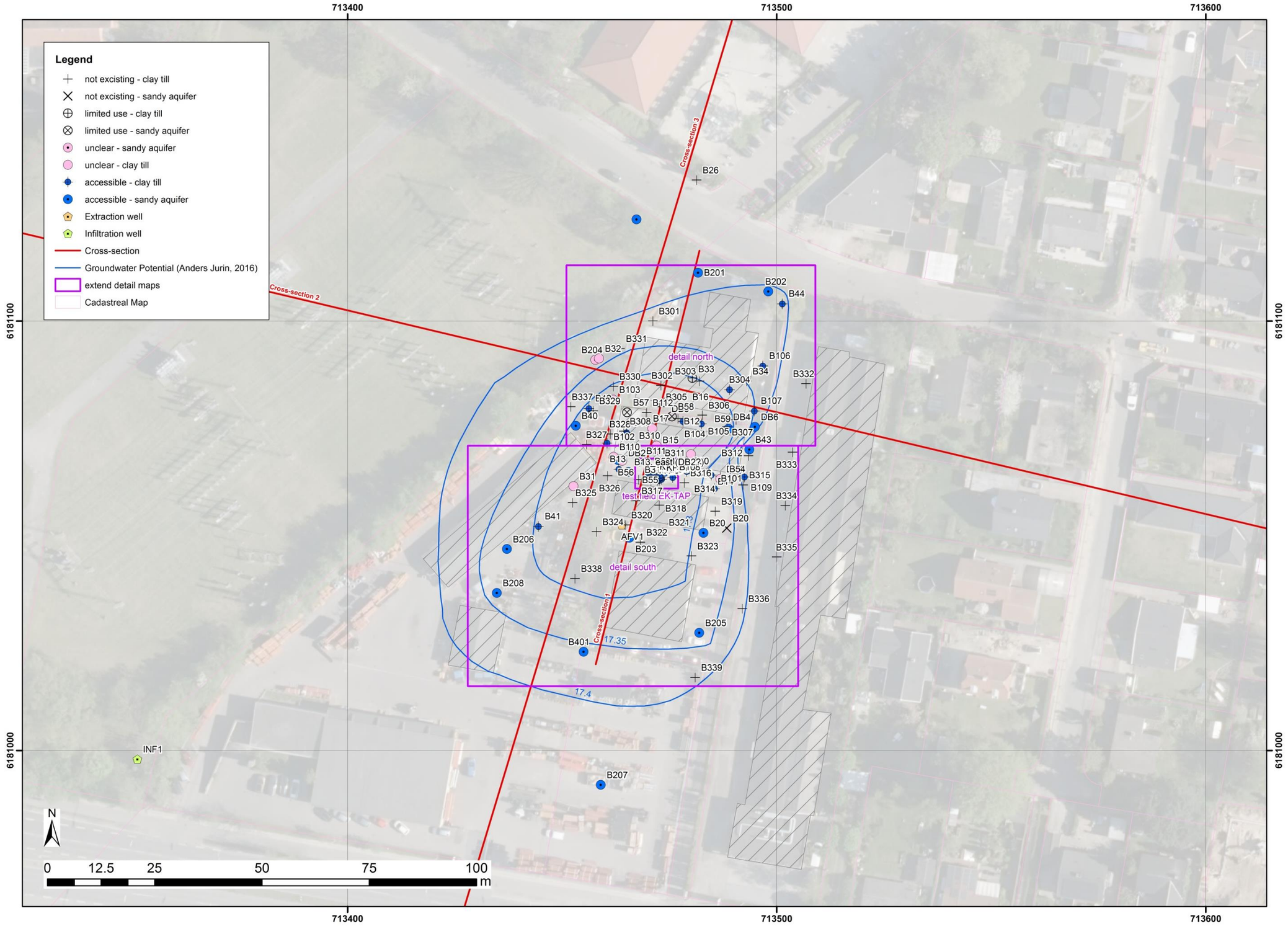
existence	DGU	internal no	screen	drilling type	depth	screen below surface			coordinates							Comment
						top	bottom	length	X	Y	height sy	z (surface)	Z (reference)	reference point	height finding	
2	200.5345	B44	1	shallow	7	6	7	1	713501	6181104	DVR90	30.48	30.39	Top af rør		information was added from Jupiter, Coordinates were changed based on results of field mapping and taken from map
2	200.8650	B501	1	deep	17.65	17.5	17.65	0.15	713470	6181065	DVR90	30.20	30.10	Top af rør		information was added from NIRAS-database
2	200.8650	B501	Poreluft	deep	11	10.5	11	0.5	713470	6181065	DVR90	30.20				information was added from NIRAS-database
2	200.8650	B501	2	deep	17.2	17.05	17.2	0.15	713470	6181065	DVR90	30.20	30.20	Terræn		information was added from NIRAS-database
2	200.8650	B501	3	deep	15.85	15.7	15.85	0.15	713470	6181065	DVR90	30.20	30.20	Terræn		information was added from NIRAS-database
2	200.8650	B501	4	deep	14.85	14.7	14.85	0.15	713470	6181065	DVR90	30.20	30.20	Terræn		information was added from NIRAS-database
2	200.8650	B501	5	deep	14.15	14	14.15	0.15	713470	6181065	DVR90	30.20	30.20	Terræn		information was added from NIRAS-database
2	200.8650	B501	6	deep	13.7	13.55	13.7	0.15	713470	6181065	DVR90	30.20	30.20	Terræn		information was added from NIRAS-database
2	B50	B50-midte	1	shallow	8.5	7.8	8.5	0.7	713479	6181065	DVR90	30.21	30.14	Top af rør		information was added from NIRAS-database
2	B50	B50-nedre	2	shallow	6	5.3	6	0.7	713479	6181065	DVR90	30.21	30.17	Top af rør		information was added from NIRAS-database
2	B50	B50-øvre	3	shallow	2	1.3	2	0.7	713479	6181065	DVR90	30.21	30.19	Top af rør		information was added from NIRAS-database
2	200.5344	B51 (midte)	2	deep	13	12.3	13	0.7	713480	6181065	DVR90	30.29	29.88	Top af rør		
2	200.5344	B51 (nedre - big Ø)	1	deep	14.8	8.8	14.8	6	713480	6181065	DVR90	30.29	29.55	Top af rør		
2	200.5344	B51 (øvre)	3	deep	10.7	9.3	10.7	1.4	713480	6181065	DVR90	30.29	29.97	Top af rør		
3	B52	B52	0													information was added from NIRAS-database, no coordinates available
3	B52	B53	0													information was added from NIRAS-database, no coordinates available
2	200.4529	B54	1	deep	15.5	7.5	15.5	8	713488	6181063	DVR90	30.40	30.38	Dækselkarm		
2	200.4530	B55	1	deep	15.5	7.5	15.5	8	713474	6181065	DVR90	30.24	30.21	Dækselkarm		
2	200.4531	B56	1	deep	15.5	7.5	15.5	8	713463	6181068	DVR90	30.27	30.25	Dækselkarm		
2	200.4532	B57	1	deep	15.5	6.5	15.5	9	713465	6181079	DVR90	30.43	30.41	Dækselkarm		
2	200.4533	B58	1	deep	14.5	7.5	14.5	7	713476	6181078	DVR90	30.40	30.35	Dækselkarm		
2	200.4534	B59	1	deep	15.5	7.5	15.5	8	713489	6181075	DVR90	30.43	30.41	Dækselkarm		
2	CW	CW	1	shallow	6.5	4	6	2	713473	6181063	DVR90	30.25	30.25		differential GPS	information was added from NIRAS-database
2	HB1	HB1	1	shallow	4.8	3.8	4.8	1	713473	6181063	DVR90	30.25	30.25		differential GPS	information was added from NIRAS-database
3	HB2	HB2		shallow					713472	6181063	DVR90	30.28			calculated / interpolated GIS	information was added from NIRAS-database
2	HB3	HB3	1	shallow	6	4	6	2	713473	6181064	DVR90	30.28	30.28		calculated / interpolated GIS	information was added from NIRAS-database
3	HB4	HB4		shallow					713472	6181063	DVR90	30.28			calculated / interpolated GIS	information was added from NIRAS-database
2	200.6902	INF1	1	nfiltration	20	12	20	8	713351	6180998	DVR90	29.71	29.71			
3	KP01	KP01	0	shallow					713473	6181064	DVR90	30.28			calculated / interpolated GIS	information was added from NIRAS-database
3	KP02	KP02	0	shallow					713471	6181064	DVR90	30.28			calculated / interpolated GIS	information was added from NIRAS-database
3	KP03	KP03	0	shallow					713472	6181064	DVR90	30.28			calculated / interpolated GIS	information was added from NIRAS-database
3	KP04	KP04	0	shallow					713473	6181063	DVR90	30.28			calculated / interpolated GIS	information was added from NIRAS-database
3	KP05	KP05	0	shallow					713473	6181064	DVR90	30.28			calculated / interpolated GIS	information was added from NIRAS-database
3	KP06	KP06	0	shallow					713472	6181064	DVR90	30.28			calculated / interpolated GIS	information was added from NIRAS-database
3	KP07	KP07	0	shallow					713472	6181064	DVR90	30.28			calculated / interpolated GIS	information was added from NIRAS-database
2	MW-1	MW-1	1	shallow	6	4	6	2	713472	6181063	DVR90	30.27	30.27		differential GPS	information was added from NIRAS-database
2	MW-2	MW-2	1	shallow	6	4	6	2	713472	6181063	DVR90	30.28	30.28		differential GPS	information was added from NIRAS-database
2	MW-3	MW-3		shallow					713473	6181064	DVR90	30.28			calculated / interpolated GIS	information was added from NIRAS-database
5	01	P01	0	P & T					713487	6181057						
5	02	P02	0	P & T												
2	03	P03	0	P & T												
5	04	P04	0	P & T												

Continuation Error! Reference source not found.

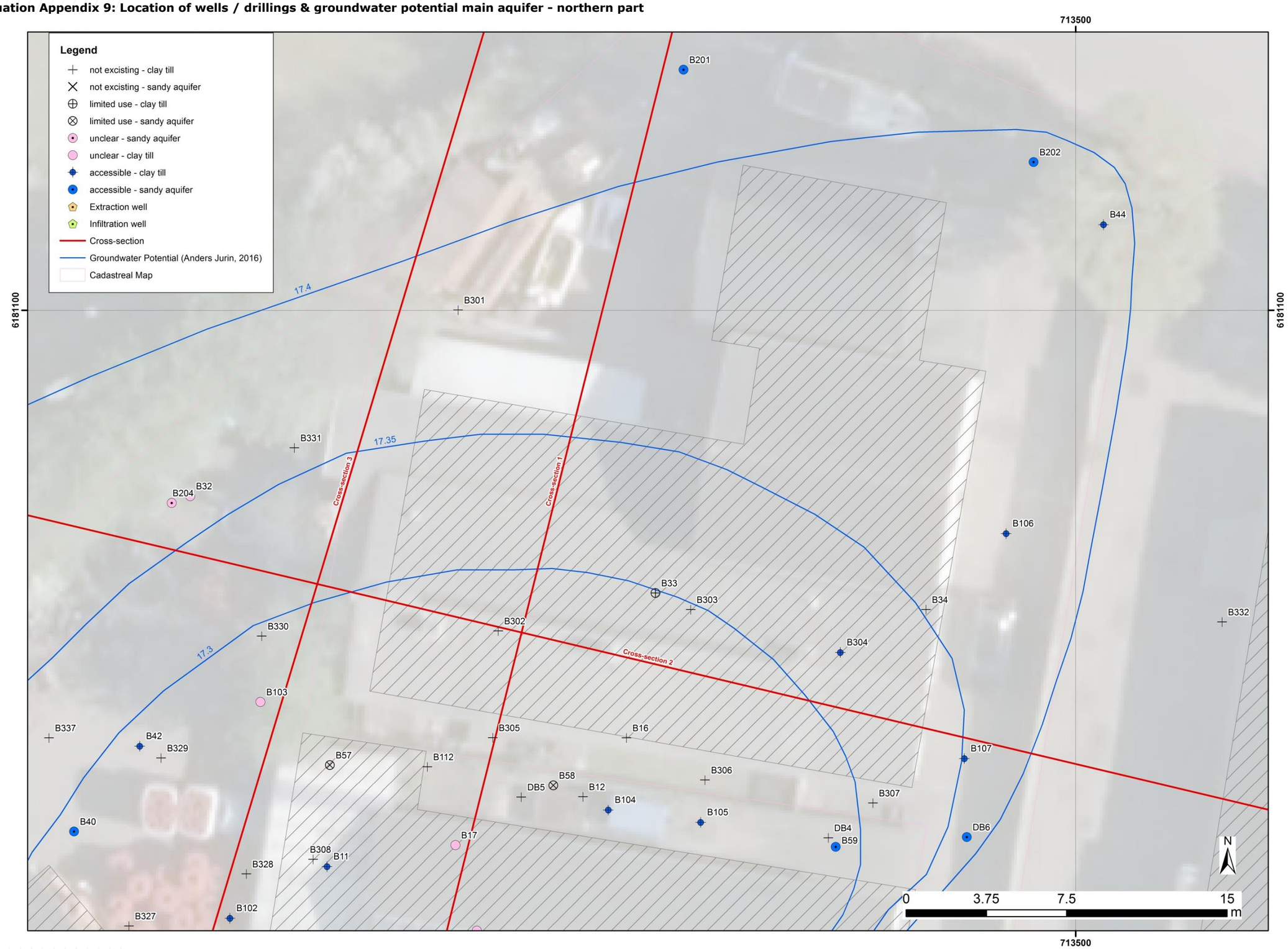
existence	DGU	internal no	screen	drilling type	depth	screen below surface			coordinates							Comment
						top	bottom	length	X	Y	height sy	z (surface)	Z (reference)	reference point	height finding	
5	05	P05	0	P & T					713487	6181057						
5	10	P10	0	P & T					721030	6191592						
2	TW-1	TW-1	1	shallow	6	5.8	6	0.2	713471	6181064	DVR90	30.29	30.29		differential GPS	information was added from NIRAS-database
2	TW-1	TW-1	2	shallow	5.1	4.9	5.1	0.2	713471	6181064	DVR90	30.29	30.29		differential GPS	information was added from NIRAS-database
2	TW-1	TW-1	3	shallow	4.1	3.9	4.1	0.2	713471	6181064	DVR90	30.29	30.29		differential GPS	information was added from NIRAS-database
2	TW-2	TW-2	1	shallow	5.8	5.6	5.8	0.2	713471	6181063	DVR90	30.31	30.31		differential GPS	information was added from NIRAS-database
2	TW-2	TW-2	2	shallow	5.2	5	5.2	0.2	713471	6181063	DVR90	30.31	30.31		differential GPS	information was added from NIRAS-database
2	TW-2	TW-2	3	shallow	4.2	4	4.2	0.2	713471	6181063	DVR90	30.31	30.31		differential GPS	information was added from NIRAS-database
2	TW-3	TW-3	1	shallow	5.7	5.5	5.7	0.2	713471	6181063	DVR90	30.35	30.35		differential GPS	information was added from NIRAS-database
2	TW-3	TW-3	2	shallow	4.9	4.7	4.9	0.2	713471	6181063	DVR90	30.35	30.35		differential GPS	information was added from NIRAS-database
2	TW-3	TW-3	3	shallow	4.2	4	4.2	0.2	713471	6181063	DVR90	30.35	30.35		differential GPS	information was added from NIRAS-database
2	TW-4	TW-4	1	shallow	5.9	5.7	5.9	0.2	713472	6181063	DVR90	30.29	30.29		differential GPS	information was added from NIRAS-database
2	TW-4	TW-4	2	shallow	5.1	4.9	5.1	0.2	713472	6181063	DVR90	30.29	30.29		differential GPS	information was added from NIRAS-database
2	TW-4	TW-4	3	shallow	4.1	3.9	4.1	0.2	713472	6181063	DVR90	30.29	30.29		differential GPS	information was added from NIRAS-database
2	200.4565		1	deep	25.4	19.4	25.4	6	713467	6181124	DVR90	30.61				information was added from Jupiter
?	DB1	DB1							713487	6181063						as no further information is avalable, well was not added to the database
?	DB2	DB2							713464	6181067						as no further information is avalable, well was not added to the database
?	DB4	DB4							713488	6181075						as no further information is avalable, well was not added to the database
?	DB5	DB5							713474	6181077						as no further information is avalable, well was not added to the database
2	DB6	DB6		deep					713495	6181075						as no further information is avalable, well was not added to the database
2	B13_east	B13_east (DB2 or B13	?	deep	15.53	?	?	?	713465	6181065	DVR90			Top af rør		well was found in the field and cannot be clearly referenced to an existing one, was not added to database

Status	
1	existing well, use limited
2	existing well
3	drilling without well installation
4	well no longer existing
5	measurement point P&T
?	unclear, not accessible

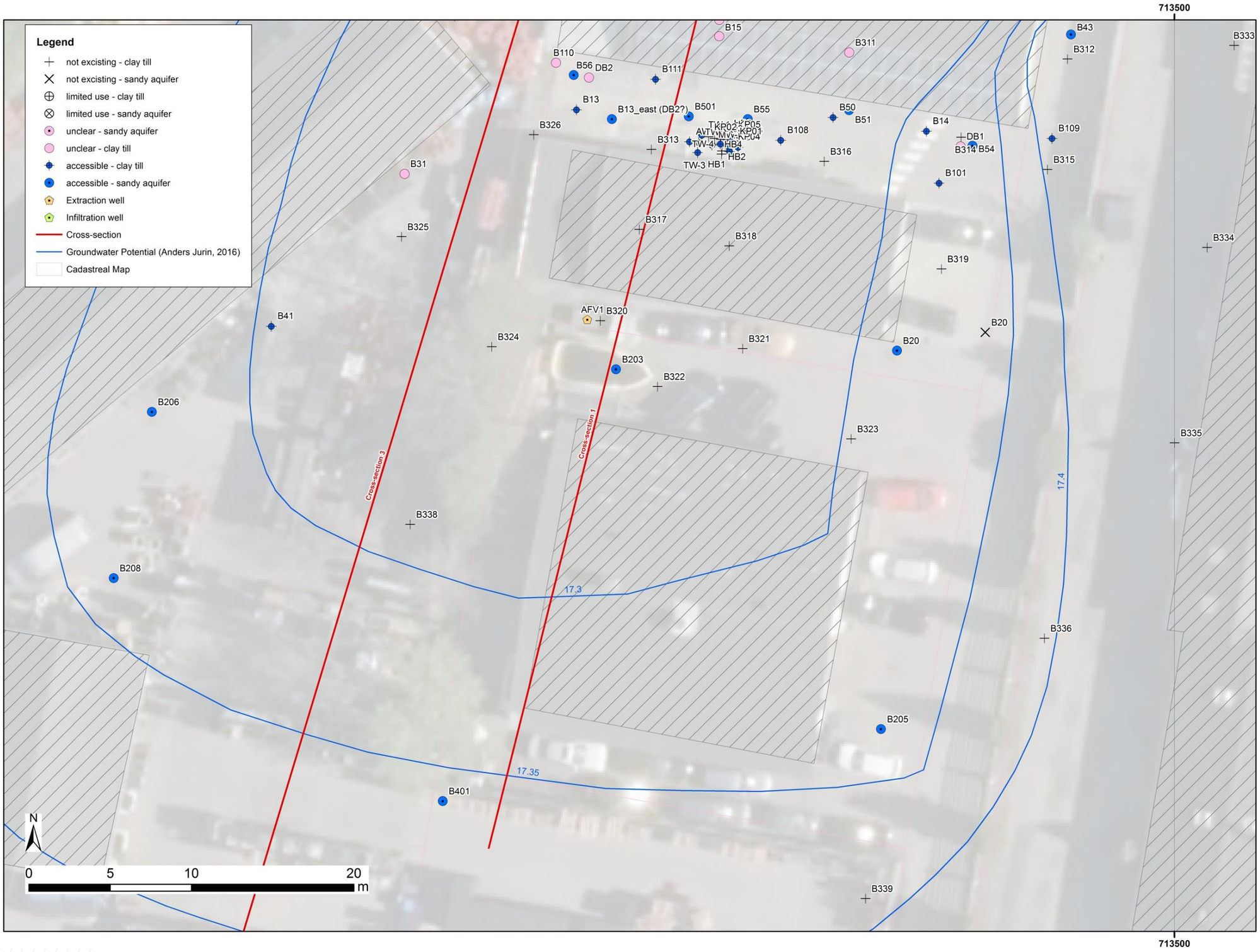
Appendix 9: Location of wells / drillings & groundwater potential main aquifer



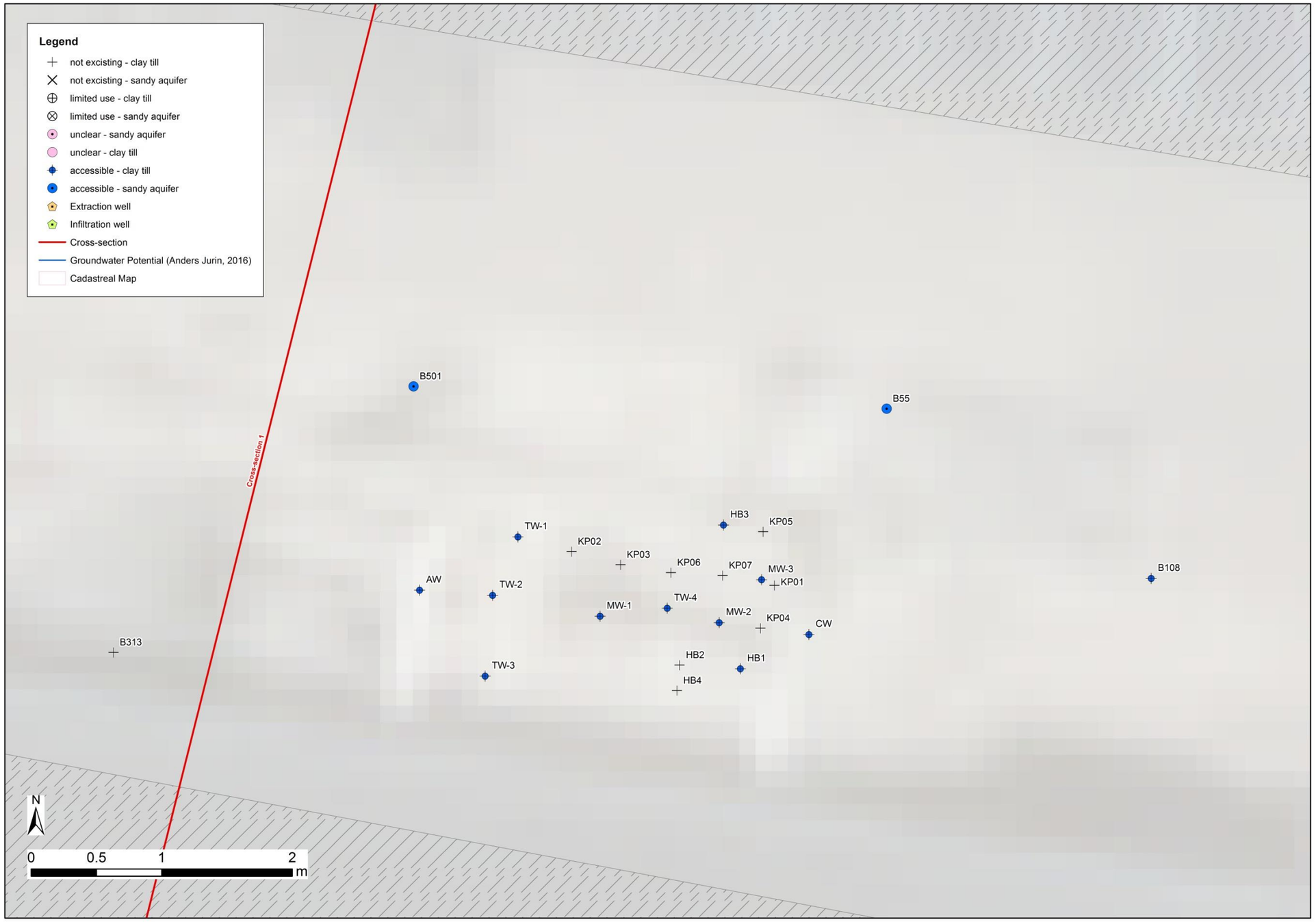
Continuation Appendix 9: Location of wells / drillings & groundwater potential main aquifer - northern part



Continuation Appendix 9: Location of wells / drillings & groundwater potential main aquifer - southern part



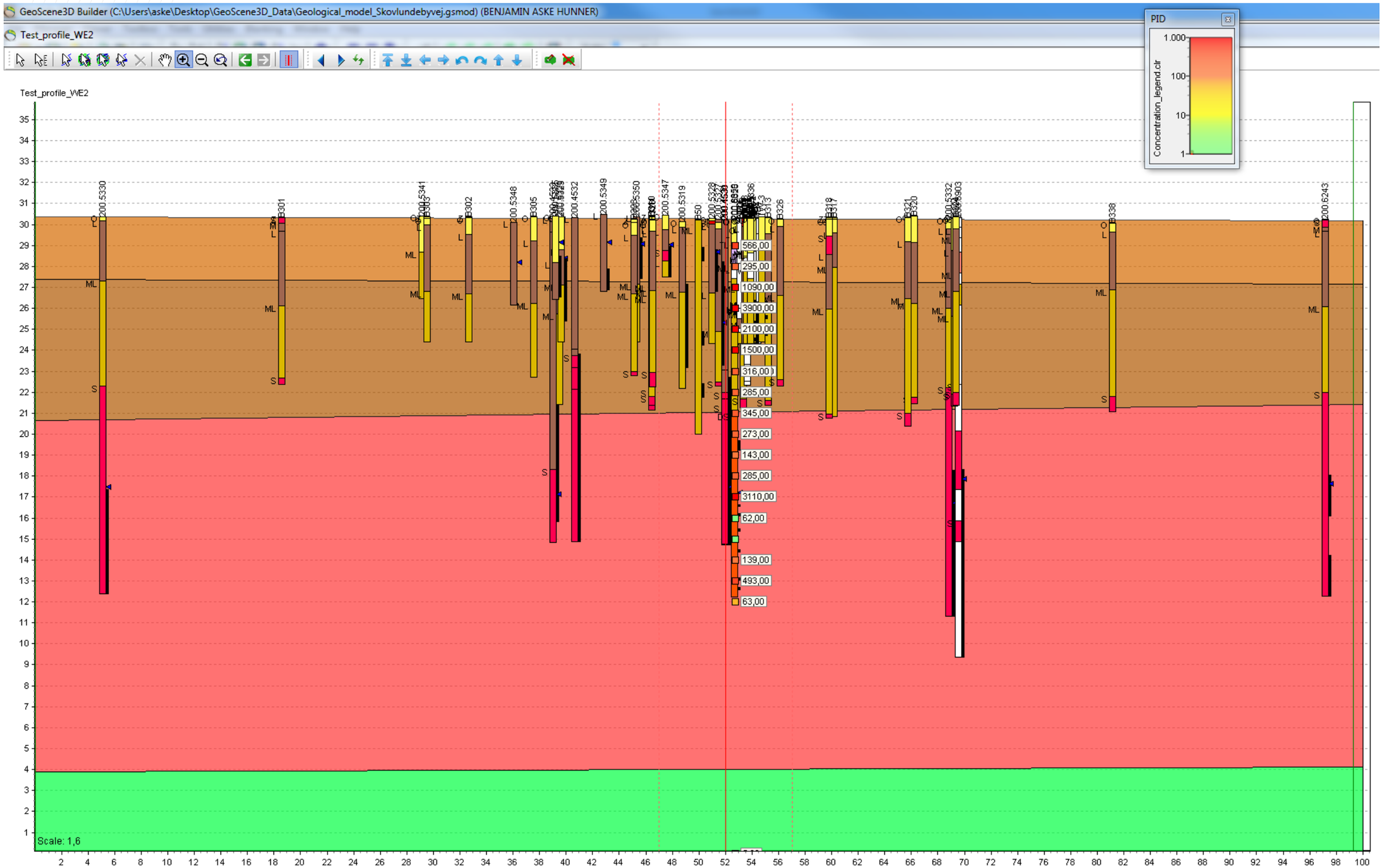
Continuation Appendix 9: Location of wells / drillings & groundwater potential main aquifer – test field EK-Tap



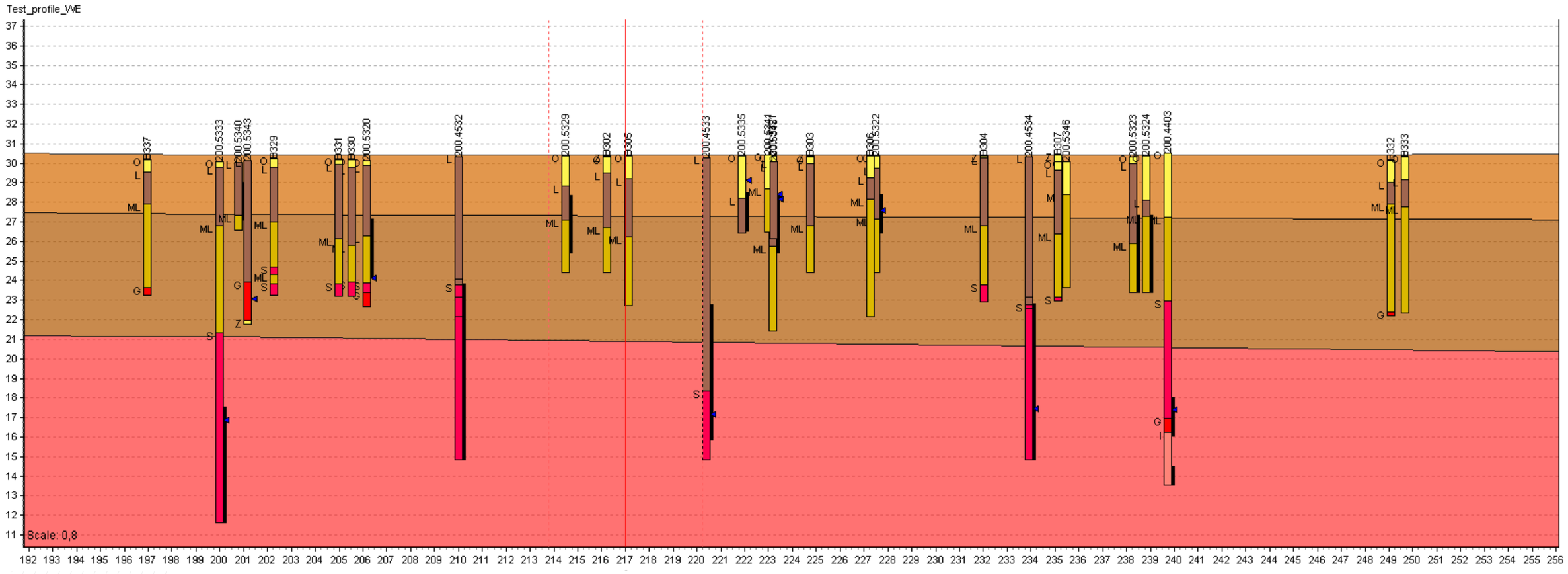
Appendix 10: Cross-Sections

The Cross-sections show the stratigraphic units at the different well positions (F & O…artificial material, L…clay, ML…clay till, S...sand). Furthermore the water table is shown (blue triangle) as well as PID-measurements (rectangles). For comparison the geological Sealand model (ref – 5) is presented (light brown…clay, dark brown…clay till, red…sand, green…limestone).

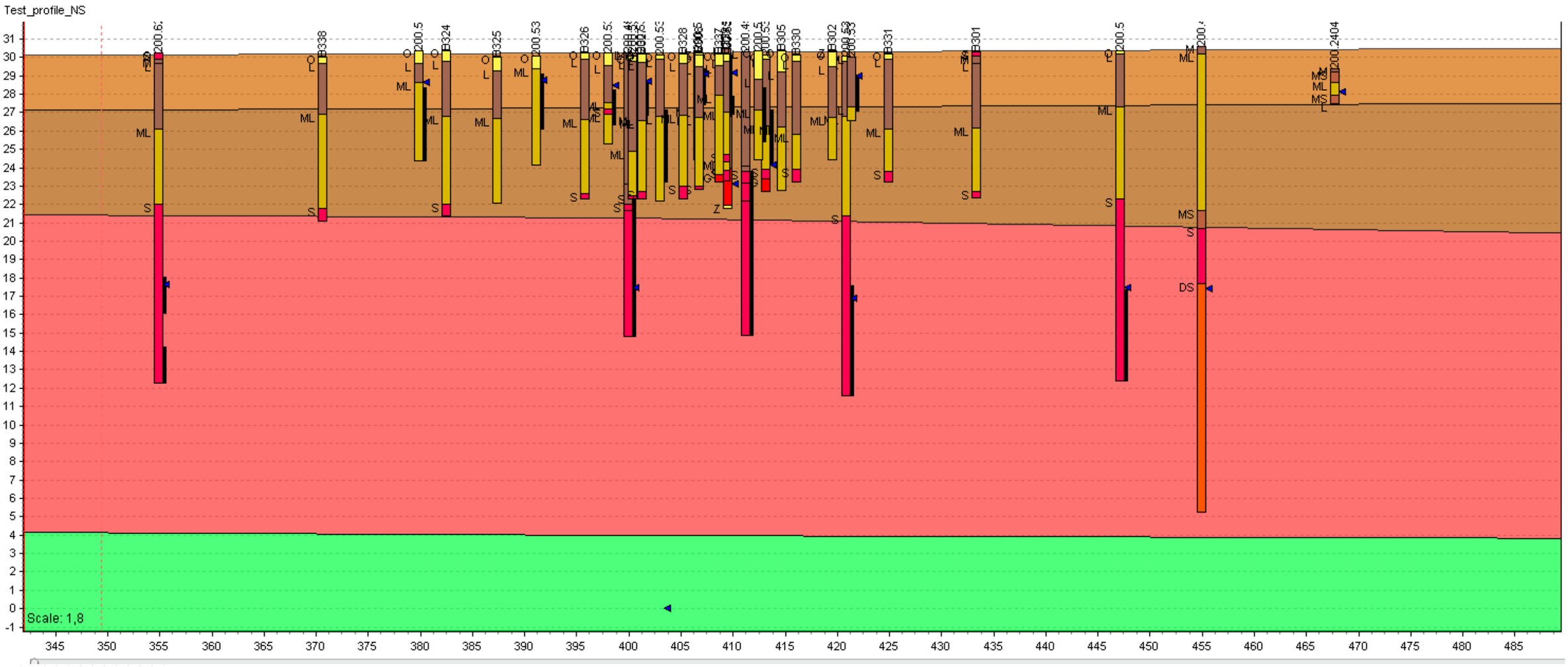
Cross Section 1 – North – South



Cross Section 2 – West – East



Cross Section 3 – North – South



Appendix 11: Comparison of original reference and terrain heights

		GeoGIS2020 database region Hovedstaden						GeoGIS2005 NIRAS				Jupiter Excel-file (same as provided db-files COWI)					Jupiter online							original well log incl Lokaliseringsskema					other sources [1]				
DGU-No	synonym	Z1 - surface hight (DVR90)	Z1 - surface hight (DNN90)	kote top - referenc e hight (DVR90)	kote top - referenc e hight (DNN90)	reference system - table indtag	reference height - table indtag	surface (DVR)	surface (DNN)	Kote (DVR)	Kote (DNN)	Jupiter xls Z1 (DVR90)	Jupiter xls Terrænkote (DVR90?/DN N?)	Jupiter xls Z1 (DNN)	Jupiter xls Terrænk ote	Jupiter xls reference point	Jupiter online Terrænk ote (DVR90)	Jupiter online Terrænk ote (DNN)	Jupiter online (Fikspun ktskote, DVR90)	Jupiter online (Fikspun ktskote, DNN)	reference point jupiter online (Fikspunktsb eskrivelse)	*Jupiter online (Kote, DVR90)*	Jupiter online (Beskrivelse)	well log (surface hight - DVR90)	well log (surfac e hight - DNN)	well log (refere nce hight - DVR90)	well log (refere nce hight - DNN)	well log (reference point)	Terrain (DVR90)	Terrain (DNN)	Kote (DVR90)	Kote (DNN)	Comment
200.6903	AFV1	30.264	30.33	30.26	30.33		30.26										30.33	30.33	30.33	30.40	Terræn			30.33	30.396			Terrain					difference between Jupiter, well log, and GeoGIS is equal to difference between DNN and DVR90. It seems that original heights were transferred accidentially.
AW	AW						30.28																										only surface height was taken with a DGPS, if detailed data is need, a field survey should be conducted
200.5318	B101											30.272	30.356			Indmålt til top pejlerør	30.36	30.43				*30.25*	Top forerør	30.40	30.466	30.27	30.34	Filterkote					differences due to rounding of numbers terrain 30.4 vs 30.356
200.5319	B102											29.966	30.142			Indmålt til top pejlerør	30.14	30.21						30.10	30.166	29.97	30.04	Filterkote					differences due to rounding of numbers terrain
200.5320	B103											29.964	30.128			Indmålt til top pejlerør	30.13	30.20						30.00	30.066	29.96	30.03	Filterkote					heights cannot be clearly identified - field survey is suggested
200.5321	B104	30.380	30.45	30.38	30.45							30.284	30.382			Indmålt til top pejlerør	30.38	30.45						30.40	30.466	30.28	30.35	Filterkote					differences due to rounding of numbers terrain
200.5322	B105	30.380	30.45	30.38	30.45							30.249	30.376			Indmålt til top pejlerør	30.38	30.45						30.40	30.466	30.25	30.32	Filterkote					differences due to rounding of numbers terrain
200.5323	B106											30.167	30.328			Indmålt til top pejlerør	30.34	30.406	30.34	30.406	Brøndkarm	*30.17*	Top forerør	30.30	30.366	30.17	30.24	Filterkote					differences due to rounding of numbers terrain
200.5324	B107											30.239	30.360			Indmålt til top pejlerør	30.36	30.43				*30.23*	Top forerør	30.40	30.466			Indmålt til top pejlerør					differences due to rounding of numbers terrain
200.5325	B108	30.210	30.28	30.21	30.28							30.105	30.211			Indmålt til top pejlerør	30.21	30.28						30.20	30.266	30.11	30.18	Filterkote					
200.5326	B109	30.410	30.48	30.41	30.48							30.287	30.411			Indmålt til top pejlerør	30.41	30.28				*30.3*	Top forerør	30.40	30.466	30.29	30.36	Filterkote					
200.5350	B11							30.37	30.44								30.10	30.10						30.37	30.44						30.274	30.34	
200.5327	B110	30.240	30.31	30.24	30.31							30.183	30.241			Indmålt til top pejlerør	30.24	30.31						30.20	30.266	30.18	30.25	Filterkote					differences due to rounding of numbers terrain
200.5328	B111	30.280	30.35	30.28	30.35							30.184	30.279			Indmålt til top pejlerør	30.28	30.35						30.30	30.366	30.18	30.25	Filterkote					differences due to rounding of numbers terrain
200.5329	B112											30.261	30.365			Indmålt til top pejlerør	30.36	30.43						30.40	30.466	30.26	30.33	Filterkote					differences due to rounding of numbers terrain
200.5335	B12	30.390	30.46	30.39	30.46			30.26	30.33			30.256	30.387	30.32	30.45	Indmålt til top pejlerør	30.46	30.39						30.264	30.33			Indmålt til top pejlerør			30.164	30.230	heights cannot be clearly identified - field survey is suggested, but well is no longer existing
200.5336	B13	30.260	30.33	30.26	30.33	DVR90	30.26	30.21	30.28			30.159	30.197		30.26	Indmålt til top pejlerør	30.26	30.33						30.214	30.28			Indmålt til top pejlerør			30.114	30.180	heights cannot be clearly identified - field survey is suggested
B13_east	B13_east (DB2/B110?)																																heights and position unclear - field survey suggested
200.5337	B14	30.350	30.42	30.35	30.42	DVR90	30.35	30.27	30.34			30.226	30.347			Indmålt til top pejlerør	30.42	30.35						30.274	30.34			Indmålt til top pejlerør			30.174	30.240	heights cannot be clearly identified - field survey is suggested
200.5347	B15							30.45	30.52								30.10	30.10						30.454	30.52						30.354	30.42	
200.5348	B16							30.18	30.25								30.10	30.10						30.184	30.25						31.094	31.16	heights cannot be clearly identified, but well is not existing anymore
200.5349	B17							30.46	30.53								30.10	30.10						30.464	30.53						30.364	30.43	
200.4342	B20	30.310	30.38	30.31	30.38	DNN	30.30					30.213	30.313			Indmålt til top pejlerør	30.31	30.376										Indmålt til top pejlerør					unclear, is maybe the same as 200.5338
200.5338	B20	30.240	30.31	30.24	30.31	DVR90	30.24	30.35	30.42			30.213	30.313			Indmålt til top pejlerør	30.24	30.306	30.29	30.356	Brøndkarm	*30.29*	Dækselkarm, To	30.338	30.42	30.287	30.35	Dækselkarm			30.234	30.3	newer height data with 2005, leight orange is the height data until 2005
200.5330	B201	30.370	30.44	30.37	30.44	DVR90	30.24					30.236	30.348			Indmålt til top pejlerør	30.37	30.44	30.37	30.44	Brøndkarm	*30.23*	Top forerør	30.30	30.366	30.24	30.31	Filterkote					differences due to rounding of numbers terrain
200.5331	B202	30.320	30.39	30.32	30.39	DVR90	30.28					30.281	30.355			Indmålt til top pejlerør	30.32	30.39	30.32	30.39	Brøndkarm	*30.18*	Top forerør	30.40	30.466	30.28	30.35	Filterkote					heights cannot be clearly identified - field survey is suggested
200.5332	B203	30.260	30.33	30.26	30.33	DVR90	30.17					30.167	30.260			Indmålt til top pejlerør	30.26	30.33				*30.18*	Top forerør	30.30	30.366	30.17	30.24	Filterkote					heights cannot be clearly identified - field survey is suggested
200.5333	B204	30.060	30.13	30.06	30.13	DVR90	29.78					29.776	30.057			Indmålt til top pejlerør	30.06	30.13						30.10	30.166	29.78	29.85	Filterkote					differences due to rounding of numbers terrain
200.5334	B205	30.310	30.38	30.31	30.38	DVR90	30.09					30.087	30.253			Indmålt til top pejlerør	30.31	30.38	30.31		Brøndkarm	*30.12*	Top forerør	30.30	30.366	30.09	30.16	Filterkote					heights cannot be clearly identified - field survey is suggested
200.5393	B206 - screen 2	30.000	30.07	30.00	30.07	DVR90	29.80										30.00	30.07	30.00	30.07		*29.77*	Top forerør	30.00	30.066			Top forerør					heights cannot be clearly identified - field survey is suggested
200.5393	B206 -screen 1	30.000	30.07	30.00	30.07	DVR90	29.79										30.00	30.07	30.00	30.07		*29.77*	Top forerør	30.00	30.066			Top forerør					heights cannot be clearly identified - field survey is suggested
200.5394	B207	29.900	29.97	29.90	29.97	DVR90	29.80										29.90	29.97	29.90	29.97				29.90	29.966								
200.5395	B208	29.800	29.87	29.80	29.87	DVR90	29.70										29.80	29.87	29.80	29.87		*29.68*	Top forerør	29.80	29.866			Top forerør					heights cannot be clearly identified - field survey is suggested

Continuation Appendix 11: Comparison of original reference and terrain heights

		GeoGIS2020 database region Hovedstaden						GeoGIS2005 NIRAS				Jupiter Excel-file (same as provided db-files COWI)					Jupiter online							original well log incl Lokaliseringsskema					other sources [1]				
DGU-No	synonym	Z1 - surface hight (DVR90)	Z1 - surface hight (DNN90)	kote top - referenc e hight (DVR90)	kote top - referenc e hight (DNN90)	reference system - table indtag	reference height - table indtag	surface (DVR)	surface (DNN)	Kote (DVR)	Kote (DNN)	Jupiter xls Z1 (DVR90)	Jupiter xls Terrænkote (DVR90?/DN N?)	Jupiter xls Z1 (DNN)	Jupiter xls Terrænk ote	Jupiter xls reference point	Jupiter online Terrænk ote (DVR90)	Jupiter online Terrænk ote (DNN)	Jupiter online (Fikspun ktskote, DVR90)	Jupiter online (Fikspun ktskote, DNN)	reference point jupiter online (Fikspunktsb eskrivelse)	*Jupiter online (Kote, DVR90)*	Jupiter online (Beskrivelse)	well log (surface hight - DVR90)	well log (surfac e hight - DNN)	well log (refere nce hight - DVR90)	well log (refere nce hight - DNN)	well log (reference point)	Terrain (DVR90)	Terrain (DNN)	Kote (DVR90)	Kote (DNN)	Comment
200.2404	B26																29.38	29.446	29.38	29.446	Terræn													heights cannot be clearly identified, but well is not existing anymore
B301	B301																																only drilling, no well installed - surface height was calculated in GIS
B302	B302	0.000		0.00																													only drilling, no well installed - surface height was calculated in GIS
B303	B303	0.000		0.00																													only drilling, no well installed - surface height was calculated in GIS
B304	B304	0.000		0.00																													surface height was calculated in GIS, field survey suggested
B305	B305																																only drilling, no well installed - surface height was calculated in GIS
B306	B306																																only drilling, no well installed - surface height was calculated in GIS
B307	B307																																only drilling, no well installed - surface height was calculated in GIS
B308	B308	0.000		0.00																													only drilling, no well installed - surface height was calculated in GIS
200.5339	B31	30.070	30.14	30.07	30.14			29.97	30.04			29.923	30.071			Indmålt til top pejlerør	30.07	30.14						29.97	30.04			Indmålt til top pejlerør			29.874	29.940	newer height data with 2005, leight orange is the height data until 2005
B310	B310																																surface height was calculated in GIS, field survey suggested
B311	B311	0.000		0.00																													surface height was calculated in GIS, field survey suggested
B312	B312																																only drilling, no well installed - surface height was calculated in GIS
B313	B313																																only drilling, no well installed - surface height was calculated in GIS
B314	B314	0.000		0.00																													only drilling, no well installed - surface height was calculated in GIS
B315	B315	0.000		0.00																													only drilling, no well installed - surface height was calculated in GIS
B316	B316																																only drilling, no well installed - surface height was calculated in GIS
B317	B317																																only drilling, no well installed - surface height was calculated in GIS
B318	B318																																only drilling, no well installed - surface height was calculated in GIS
B319	B319																																only drilling, no well installed - surface height was calculated in GIS
200.5340	B32	30.030	30.10	30.03	30.10			29.97	30.04			29.920	30.029			Indmålt til top pejlerør	30.03	30.10						29.97	30.04			Indmålt til top pejlerør			29.874	29.940	newer height data with 2005, leight orange is the height data until 2005
B320	B320																																only drilling, no well installed - surface height was calculated in GIS
B321	B321																																only drilling, no well installed - surface height was calculated in GIS
B322	B322																																only drilling, no well installed - surface height was calculated in GIS
B323	B323																																only drilling, no well installed - surface height was calculated in GIS
B324	B324																																only drilling, no well installed - surface height was calculated in GIS
B325	B325																																only drilling, no well installed - surface height was calculated in GIS
B326	B326																																only drilling, no well installed - surface height was calculated in GIS
B327	B327																																only drilling, no well installed - surface height was calculated in GIS
B328	B328																																only drilling, no well installed - surface height was calculated in GIS
B329	B329	0.000		0.00																													only drilling, no well installed - surface height was calculated in GIS
200.5341	B33	30.410	30.48	30.41	30.48			30.29	30.36			30.295	30.410			Indmålt til top pejlerør	30.41	30.48						30.29	30.36			Indmålt til top pejlerør			30.244	30.310	newer height data with 2005, leight orange is the height data until 2005
B330	B330	0.000		0.00																													only drilling, no well installed - surface height was calculated in GIS

Continuation Appendix 11: Comparison of original reference and terrain heights

		GeoGIS2020 database region Hovedstaden						GeoGIS2005 NIRAS				Jupiter Excel-file (same as provided db-files COWI)					Jupiter online							original well log incl Lokaliseringsskema					other sources [1]				
DGU-No	synonym	Z1 - surface hight (DVR90)	Z1 - surface hight (DNN90)	kote top - referenc e hight (DVR90)	kote top - referenc e hight (DNN90)	reference system - table indtag	reference height - table indtag	surface (DVR)	surface (DNN)	Kote (DVR)	Kote (DNN)	Jupiter xls Z1 (DVR90)	Jupiter xls Terrænkote (DVR90?/DN N?)	Jupiter xls Z1 (DNN)	Jupiter xls Terrænk ote	Jupiter xls reference point	Jupiter online Terrænk ote (DVR90)	Jupiter online Terrænk ote (DNN)	Jupiter online (Fikspun ktskote, DVR90)	Jupiter online (Fikspun ktskote, DNN)	reference point jupiter online (Fikspunktsb eskrivelse)	*Jupiter online (Kote, DVR90)*	Jupiter online (Beskrivelse)	well log (surface hight - DVR90)	well log (surfac e hight - DNN)	well log (refere nce hight - DVR90)	well log (refere nce hight - DNN)	well log (reference point)	Terrain (DVR90)	Terrain (DNN)	Kote (DVR90)	Kote (DNN)	Comment
B331	B331																																only drilling, no well installed - surface height was calculated in GIS
B332	B332																																only drilling, no well installed - surface height was calculated in GIS
B333	B333																																only drilling, no well installed - surface height was calculated in GIS
B334	B334																																only drilling, no well installed - surface height was calculated in GIS
B335	B335	0.000		0.00																													only drilling, no well installed - surface height was calculated in GIS
B336	B336																																only drilling, no well installed - surface height was calculated in GIS
B337	B337																																only drilling, no well installed - surface height was calculated in GIS
B338	B338																																only drilling, no well installed - surface height was calculated in GIS
B339	B339																																only drilling, no well installed - surface height was calculated in GIS
200.5346	B34							30.28	30.35								30.10	30.10						30.28	30.35								heights cannot be clearly identified, but well is not existing anymore
200.4404	B40 (nedre - north)	30.230	30.30	30.23	30.30	DVR90	30.06	30.18	30.25			30.037	30.190				30.23	30.30			Terræn			30.18	30.25						30.07	30.13	heights cannot be clearly identified, as well original coordinates were wrong - field survey is suggested
200.4404	B40 (øvre - south)	30.230	30.30	30.23	30.30	DVR90	30.08	30.18	30.25			30.054	30.190				30.23	30.30			Terræn			30.18	30.25						30.09	30.15	heights cannot be clearly identified, as well original coordinates were wrong - field survey is suggested
200.6243	B401 (nedre - north	30.240	30.31	30.17	30.24	DVR90	30.17																										heights are maybe wrong - surface is not equal to local DTM (20cm difference)
200.6243	B401 (øvre- south)	30.240	30.31	30.17	30.24	DVR90	30.17																										heights are maybe wrong - surface is not equal to local DTM (20cm difference)
200.5342	B41	30.340	30.41	30.34	30.41		29.94	30.03	30.10			29.916	29.967			Indmålt til top pejlerør	30.34	30.41				*29.94*	Top forerør	30.03	30.1			Top forerør			29.94	30	heights cannot be clearly identified - field survey is suggested
200.5343	B42 (nedre - south)							30.15	30.22			30.023	30.153				30.15	30.22				*30.01*	Top forerør	30.15	30.22			Top forerør			30.05	30.11	heights cannot be clearly identified - field survey is suggested
200.5343	B42 (øvre - north)							30.15	30.22			30.033	30.153				30.15	30.22				*30.01*	Top forerør	30.15	30.22			Top forerør			30.06	30.12	heights cannot be clearly identified - field survey is suggested
200.4403	B43-nedre	30.510	30.58	30.51	30.58	DVR90	30.36	30.41	30.48			30.277	30.416			Indmålt til top pejlerør	30.51	30.58	30.51	30.58	Brøndkarm	*30.38*	Top forerør	30.41	30.48			Indmålt til top pejlerør			30.300	30.360	heights cannot be clearly identified - field survey is suggested
200.4403	B43-øvre	30.510	30.58	30.51	30.58	DVR90	30.38	30.41	30.48			30.305	0.000			Indmålt til top pejlerør	30.51	30.58	30.51	30.58		*30.38*	Top forerør	30.41	30.48			Indmålt til top pejlerør			30.320	30.380	heights cannot be clearly identified - field survey is suggested
200.5345	B44			30.20	30.27			30.48	30.55								30.20	30.20						30.48	30.55						30.39	30.45	coordinates should be measured, coordinates in the regions GeoGIS are wrong, data is appr. 20 years old
200.8650	B501-1	30.200	30.27				30.20										30.23	30.296	30.23	30.296	Terræn											Top of screen is not measured - field survey suggested
200.8650	B501-2	30.200	30.27				30.20										30.23	30.296	30.23	30.296	Terræn											Top of screen is not measured - field survey suggested
200.8650	B501-3	30.200	30.27				30.20										30.23	30.296	30.23	30.296	Terræn											Top of screen is not measured - field survey suggested
200.8650	B501-4	30.200	30.27				30.20										30.23	30.296	30.23	30.296	Terræn											Top of screen is not measured - field survey suggested
200.8650	B501-5	30.200	30.27				30.20										30.23	30.296	30.23	30.296	Terræn											Top of screen is not measured - field survey suggested
200.8650	B501-6	30.200	30.27				30.20										30.23	30.296	30.23	30.296	Terræn											Top of screen is not measured - field survey suggested
B50-midte	B50-midte	30.144	30.21					30.14	30.21	30.12	30.19	30.135	30.290			Indmålt til top pejlerør												Indmålt til top pejlerør					heights cannot be clearly identified - field survey is suggested
B50-nedre	B50-nedre	30.144	30.21					30.14	30.21	30.08	30.15	30.168	30.290			Indmålt til top pejlerør												Indmålt til top pejlerør					heights cannot be clearly identified - field survey is suggested
B50-øvre	B50-øvre	30.144	30.21					30.14	30.21	30.14	30.21	30.192	30.290			Indmålt til top pejlerør												Indmålt til top pejlerør					heights cannot be clearly identified - field survey is suggested
200.5344	B51 (midte)	30.290	30.36	30.29	30.36	DVR90	29.88	30.23	30.30	29.88	29.95					Indmålt til top pejlerør	30.29	30.36						30.23	30.30	29.884	29.95	Indmålt til top pejlerør					heights cannot be clearly identified - field survey is suggested
200.5344	B51 (nedre - big Ø)	30.290	30.36	30.29	30.36	DVR90	29.55	30.23	30.30	29.55	29.62	29.607	30.288			Indmålt til top pejlerør	30.29	30.36						30.23	30.30	29.554	29.62	Indmålt til top pejlerør					heights cannot be clearly identified - field survey is suggested
200.5344	B51 (øvre)	30.290	30.36	30.29	30.36	DVR90	29.97	30.23	30.30	29.97	30.04					Indmålt til top pejlerør	30.29	30.36						30.23	30.30	29.974	30.04	Indmålt til top pejlerør					heights cannot be clearly identified - field survey is suggested
B52	B52																																was only a drilling - no well installed

Continuation Appendix 11: Comparison of original reference and terrain heights

		GeoGIS2020 database region Hovedstaden						GeoGIS2005 NIRAS				Jupiter Excel-file (same as provided db-files COWI)					Jupiter online							original well log incl Lokaliseringsskema					other sources [1]				
DGU-No	synonym	Z1 - surface hight (DVR90)	Z1 - surface hight (DNN90)	kote top - reference hight (DVR90)	kote top - reference hight (DNN90)	reference system - table indtag	reference height - table indtag	surface (DVR)	surface (DNN)	Kote (DVR)	Kote (DNN)	Jupiter xls Z1 (DVR90)	Jupiter xls Terrænkote (DVR90?/DNN?)	Jupiter xls Z1 (DNN)	Jupiter xls Terrænkote	Jupiter xls reference point	Jupiter online Terrænkote (DVR90)	Jupiter online Terrænkote (DNN)	Jupiter online (Fikspunktskote, DVR90)	Jupiter online (Fikspunktskote, DNN)	reference point jupiter online (Fikspunktsbeskrivelse)	*Jupiter online (Kote, DVR90)*	Jupiter online (Beskrivelse)	well log (surface hight - DVR90)	well log (surface hight - DNN)	well log (reference hight - DVR90)	well log (reference hight - DNN)	well log (reference point)	Terrain (DVR90)	Terrain (DNN)	Kote (DVR90)	Kote (DNN)	Comment
B53	B53																																was only a drilling - no well installed
200.4529	B54	30.360	30.43	30.36	30.43	DVR90	30.38					30.364	30.384			Indmålt til kant af brøndkar	30.36	30.43	30.38	30.45	Brøndkarm	*30.38*	Dækselkarm	30.338	30.404	30.377	30.44	Dækselkarm					top screen is not measured - should be measured, there a small difference between original data and xls-Jupiterfile, Excel data is assumed to be correct because is newer;
200.4530	B55	30.190	30.26	30.19	30.26	DVR90	30.21					30.192	30.212			Indmålt til kant af brøndkar	30.19	30.26	30.21	30.28	Brøndkarm	*30.21*	Dækselkarm	30.235	30.301	30.214	30.28	Dækselkarm					top screen is not measured - should be measured, there a small difference between original data and xls-Jupiterfile, Excel data is assumed to be correct because is newer;
200.4531	B56	30.230	30.30	30.23	30.30	DVR90	30.25					30.238	30.258			Indmålt til kant af brøndkar	30.23	30.30	30.25	30.32	Brøndkarm	*30.25*	Dækselkarm	30.270	30.336	30.248	30.31	Dækselkarm					top screen is not measured - should be measured, there a small difference between original data and xls-Jupiterfile, Excel data is assumed to be correct because is newer;
200.4532	B57	30.320	30.39	30.32	30.39	DVR90	30.41										30.32	30.39	30.34	30.41	Brøndkarm	*30.34*	Dækselkarm	30.431	30.497	30.346	30.41	Dækselkarm					heights cannot be clearly identified , as well top of screen is not measured- field survey is suggested
200.4533	B58	30.290	30.36	30.29	30.36	DVR90	30.38					30.365	30.387			Indmålt og pejlet til kant af	30.29	30.36	30.31	30.38	Brøndkarm	*30.31*	Dækselkarm	30.398	30.464	30.311	30.38	Dækselkarm					heights cannot be clearly identified , as well top of screen is not measured- field survey is suggested
200.4534	B59	30.320	30.39	30.32	30.39	DVR90	30.35					30.406	30.427			Indmålt og pejlet til kant af	30.32	30.39	30.34	30.41	Brøndkarm	*30.34*	Dækselkarm	30.428	30.494	30.345	30.41	Dækselkarm					heights cannot be clearly identified , as well top of screen is not measured- field survey is suggested
CW	CW																																only surface height was taken with a DGPS, if detailed data is need, a field survey should be conducted
DB1	DB1																																unclear, no further information available, not in the GeoGIS
DB2	DB2																																could not be clearly identified in the field ->is maybe "B13_east"
DB4	DB4																																unclear, no further information available, not in the GeoGIS
DB5	DB5																																unclear, no further information available, not in the GeoGIS
DB6	DB6																																no height information is given - field survey suggested
HB1	HB1																																only surface height was taken with a DGPS, if detailed data is need, a field survey should be conducted
HB2	HB2																																well is no longer existing, surface height was calculated in GIS
HB3	HB3																																only surface height was taken with a DGPS, if detailed data is need, a field survey should be conducted
HB4	HB4																																well is no longer existing, surface height was calculated in GIS
200.6902	INF1	29.714	29.78	29.71	29.78												29.78	29.78	29.78	29.85	Terræn			29.78	29.846			Terræn					difference between Jupiter, well log, and GeoGIS is equal to difference between DNN and DVR90. It seems that original heights were transferred accidentially
KP01	KP01																																was only a drilling - no well installed, surface height was calculated in GIS
KP02	KP02																																was only a drilling - no well installed, surface height was calculated in GIS
KP03	KP03																																was only a drilling - no well installed, surface height was calculated in GIS
KP04	KP04																																was only a drilling - no well installed, surface height was calculated in GIS
KP05	KP05																																was only a drilling - no well installed, surface height was calculated in GIS
KP06	KP06																																was only a drilling - no well installed, surface height was calculated in GIS
KP07	KP07																																was only a drilling - no well installed, surface height was calculated in GIS
MW-1	MW-1																																only surface height was taken with a DGPS, if detailed data is need, a field survey should be conducted
MW-2	MW-2																																only surface height was taken with a DGPS, if detailed data is need, a field survey should be conducted
TW-1	TW-1																																only surface height was taken with a DGPS, if detailed data is need, a field survey should be conducted
TW-2	TW-2																																only surface height was taken with a DGPS, if detailed data is need, a field survey should be conducted
TW-3	TW-3																																only surface height was taken with a DGPS, if detailed data is need, a field survey should be conducted
TW-4	TW-4																																only surface height was taken with a DGPS, if detailed data is need, a field survey should be conducted
200.4565																	30.61		30.87		Brøndkarm	*30.77*	Top forerør					Top forerør					heights cannot be clearly identified - field survey is suggested

calculated height using the difference between DVR90 and DNN of 6.6 cm
value used for GeoGIS
value used for GeoGIS for data before 2005

1) Niras Reports from 1998 & 2000; ref 8-11

Appendix 12: Photo documentation wells

B11 (200.5350)

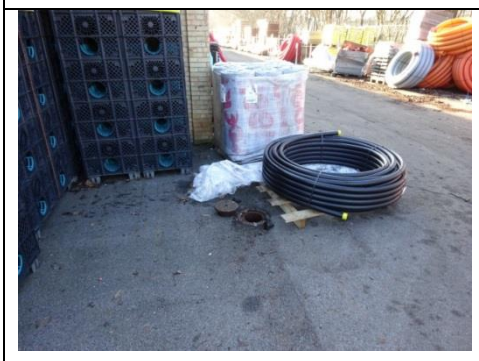
B13 (200.5336)

B13_east or DB2 or B110 (200.5327)

B14 (200.5337)

B20 (200.5338)

B33 (200.5341)

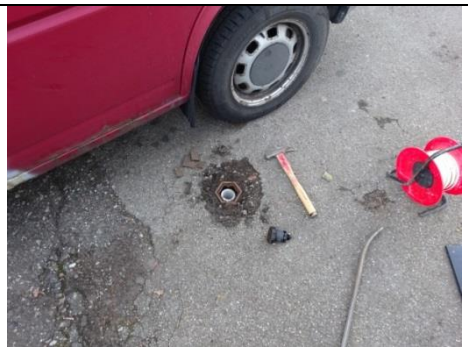


B40 (200.4404)

B41 (200.5342)

B42 (200.5343)

B43 (200.4403)



B44 (200.5345)

 B50	
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 B54 (200.4529)	
 B55 (200.4530)	


B56 (200.4531)


B57 (200.4532)


B58 (200.4533)


B59 (200.4534)

B101 (200.5318)

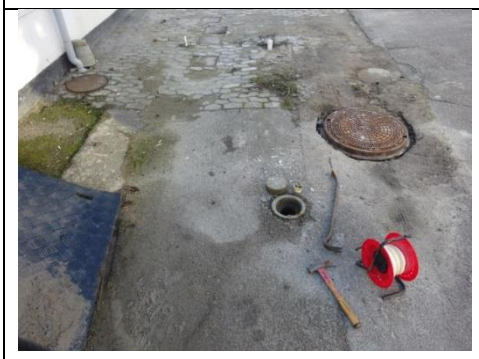
B102 (200.5319)

B104 (200.5321)

B105 (200.5322)

B106 (200.5323)

B107 (200.5324)



B108 (200.5325)

B109 (200.5326)

B111 (200.5328)

B201 (200.5330)

B202 (200.5331)

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B206 (200.5393)

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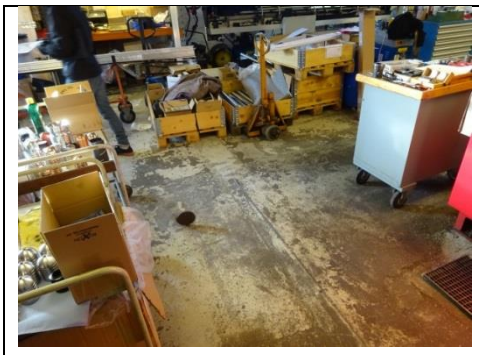
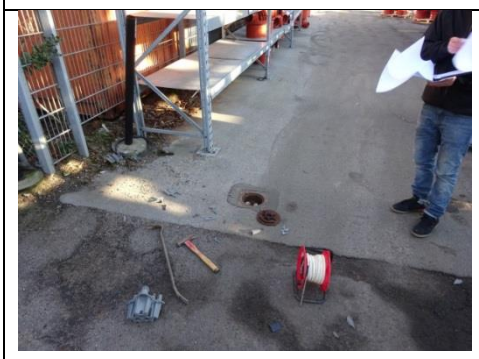
B208 (200.5395)

 B304	
 B401 (200.6243)	
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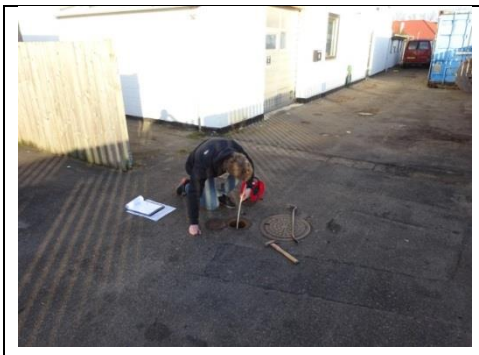

DB6

AFV1 (200.6903)

CW

TW1

AW

TW2

MW2

TW3

MW1

TW4

	
MW3	HB1