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Change Log

**MED_AO6 AREA – OWF ZONE 1
UXO SURVEY**

MED_TEC_55_FACTUAL
REPORT - UXO SURVEY -
OWF ZONE 1 AO6 AREA_1

PROJECT No.
113401341

FACTUAL REPORT

No. OF PAGES
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ABBREVIATIONS

ADCP	Acoustic Doppler Current Profiler
Ch	Channel
cm	Centimetre
CMP	Common Mid-Point
C-O	Computed Minus Observed
CoG	Centre of Gravity
CRP	Central Reference Point
DEMOB	Demobilisation
DGEC	Direction générale de l'énergie et du climat
DP	Dynamic Positioning
DPO	Dynamic Positioning Officer
DPR	Daily production report
EP	Environmental Protection
FLO	Fisheries Liaison Officer

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ABBREVIATIONS

GNSS	Global Navigation Satellite System
GPS	Global Positioning System
GRS	Geodetic Reference System
GSO	Geophysical Services Offshore
h	Hour
IMO	International Maritime Organization
J	Joule
JNCC	Joint Nature Conservation Committee
kHz	Kilohertz
LAT	Low Astronomical Tide
m	Meters
min	Minutes
MBES	Multibeam echosounder
mm	Millimetre
MOB	Mobilisation
MRU	Motion Reference Unit
MBES	Multibeam Echosounder System
POB	Personnel On Board
PAM	Passive Acoustic Monitoring
PPP	Precise Point Positioning
PPSU	Pulse Power Supply Unit
QA-QC	Quality Assurance – Quality Control
RTE	Réseau de Transport d'Électricité
RTK	Real Time Kinematics
s	Second
SHOM	Service Hydrographique et Océanographique de la Marine
SN	Serial Number
SRF	Ship's Reference Frame
SBP	Sub-Bottom Profiler
SVP	Sound Velocity Profiler
SVS	Sound Velocity Sensor
SSS	Side Scan Sonar
TBC	To be confirmed

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ABBREVIATIONS

TTS	TTSurvey Ltd (Seismic equipment hire company)
UHR	Ultra-High Resolution
UTC	Coordinated Universal Time
UTM	Universal Transverse Mercator
UXO	Unexploded Ordnance
VSAT	Very-Small-Aperture Terminal
WB	Water Bottom
WD	Water Depth
WGS84	World Geodetic System 1984
WT	Work time
ZH	Hydrographic Zero or Hydrographic Datum

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1. INTRODUCTION

This report together with the supporting appendix, describes the results of the UXO survey conducted by Tecnoambiente with the S/V Geo Focus in the Zone 1 offshore windfarm area (OWF) at MED_AO6 area (Mediterranean). Both the survey vessel and the equipment used for this task have been shared with the rest of offshore windfarm areas (Zones 1, 2, 3 and 4 OWF) and the Offshore Substation areas (Zone 1, 2 and 3 OSS).

The objective of the site survey was to perform an UXO survey over the proposed UXO GI points (Borehole locations) over the area of interest, comprising MBES, SSS and SBP datasets.

The purpose of this survey was to:

- To define the final location of the GI points on the proposed box
- To detect MBES, SSS and SBP contacts
- To review proposed borehole locations for geohazards

The main objective of this was to provide the ALARP certificates necessary for a subsequent geotechnical investigation to be conducted within the zone. The survey proved to be a success and all objectives were met as detailed herein.

2. SCOPE OF WORK

2.1. SURVEY AREA

The areas of interest are located in the Gulf of Lion off the French Mediterranean coast. These areas are 4 offshore windfarm (Zone 1 OWF, Zone 2 OWF, Zone 3 OWF and Zone 4 OWF) and 3 offshore substations (Zone 1 OSS, Zone 2 OSS and Zone 3 OSS) which are under investigation in this project (Figure 2-1).

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The area of relevance in this report is Zone 1, located off the coast of Port-La-Nouvelle. This survey area is divided in two sites (Figure 2-2):

- Offshore Substation (OSS) (10.29 km²)
 - *Dimensions: 4.17 km x 2.45 km*
 - *Bathymetric range: -85 m to -93 m (Vertical reference Bathylli v2 ZH)*
- Windfarm area (OWF) (295.53 km²)
 - *Dimensions: 19.6 km x 23.90 km.*
 - *Bathymetric range: -65 m to -100 m (Vertical reference Bathylli v2 ZH)*

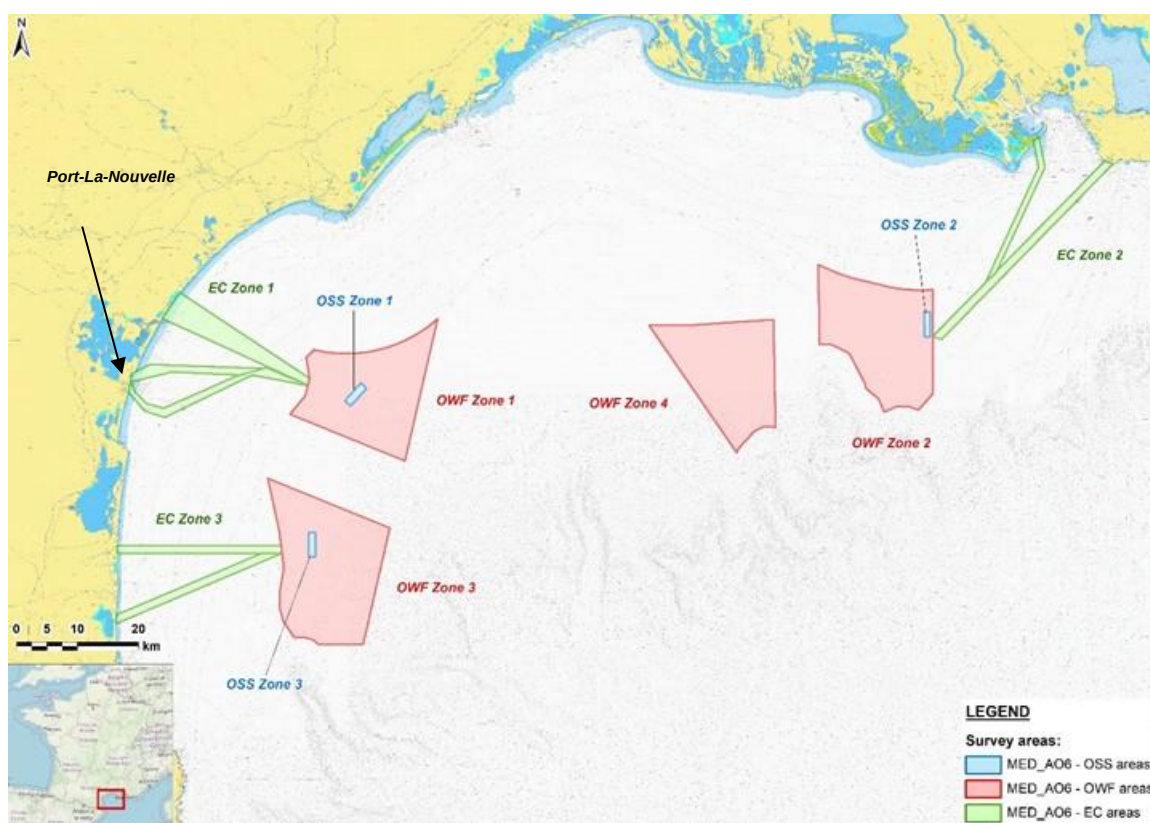


Figure 2-1: MED_AO6 survey area.

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Figure 2-2: Windfarm area (OWF) and Offshore Substation (OSS) in the MED_AO6 Zone 1 Survey area.

2.2. SURVEY PLAN

The AO6 Zone 1 OWF contains 20 base UXO boxes and 4 alternative boxes. A lineplan of 3 lines with 30 meters spacing was performed to acquire the required geophysical data on each UXO box.

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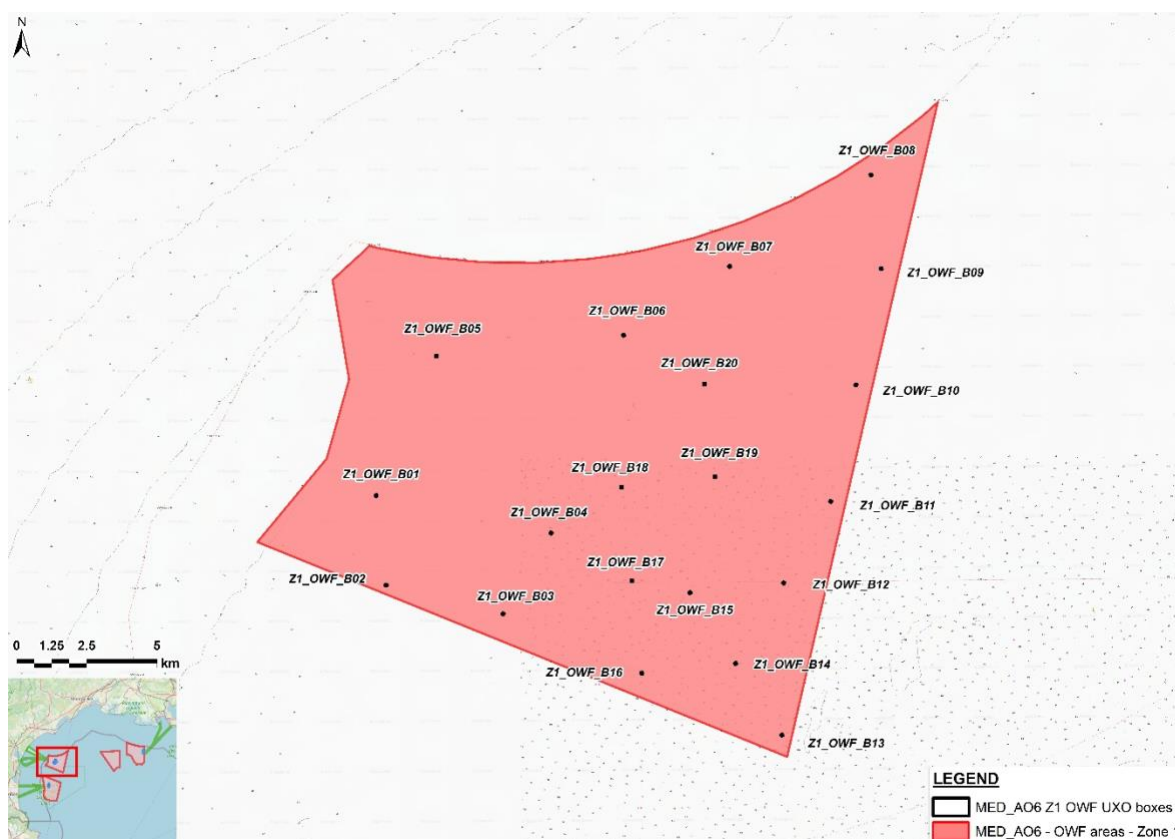


Figure 2-3: MED_AO6 Zone 1 OWF UXO boxes locations.

Each of the UXO boxes comprises an area of approximately 30m x 30m, with a run in / run out length of 400 metres utilised to optimise the acquisition of the geophysical data.

Figure 2-4 provides an example of the UXO survey boxes and Figure 2-5 illustrates the survey line plan for the different UXO risk locations (Please refer to section 2.4).

Figure 2-6 shows the general lineplan for UXO boxes at the survey area.

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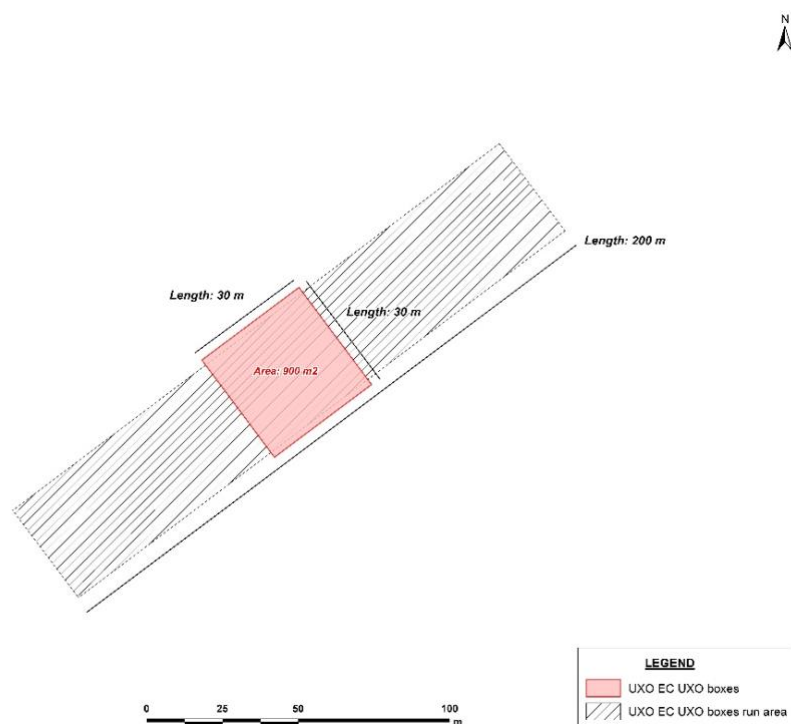


Figure 2-4: Example of UXO boxes dimensions.

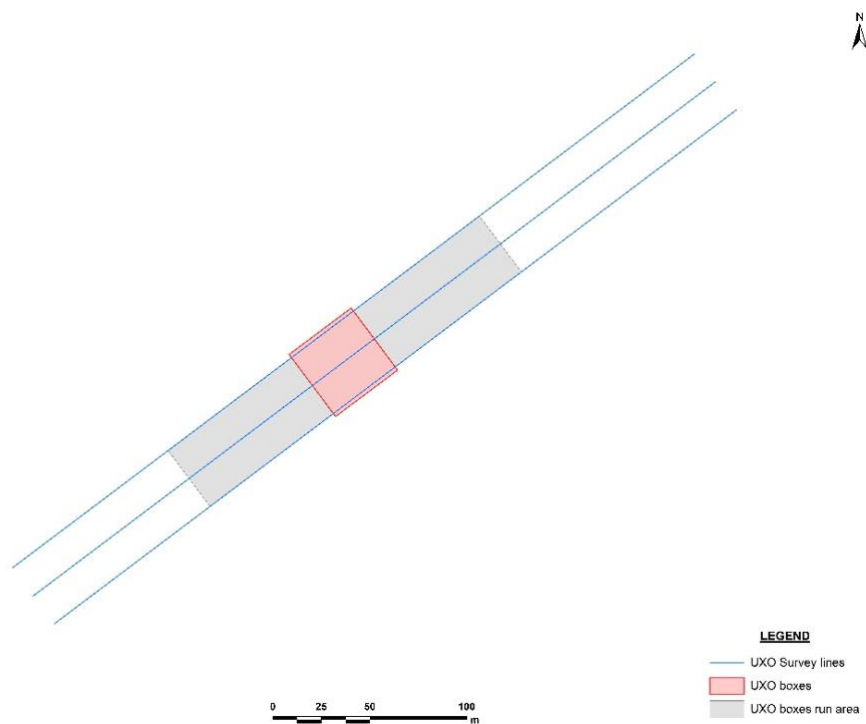


Figure 2-5: Example of UXO boxes survey line plan for the UXO Low and Medium risk locations.

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Table 1: Summary for the number of UXO boxes in the MED_AO6 OWF Z1 area.

SUMMARY OF NUMBER OF UXO BOXES ON SITE		
Operation	Unit	#
MED_AO6 OWF Z1 GI Locations (UXO boxes)	No	20
TOTAL	No	20

Table 2: Summary for the survey line plan of the UXO boxes in the MED_AO6 OWF Z1 area.

SUMMARY OF LINEPLAN FOR THE UXO BOXES ON SITE		
Operation	Unit	Length
MED_AO6 OWF Z1 GI Locations (UXO boxes)	km	39.6
TOTAL	km	39.6

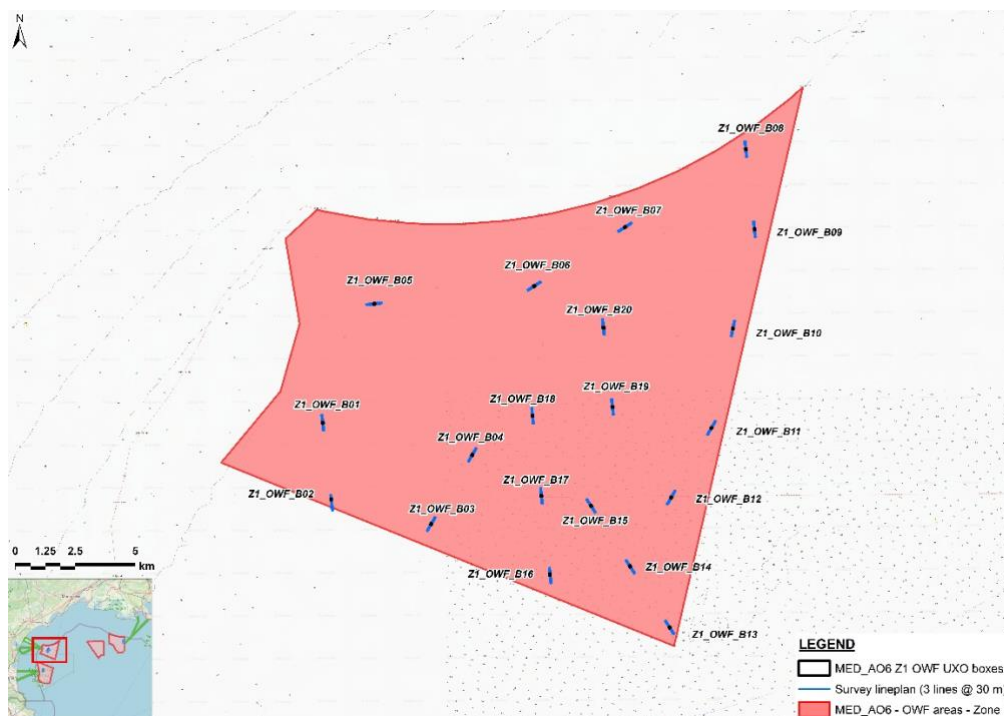


Figure 2-6: MED_AO6 Zone 1 OWF UXO survey plan.

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2.3. UXO RISK ANALYSIS

During the survey planning of this project, 6-Alpha associates conducted a risk analysis of the presence of UXO elements in the MED_AO6 work area. The "Unexploded Ordnance Threat and Risk Assessment" document detailed a zonation of the work zone into three categories: Low, Medium and High risk. This zonation is presented in the figure below.

As agreed with the client, based on the risk presented by 6-Alpha in its study, it was established that:

- In areas whose UXO risk is Low or Medium, data acquisition for UXO detection would be performed with MBES, SSS and SBP.
- In areas with High UXO risk, data acquisition for UXO detection would be performed with MBES, SSS and MAG.

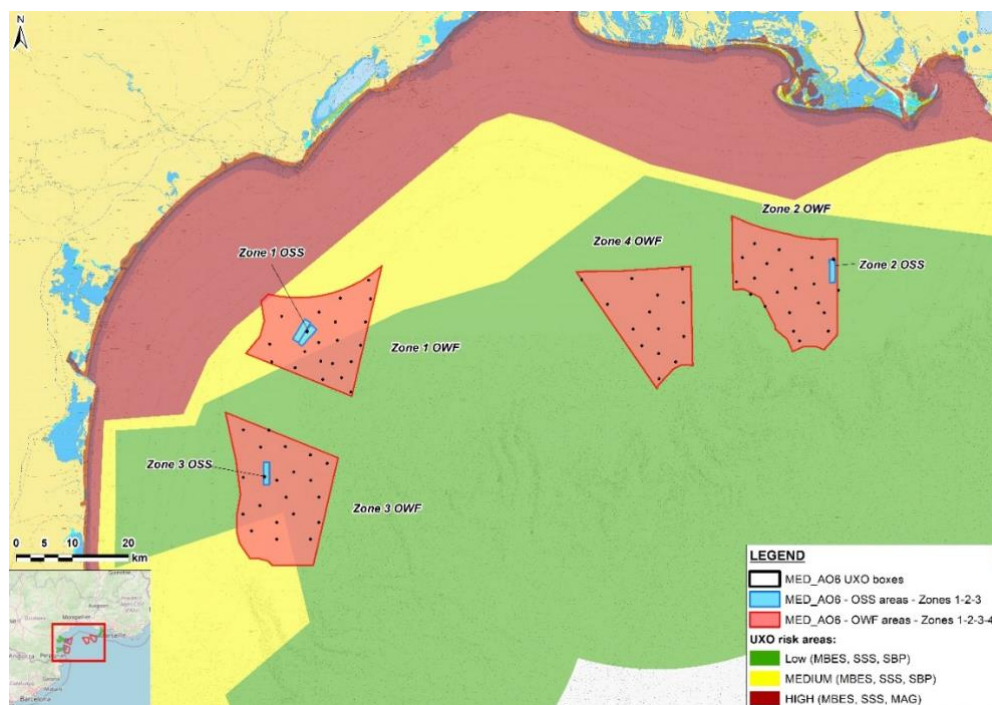


Figure 2-7: UXO risk analysis for the MED_AO6 OWF and OSS survey areas.

It is observed in the zonation that the working areas of the OWF Z1-Z2-Z3-Z4 and OSS Z1-Z2-Z3 are located in low and medium UXO risk areas.

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3. SURVEY CONTROL

3.1. GEODETIC PARAMETERS

3.1.1. Survey datum

These parameters are detailed below.

Table 3: Datum parameters table

DATUM	
Survey Datum:	WGS 84
Spheroid	GRS 1980
Semi-Major Axis (a)	6378137.000000000
Semi-Minor Axis (b)	6356752.314245179
Inverse Flattening (1/f)	1/298.257223563

Table 4: Projection parameters table.

PROJECTION	
Projection	UTM
False Easting	500000
False Northing	0
Latitude of Origin	0°00'00.000000"
Central Meridian	3°00'00.000000"
UTM Zone	31 N
Scale Factor on CM	0.9996
Units:	Meters

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3.1.2. Vertical datum

The vertical datum used in the QINSy software is Bathyelli v2.0 ZH geoid published by the SHOM in December 2018. The Bathyelli v2.0 ZH (SHOM 2018) is a surface based on the GRS 1980 spheroid, and it is a set of surfaces each of which defines the separation of one vertical datum from the WGS84 ellipsoid to the vertical maritime reference Hydrographic Datum or Hydrographic Zero. These ellipsoidal heights are given in meters.

This geoid covers the intersection between the SHOM tidal model and the different tidal zones of France.

For the survey area MED_AO6 Z1, the corrections to hydrographic zero are made by tidal observations of the port Port-La Nouvelle (43°01' N – 03° 04' E). For informative purposes, the difference between the hydrographic zero and the LAT reference level for this port is 0.34 m, according to the study by SHOM "*Références Altimétriques Maritimes. Ports de France métropolitaine et d'outre-mer*" of 2019.

3.1.3. Tidal reduction

To carry out the survey as accurately as possible, Tecnoambiente is receiving MarineStar PPP corrections by satellite signal. When using an accurate GNSS system, the tidal corrections are carried out in real-time through QINSy computations, as it is shown in the following figure.

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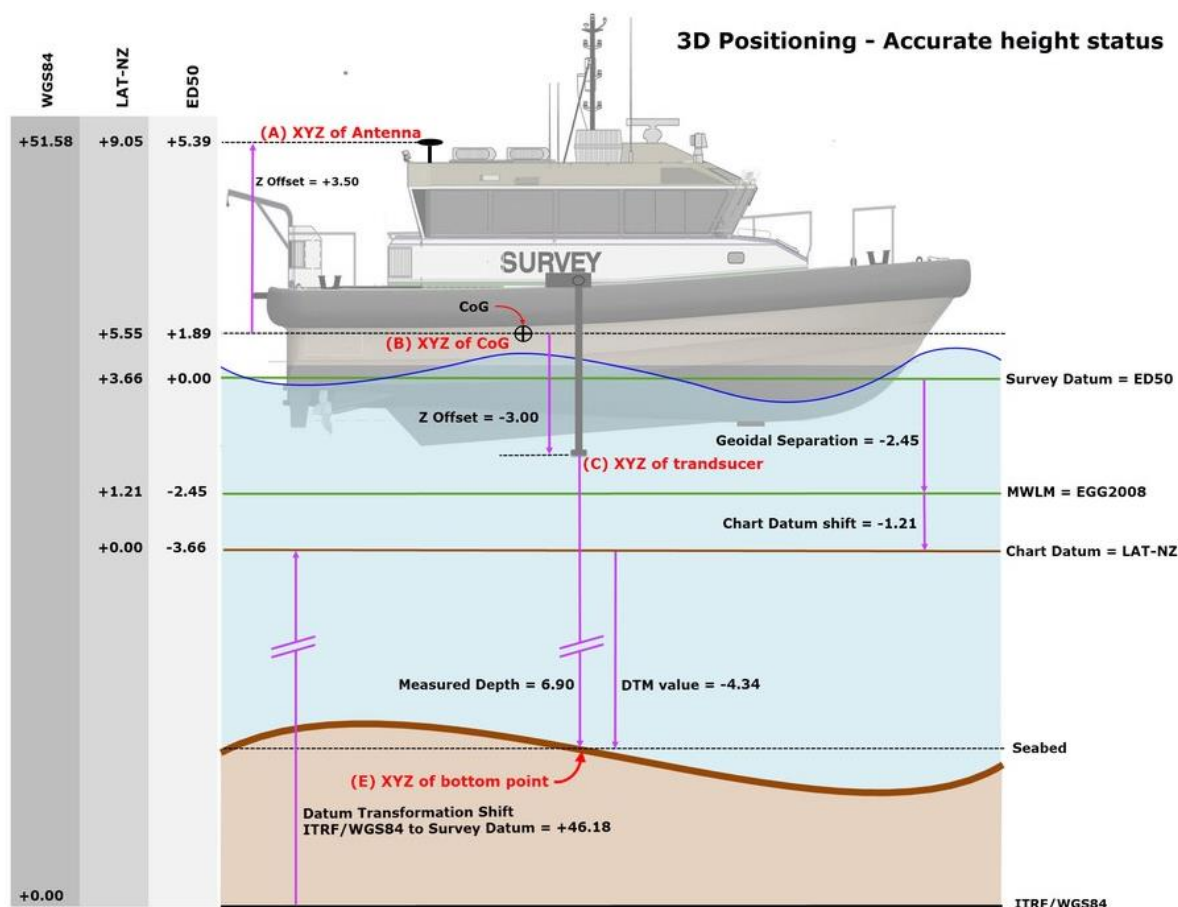


Figure 3-1: QINSy's method for accurate tide calculation.

In the event that corrections drop out they can be applied in post processing.

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4. QA/QC CHECK

The processed values obtained from the onboard processing team during the survey were checked before the ALARP certificate phase. This quality control check of the input data validated the quality of the processing method.

Below are presented the QA/QC checks made for the measurements:

- QC0: Check of the geophysical value
- QC1: Check of the sensor position
- QC2: Check of the altitude of sensor and dynamic coverage
- QC3: Check of the noise
- QC4: Check of the speed and sampling frequency

5. METHODOLOGY

5.1. MBES BATHYMETRY

5.1.1. Data acquisition

The main objective of the MBES data acquisition is to identify pUXO in the ALARP box areas and buffer zones, therefore, the total coverage of the study area was not necessary. Due to this the project lines have been designed with a spacing of 30 meters.

During the data acquisition, the vessel's master must follow the previously programmed routes of the project lines, governed by the indications of the computer screen (Helmsmann indicator), which is shown, by means of visual and audible alarms, when it separates from its course more than a specified amount (variable according to weather conditions in the area, but never more than 2.5 metres from the theoretical line), and also when there is a problem in a peripheral, such as the loss of GPS corrections.

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While the master follows the navigation lines, the acquisition module of the hydrography program captures all the position data sent by the GPS, as well as the soundings sent by the multibeam sounder for each transmission pulse, as well as the values of the heading, wave height, roll and head angles sent by the MRU.

Parallel to the data entry, the data acquired by the equipment and peripherals is synchronized. This process is carried out by QINSy itself, complemented by the input of the time and the pulse per second (PPS) provided by the MRU, so that all the data is time synchronised.

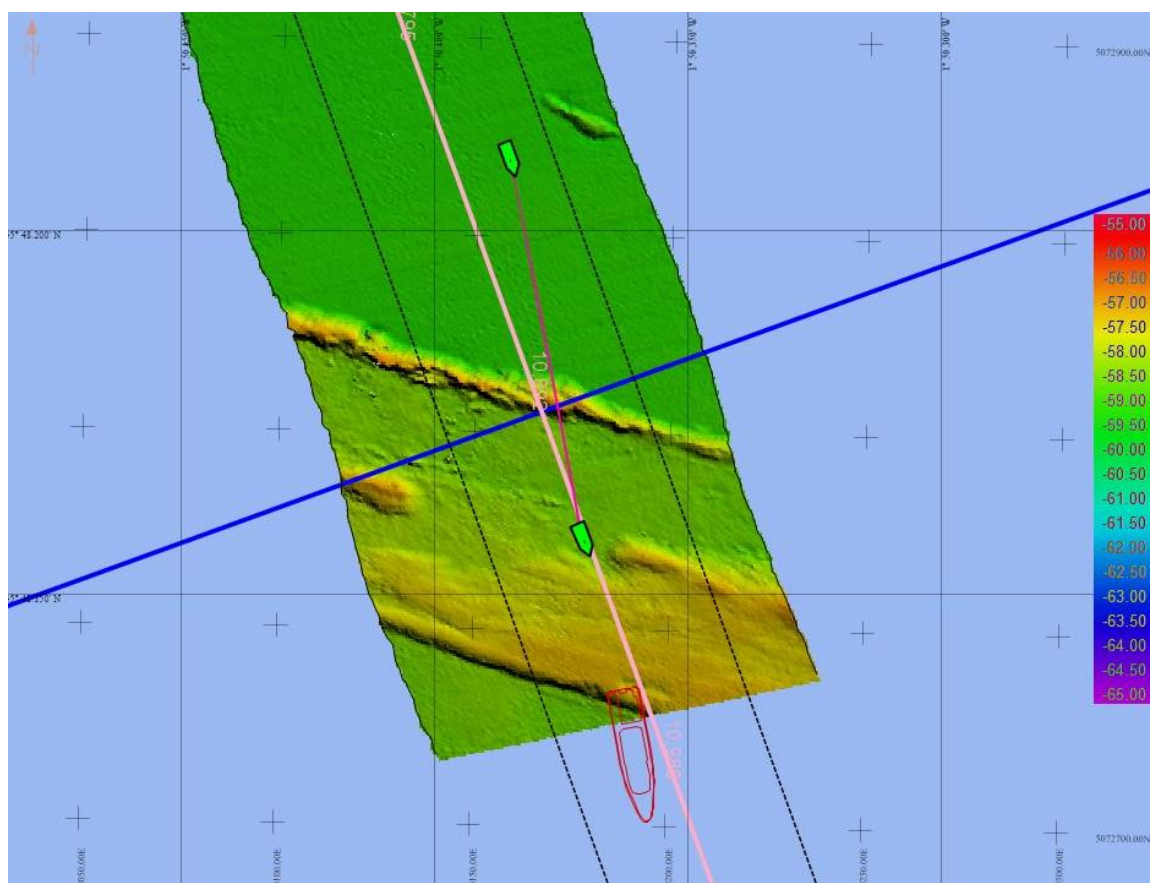


Figure 5-1: MBES bathymetry data acquisition with the QINSy software.

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5.1.2. Data processing

A single head Kongsberg EM 2040 high resolution MBES system that is permanently installed on the Geo Focus vessel was used to produce digital terrain models (DTMs).

Along the processing phase of the acquired data, the lines on the screen are processed in order to manually match the height of the bathymetric lines and also correct the noise that appears in the records, noise produced by multiple factors such as, multipath in position, air bubbles, motor interference of the vessel etc. in the digital register of soundings.

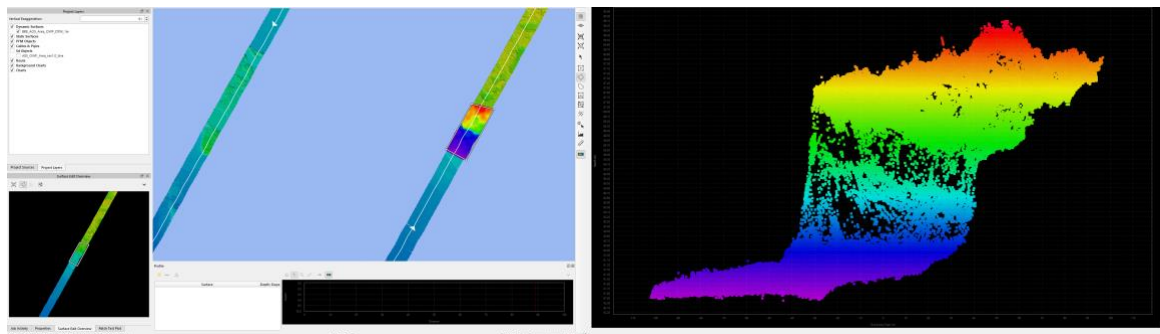


Figure 5-2: Processing screen of MBES bathymetry data with the Qimera software.

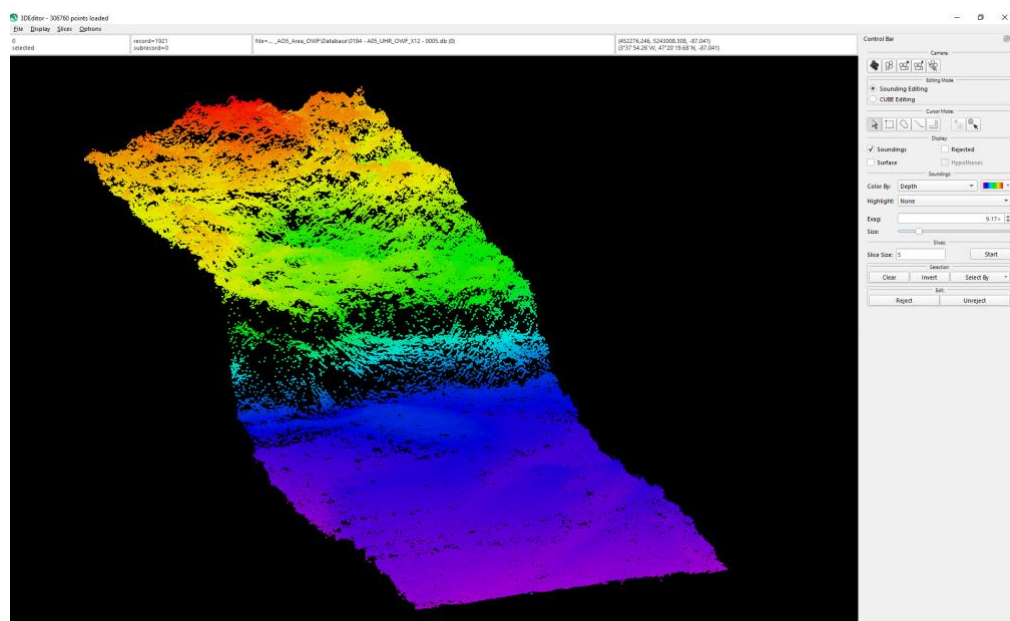


Figure 5-3: 3D image of the MBES bathymetry processing.

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Once the possible existing errors in the records have been deleted, a digital model of the terrain with 0.5 x 0.5 m grid size has been made with a minimum cell size to obtain the maximum resolution of the background.

The general MBES processing workflow is presented in the following figure.

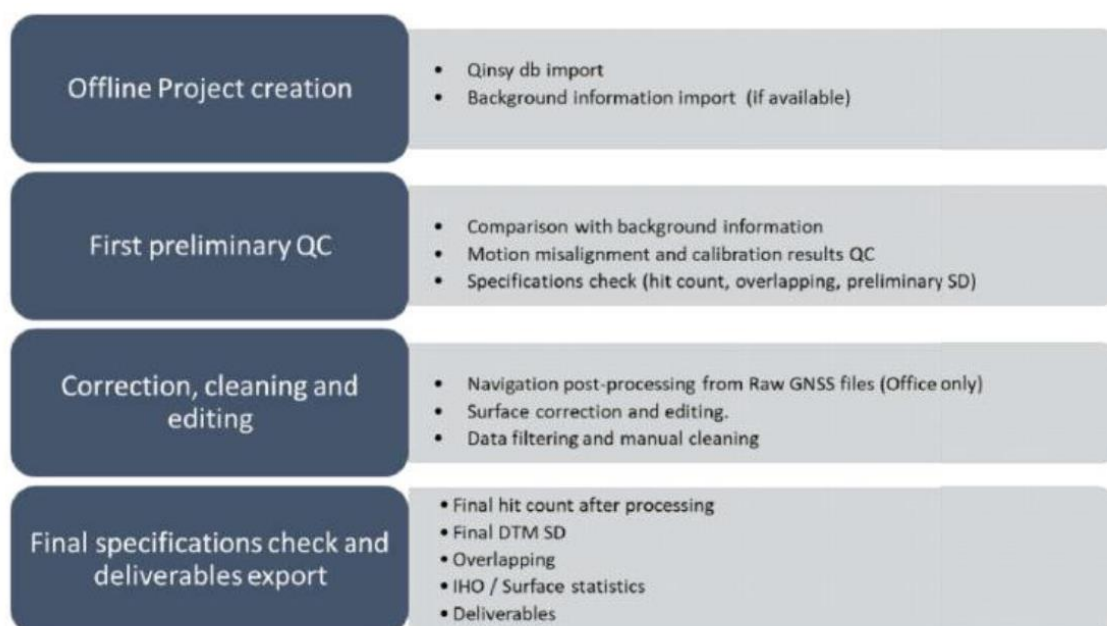


Figure 5-4: MBES bathymetry processing overview.

5.1.3. Target picking

The target picking was done using a GIS platform to detect and digitize the contacts present over the seabed surface.

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5.2. SIDE SCAN SONAR

5.2.1. Data acquisition

The objective of this phase of data acquisition is the detection of possible sonar targets lying on the seabed. Due to the total coverage requirements of the seabed within each of the UXO boxes, a survey line spacing of 40 metres was utilised.

A side scan sonar system comprises a processing unit connected through a cable to a wet unit that transmits and receives acoustic energy. Side scan sonar can determine seabed morphology and configuration by means of acoustic signals. It can also determine its composition, identifying different seabed strata as hard (rocky or consolidated), soft or sedimentary, as well as identifying areas of seagrass.

Side scan sonar systems can work in different frequency ranges: systems working in high frequencies, (between 500 kHz and 900kHz) offer higher resolution but lower ranges, with systems working in low frequencies (100 kHz), offer lower resolution but higher ranges. For this survey, a frequency of 900KHz was utilised. The reflection of the signal coming from the seabed is detected by the same transducers, amplified and transmitted to the control unit, and recorded and displayed on the computer screen, providing an acoustic map. With this data, it is possible to identify different seabed morphologies, together with the visualization of any seabed objects.

When the vessel is underway, the winch operator can start deploying cable until the fish gets to the desired working depth of about 6 m above the seabed.

5.2.2. Data processing

Once the SSS data were acquired and then exported into JSF format, the files are imported into the SonarWiz 7 software. Channels 3 and 4 were used for recording the high frequency data.

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After data importation into the SonarWiz 7 software, an initial navigation correction was made for each imported file, applying smoothing filters to avoid errors in the heading of the tow fish. The track position was smoothed using a mean value of 300 pings.

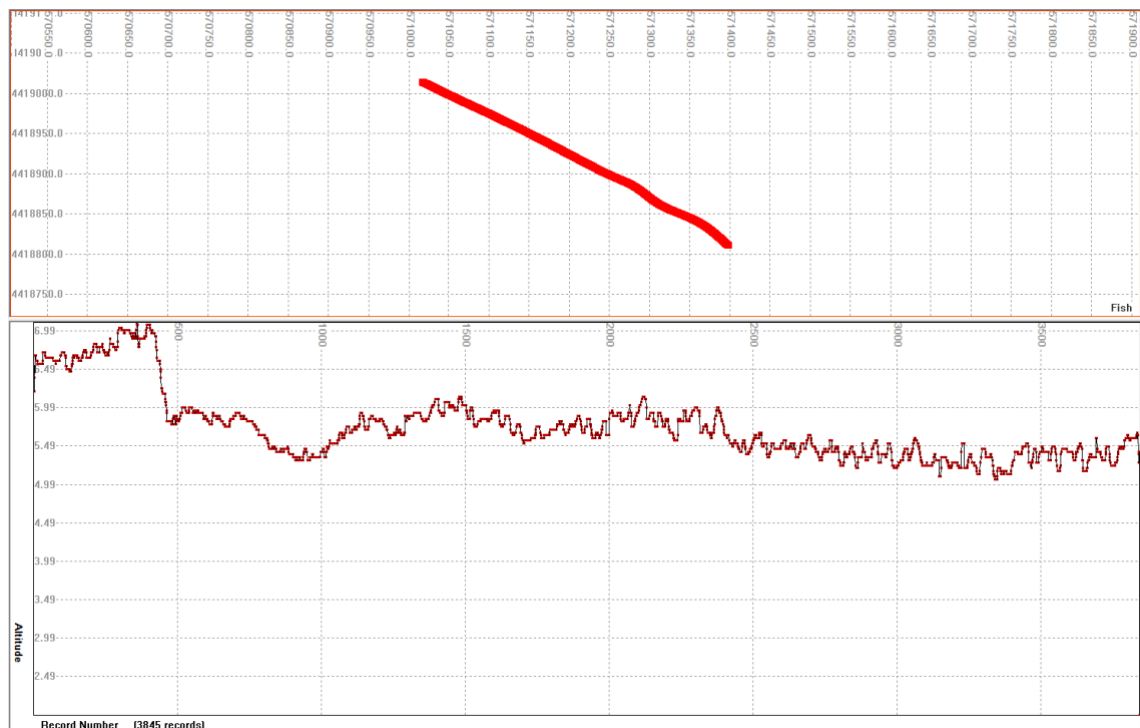


Figure 5-5: Navigation editor in SonarWiz 7.

After the aforementioned corrections were implemented, the water column for each file was eliminated, by applying the bottom-tracking acquired during the survey, as shown in Figure 5-6. If bottom-tracking of the tow fish failed during the survey, it was done automatically by applying filters or by drawing the seabed manually during post-processing. This enables slant range corrections for the digital data to be as accurate as possible.

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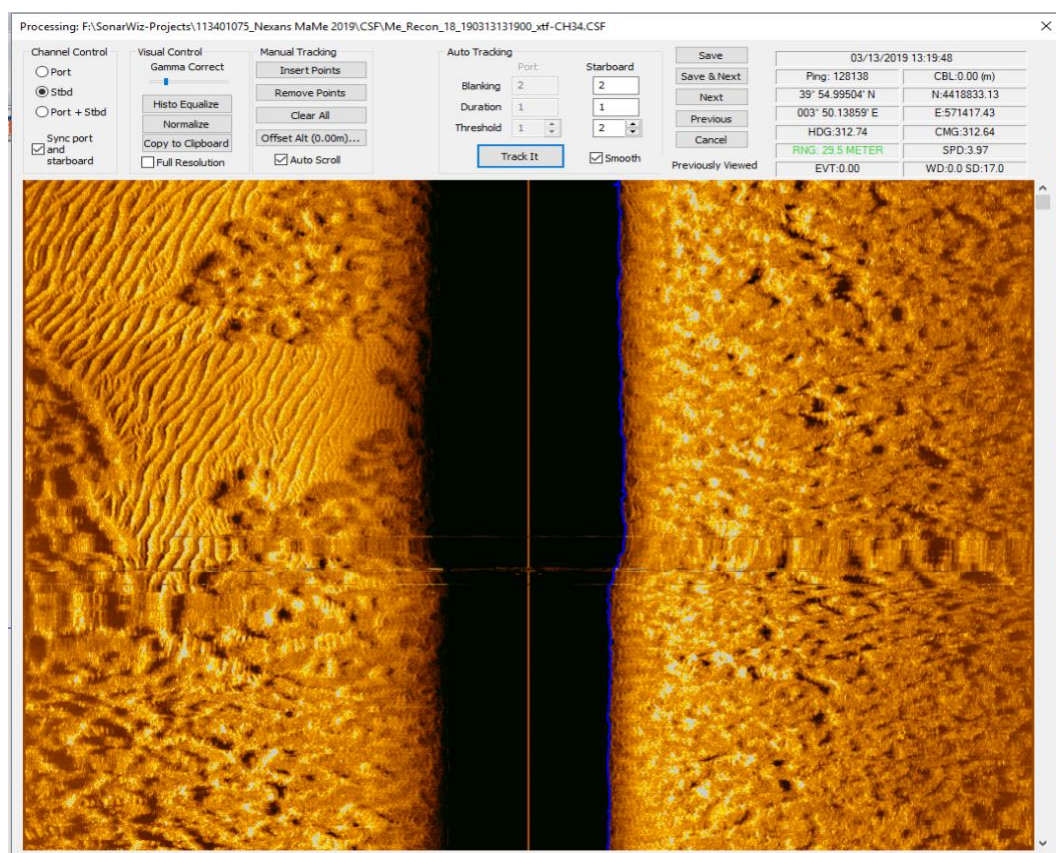


Figure 5-6: Bottom tracking processing drawn in blue in the SonarWiz software.

The following steps during SSS processing in the SonarWiz 7 software are the application and enabling of the EGN filter, and the enabling of the de-stripe filter.

At this point during data processing, a processed MBES geotiff is imported into the project. Using the MBES information, rotations to the SSS file are applied, in order to match feature orientations seen in the MBES data. Where necessary, a move offset can be applied to the SSS file, in order to match features within the MBES data.

The final processing step is the export of the sonar files into a GIS software package, where all of the information is integrated and a sonar mosaic is generated. This is carried out by converting the JSF files into 32bits RGB Geotiff images, to obtain georeferenced images of the processed data, with a resolution of 0.1 m.

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	Title	MED_TEC_55_Factual report - UXO survey - OWF Zone 1 AO6 area_1				

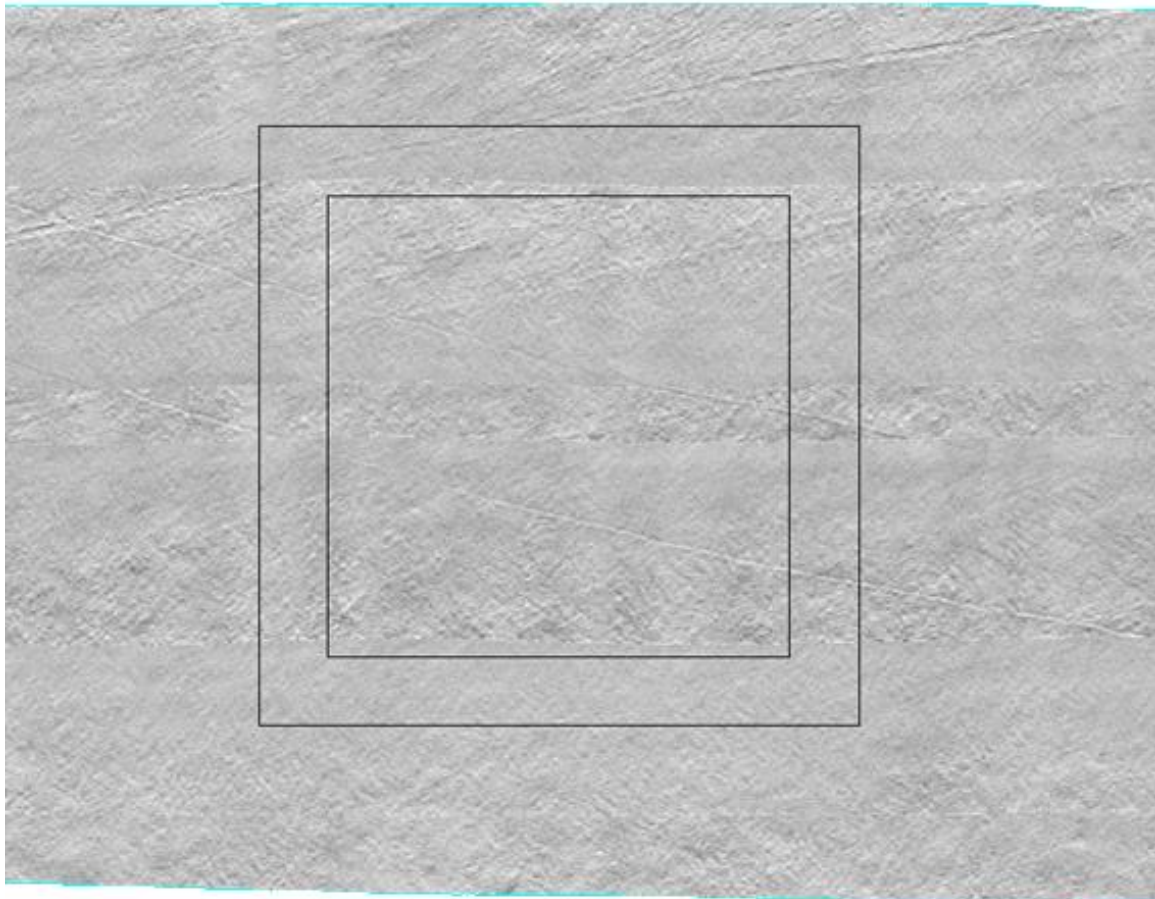


Figure 5-7: Example of an UXO box 32bits RGB SSS Mosaic with a resolution of 0.1 m.

5.2.3. Target picking

The picking of the targets was carried out on the sonograms with the “Digitizing View” tool.

When an object is detected, it is targeted, and its width and length is directly measured. The height is calculated based on the shadow on the sonogram. These measurements are performed on the processing software (SonarWiz).

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	Title	MED_TEC_55_Factual report - UXO survey - OWF Zone 1 AO6 area_1				

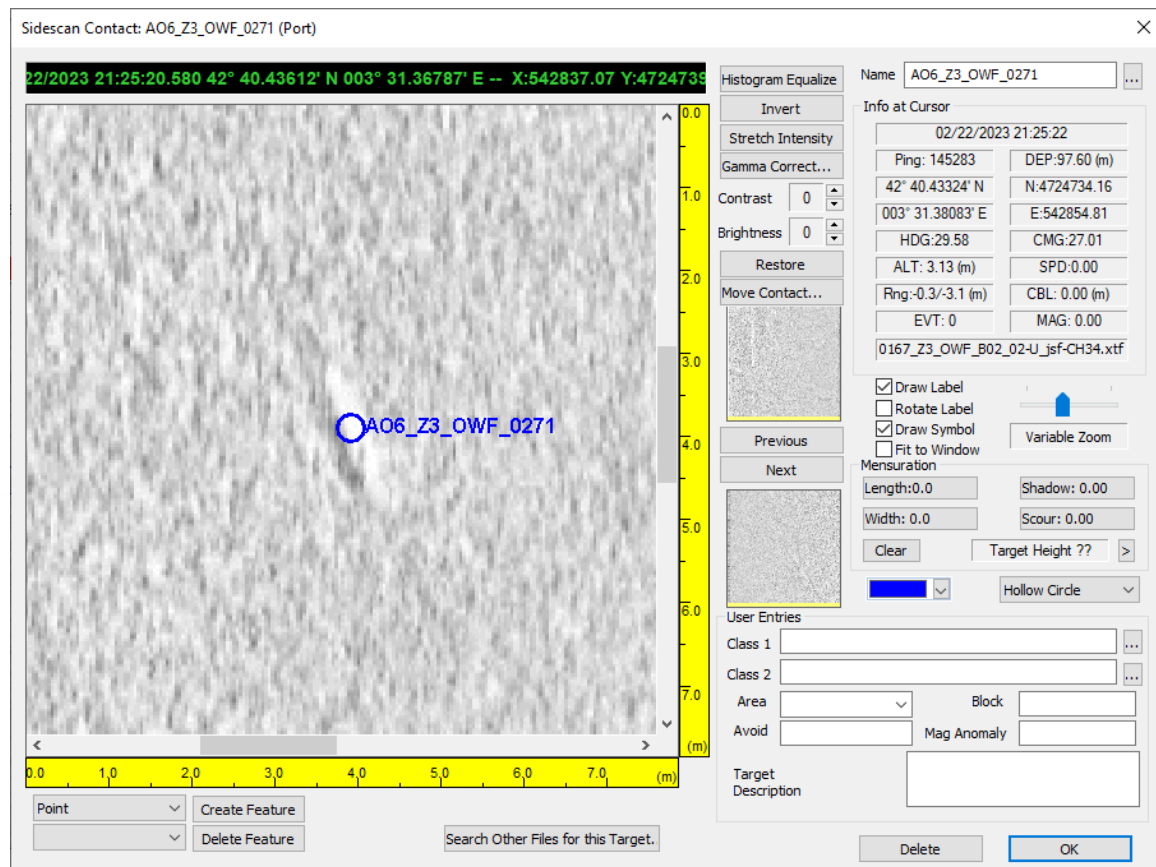


Figure 5-8: SonarWiz targeting tool.

Detection has been performed for all the objects/anomalies/obstructions that were detected during the observation of the sonograms. To prevent to pick too many targets of geological origin, it has been decided to pick:

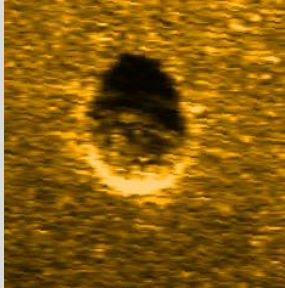
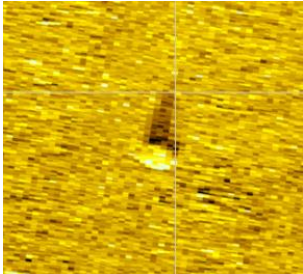
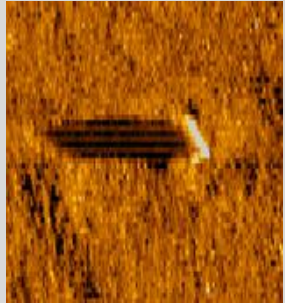
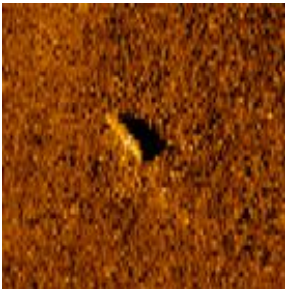
- Objects that are isolated within a quiet and/or sandy environment.
- Objects that have an unusual shape or that looks hand-made or non-natural.

Below, in Table 5, a bibliographic comparison of detected sonographies is presented, showing the similarities between boulders and UXO.

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	Title	MED_TEC_55_Factual report - UXO survey - OWF Zone 1 AO6 area_1				

Table 5: Comparison of sonar image of UXO and boulders using SonarWiz.

Sonar image	Photography	Identification
		RMAK Mine (Cherbourg)
		Boulder (Normandie)
		BM1000 (Normandie)
		Boulder (Normandie)

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	Title	MED_TEC_55_Factual report - UXO survey - OWF Zone 1 AO6 area_1				

5.3. SUB-BOTTOM PROFILER

5.3.1. Data acquisition

The objective during SBP data acquisition was to detect possible UXO below the seabed. Due to this, the project lines were designed with a line spacing of 30 metres.

An SBP system comprises a processing unit, which is connected through a cable to the equipment that transmits and receives acoustic energy. Seismic systems operate according to the principle by which transmitted seismic-acoustic energy affects an acoustic interface, being partially reflected by this surface. An acoustic interface is that area of the subsoil through which there is some contrast in acoustic impedance (acoustic impedance is defined as the product of the density of the medium by the propagation speed of compressional sonic waves (p waves)). Reflection is obtained by variations in acoustic impedance, which is a measure of the acoustic contrast of the materials on each side of the interface.

There are two properties that characterize any seismic system: penetration and resolution. These two properties have an inverse relationship:

- **Penetration**: Is the maximum depth at which a reflector can be detected. It depends on the power and frequency of the emitted signal; a lower frequency corresponds to a longer wavelength and greater penetration. At each interface, the amount of energy transmitted to the next decreases by an amount equal to that which has been reflected.
- **Resolution**: Is the minimum distance at which 2 consecutive reflectors can be identified, for a given frequency signal. The higher the frequency, the higher the resolution. A horizontal resolution can be considered when there are changes in the acoustic response in the horizontal plane.

SBP data was acquired using an Innomar SES 2000 compact, with a frequency of 8 kHz, 1 cycle of pulse, 20 m of sweep and a 4-8 Hz trigger rate. This SBP system was heave and

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roll compensated. Navigation and real time sensor height were received directly from Qinsy. Data was recorded in 16-bit format.

5.3.2. Data processing

All sub-bottom profiler data processing was carried out using SonarWiz software. The files were heave and tidally corrected, to ensure that the SBP data matched up with corresponding MBES data. Frequency filtering and a TVG were also applied and then pre-processed SEG-Y files exported. SEG-Y files were then imported into Seisee software, for final QC. The SBP data were deemed to be of good quality, throughout the survey.

Onboard SBP processing and quality control workflow was performed as follows:

- Importing raw files (.JSF files in the case of Edgetech equipment) or converting raw files to SEG-Y format, through SES Converter (in the case of Innomar compact) and import them into the SonarWiz software.
- Navigation Quality Control, looking for stable navigation, without peaks and gaps.
- Bottom tracking, Gain configuration and frequency filtering.
- Ticking off SBP lines against the online log, to make sure a complete data set was present
- Tide and heave correction and verification, with a pre-processed bathymetric grid. With this bathymetric grid, the separation offsets of the SBP data were observed against the real multibeam seabed, and this was applied to give a 3D reference to the SBP data.

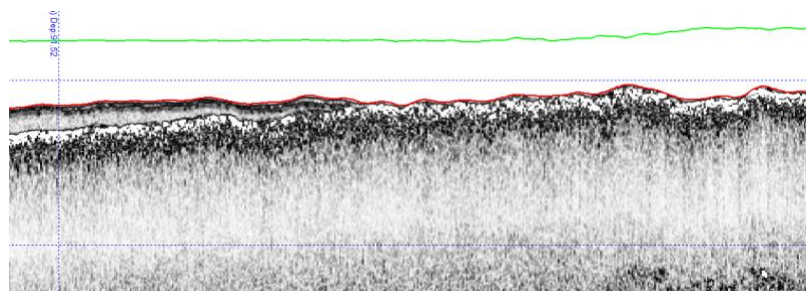


Figure 5-9: Example of a SBP profile before applying tides, heave and swell and referencing to a bathymetric grid.

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	Title	MED_TEC_55_Factual report - UXO survey - OWF Zone 1 AO6 area_1				

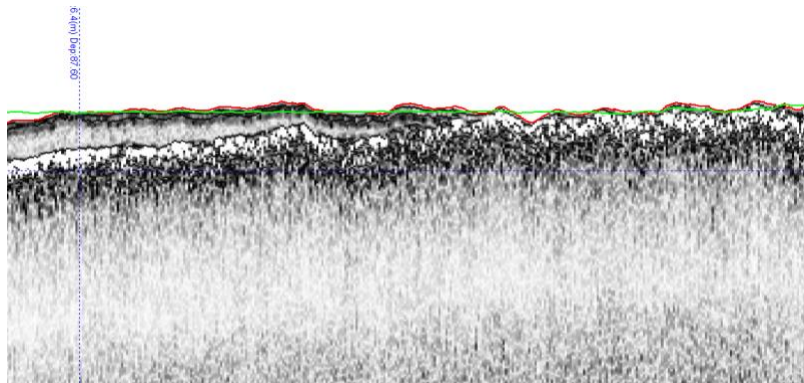


Figure 5-10: Example of a SBP profile after applying tides, heave and swell and referencing to a bathymetric grid.

5.3.3. Target picking

The processed profiles are then visualized in SonarWiz, where the dynamic color scale is adjusted, in order to visualize the data at greater depths by playing on with the contrasts. The "Target Picker" tool allows data acquisition by pointing points along the profiles.

The pointed data is then exported into a grid (x, y, z) and can be added in the map of the project. For each pointed target, a ".gif" file is exported in order to clearly see the picked target over the SBP profile.

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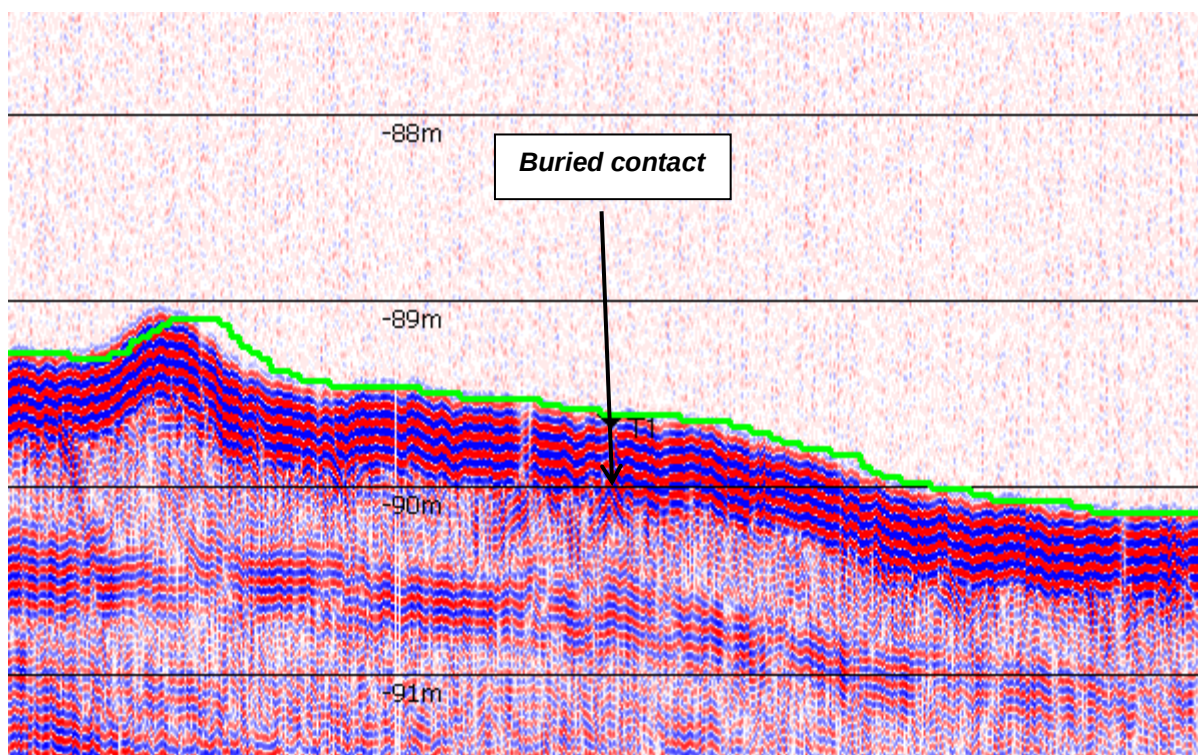


Figure 5-11: Target example along a SBP profile.

This analysis of the profile allows the identification of punctual objects, but not specifically ferromagnetic elements. It can therefore be difficult to distinguish anthropogenic elements from geological elements (boulders, gravel, coarser sediments, etc.).

It has been selected contacts that could be characteristic of buried punctual objects. Contacts causing refraction hyperbolas, particularly intense reflectors, isolated and contrasting within the surrounding sediments, atypical reflectors such as sloping or angular reflectors.

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	Title	MED_TEC_55_Factual report - UXO survey - OWF Zone 1 AO6 area_1				

6. RESULTS

6.1. TARGET PICKING

Sidescan sonar anomalies were picked all along the sidescan sonar lines, and not only in the vicinity of the UXO boxes. Sidescan sonar anomalies are listed in the APPENDIX II – TARGET LIST.

6.2. DISCRIMINATION OF pUXO TARGETS

The identification of punctual objects has been made but cannot specify if there are ferromagnetic elements. It can therefore be difficult to distinguish anthropogenic elements from geological elements (boulders, gravel, coarser sediments, etc.).

Any anomaly can therefore correspond to a potential UXO

7. AVOIDANCE DISTANCES

Following the analysis, we are looking for as low as reasonably practicable (ALARP), areas that can be considered clear of any pUXO. The avoidance criteria has been defined following the UXO threat and risk assessment with geotechnical investigation risk mitigation strategy recognised and the desktop studies (**Ref. 01**):

Thus, the avoidance distance can be calculated as follows (Figure 7-1):

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	Title	MED_TEC_55_Factual report - UXO survey - OWF Zone 1 AO6 area_1				

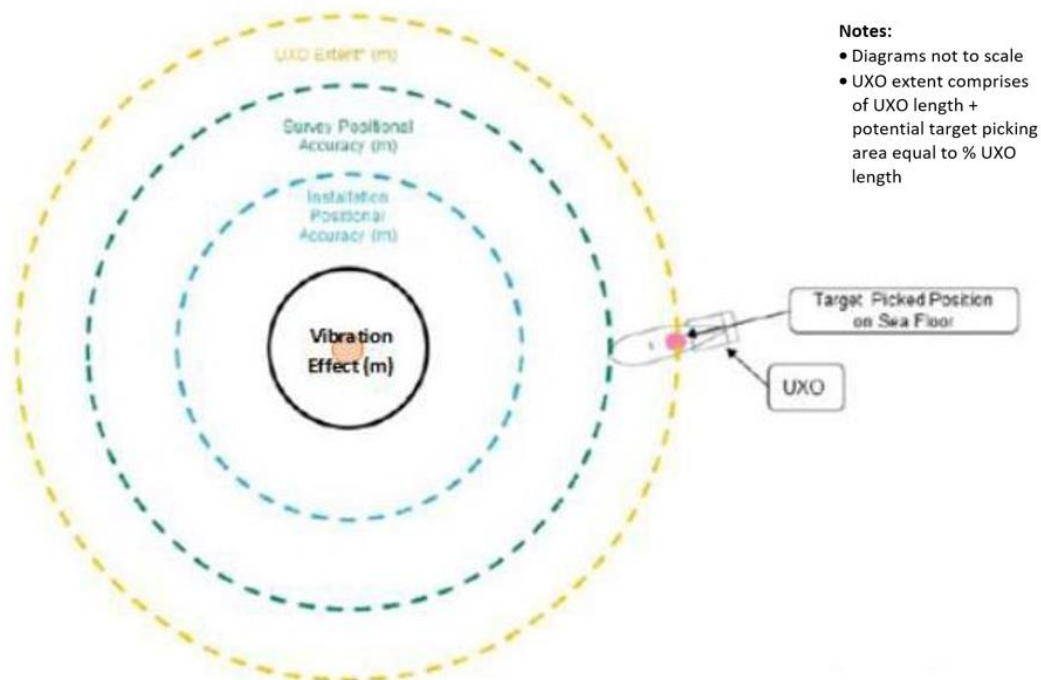


Figure 7-1: Avoidance distances.

Avoidance distance = Geotechnical tool width + Vibration effect distance + Geotechnical tool positioning accuracy + UXO survey accuracy + Ammunition length

The effect of the generation of seismic waves during vibro-driving or pile driving has to take in account in the case of geotechnical drilling or pile driving. The machines generate a wide variety of seismic waves (pressure, Rayleigh shear) (*Study report DRS17-164706-11171B, INERIS*) that can trigger UXO detonation. This effect should not be considered for other geotechnical work such as jack up or anchor installation.

For the **OWF area**, the **15 m buffer** has been applied as avoidance distance according to the document delivered by 6 Alpha Associates Limited (**Ref. 01**).

A safety buffer of 15 m is to be employed from any isolated anomaly.

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This was achieved through geospatial processing by QGIS software.

First, the areas that could not be considered as white areas are mapped, grouping the pUXO targets (MBES, SSS and SBP contacts) and potential saturated areas. Afterwards, the “avoidance areas” are mapped with an avoidance zone of 15 meters (a 15 m safety buffer around the anomaly) away from all the potential UXO (pUXO) anomalies or any saturated or excluded areas. This avoidance area is also applied from the edge of the dataset inwards the center of the survey area.

Then the free space between these avoidance areas and the detection surface and the survey limits is mapped, and a workable area is obtained.

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8. CONCLUSION

ALARP areas of 18.000 m² has been found for the 20 GI locations. An alternative location has been found for 4 positions and has been indicated in grey in Table 6.

Table 6: Final GI box locations.

ID	GI box	UTM X	UTM Y	Original coordinates and distance (m)
1	Z1_OWF_B01	535653.00	4759631.00	-
2	Z1_OWF_B02	536029.88	4756351.93	536023.81 4756310.75 143.68 m
3	Z1_OWF_B03	540174.00	4755418.00	-
4	Z1_OWF_B04	541885.00	4758300.00	-
5	Z1_OWF_B05	537801.00	4764594.00	-
6	Z1_OWF_B06	544468.00	4765336.00	-
7	Z1_OWF_B07	548247.00	4767787.00	-
8	Z1_OWF_B08	553282.00	4771042.00	-
9	Z1_OWF_B09	553644.00	4767710.00	-
10	Z1_OWF_B10	552748.00	4763567.00	-
11	Z1_OWF_B11	551851.00	4759421.00	-
12	Z1_OWF_B12	550173.00	4756522.00	-
13	Z1_OWF_B13	550110.00	4751106.00	-
14	Z1_OWF_B14	548460.00	4753652.00	548521.47 4753554.35 116.96 m
15	Z1_OWF_B15	546831.00	4756173.00	-
16	Z1_OWF_B16	545119.00	4753310.00	545146.44 4753166.27 151.52 m

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	Title	MED_TEC_55_Factual report - UXO survey - OWF Zone 1 AO6 area_1				

ID	GI box	UTM X	UTM Y	Original coordinates and distance (m)
17	Z1_OWF_B17	544766.00	4756595.00	-
18	Z1_OWF_B18	544395.00	4759928.00	-
19	Z1_OWF_B19	547728.00	4760299.00	-
20	Z1_OWF_B20	547351.00	4763598.00	547343.88 4763651.92 51.68 m

9. REFERENCES

In accordance with:

- Letter the “*Inspection des poudres et explosifs*” of the French Ministry of Defence and the “*Direction générale du Travail*” of the French Ministry of Labour of September 18th, 2013, relating to pyrotechnic clearance carried out on civil land.
- Decree No. 2014-381 of March 28, 2014, regulatory part Art. R.733-1 to 16 and legislative part Art. L. 733-1 to 3.

In reference to:

- Decree No. 2005-1325 of October 26, 2005, amended from the Ministry of Defence relating to the safety rules applicable during work in the context of a pyrotechnic clearance site and the two implementing decrees.

Ref.01. Unexploded Ordnance Threat and Risk Assessment: 9797_UXOTARA_AO6 Mediterranean_DNV_V1.

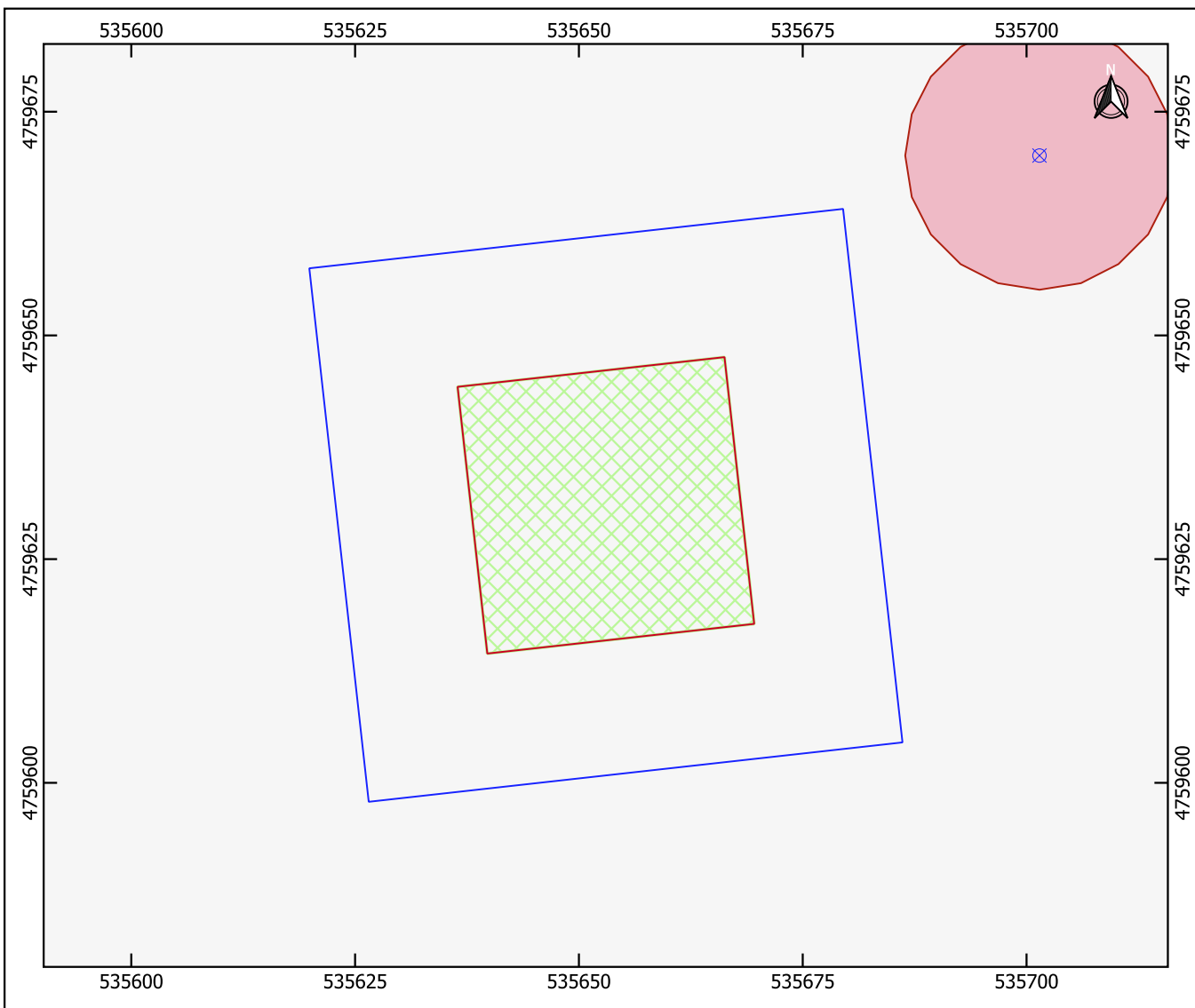
Ref.02. Travaux sous-marins – Rapport final : RTE Midi Provence – Détection sous-marine Magnétométrie REV2 – Géomines

Ref.03. Etude historique pyrotechnique – RTE Projet Midi Provence – Géomines

Ref.04. 002GR17-JFM – Elenkhos Special Risks & consulting – Rapport d’évaluation des risques sur munitions non explosées

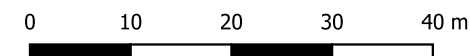
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APPENDIX I – ALARP CERTIFICATE MAPS



ANNEXE A: Z1_OWF_B01 ALARP CERTIFICATE GIS

Scale: 1/750 Date: 2023-03-18
Geodesy : WGS 84 - UTM 31N Version: V0



Original LOCATION
x=535653, y=4759631

OWF Zone 1

Geotechnical Boxes OWF zone 1

Survey extent

Concession

Zone Parc AO6

Zone corridors AO6

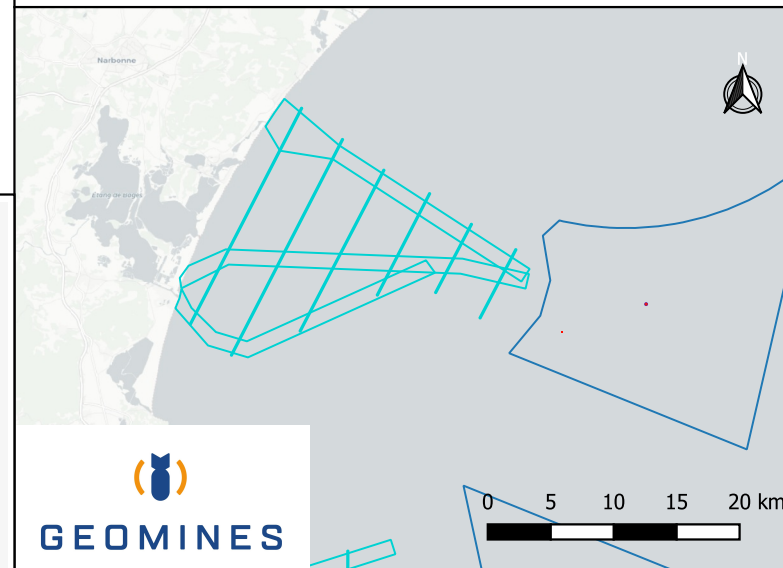
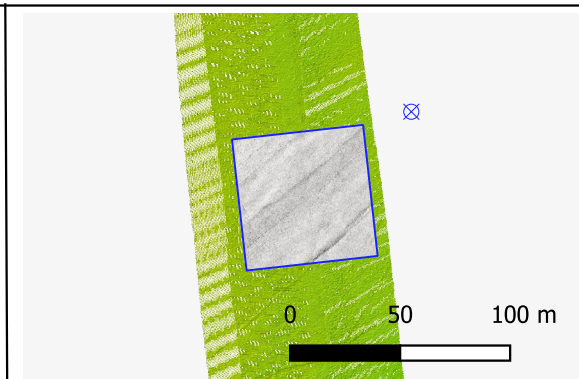
ALARP

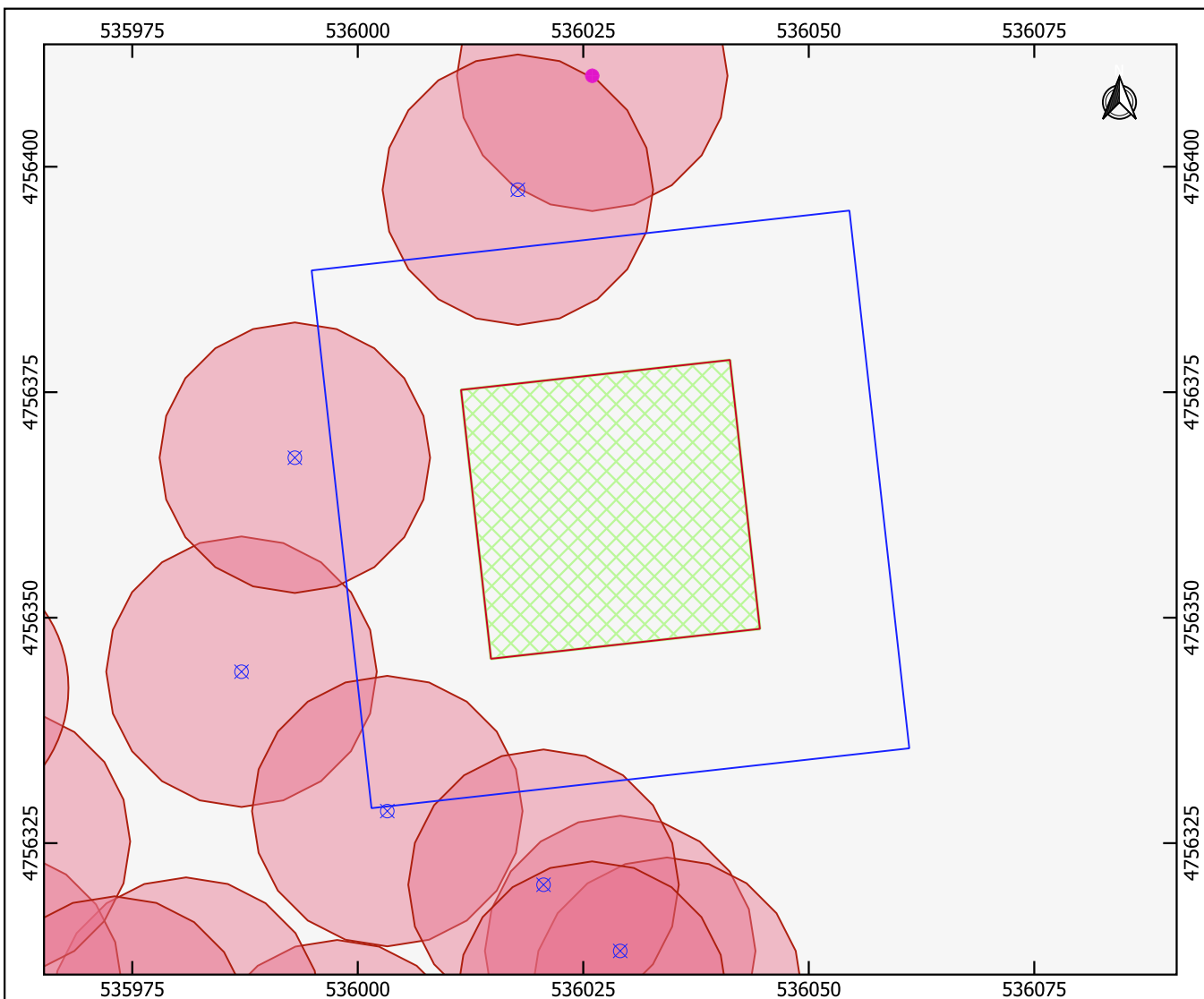
AO6_Z1_OWF_SSS_targets

AO6_Z1_OWF_SBP_targets

AO6_Z1_OWF_ALARP

AO6_Z1_OWF_avoidance





OWF Zone 1

Geotechnical Boxes OWF zone 1

Survey extent

Concession

Zone Parc AO6

Zone corridors AO6

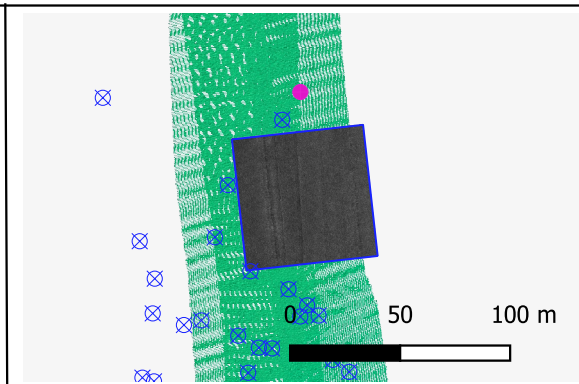
ALARP

AO6_Z1_OWf_SSS_targets

AO6_Z1_OWf_SBP_targets

AO6_Z1_OWf_ALARP

AO6_Z1_OWf_avoidance



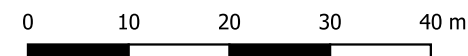
ANNEXE A: Z1_OWf_B02 ALARP CERTIFICATE GIS

Scale: 1/750

Date: 2023-03-18

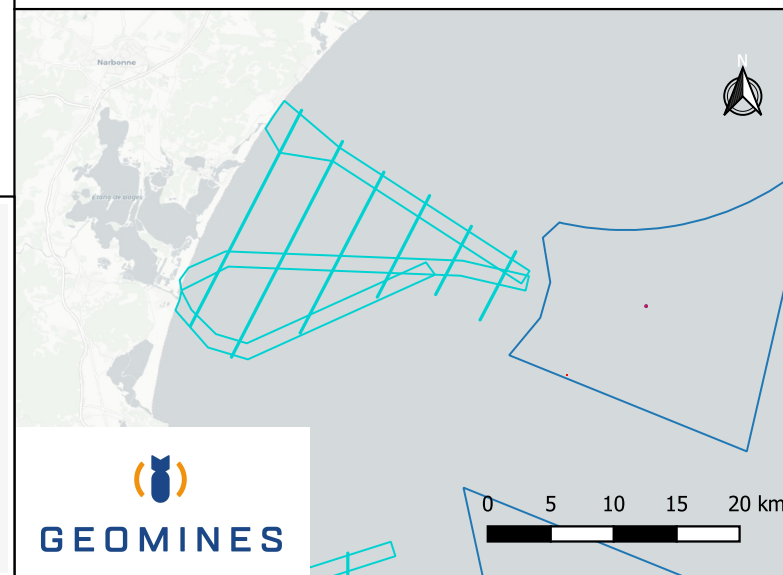
Geodesy : WGS 84 - UTM 31N

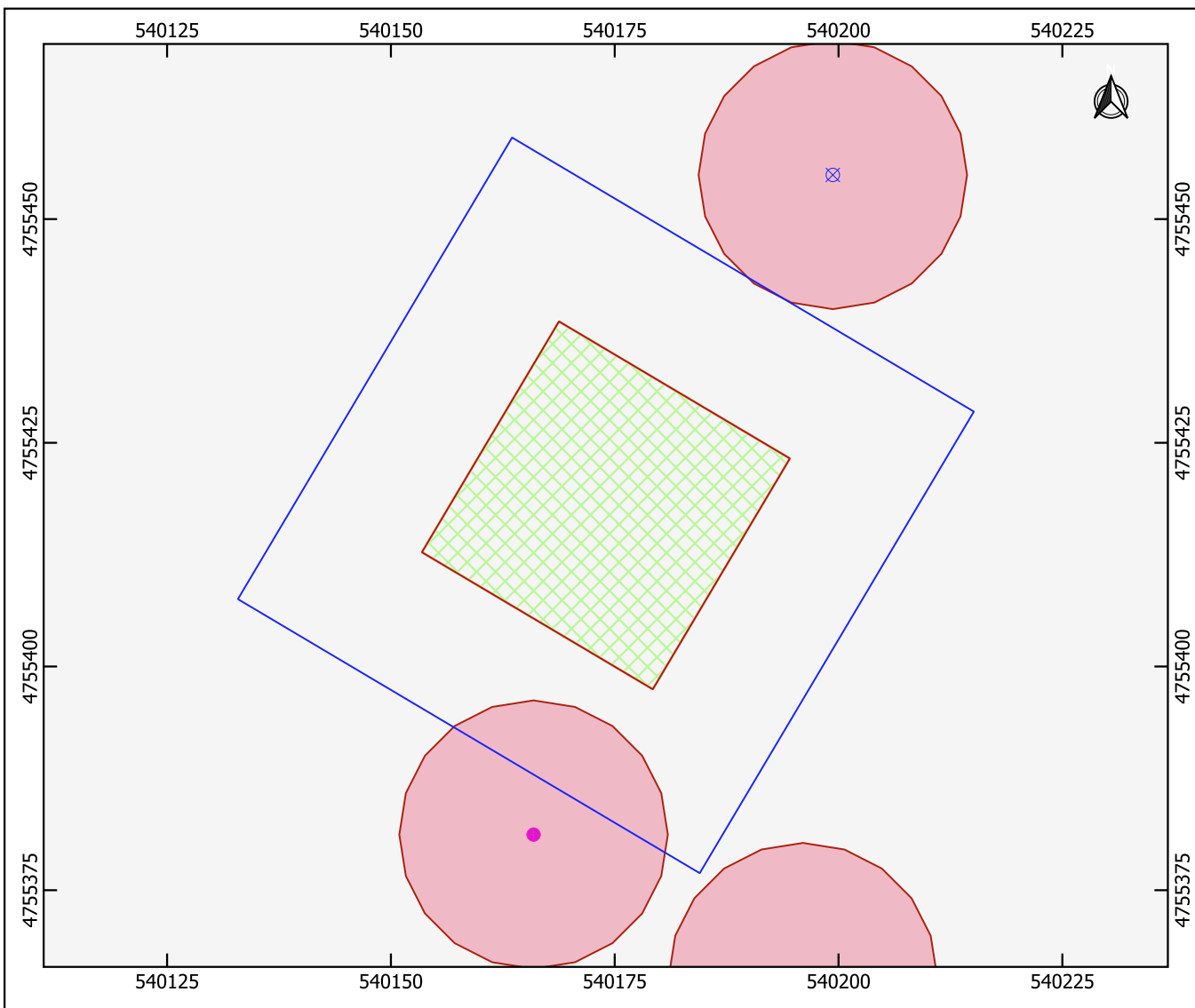
Version: V0



Alternate LOCATION

x=536028, y=4756362





OWF Zone 1

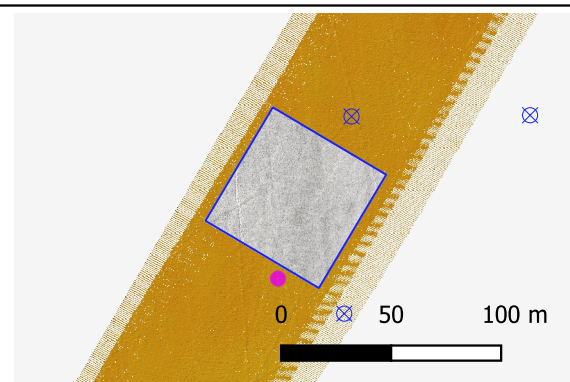
- Geotechnical Boxes OWF zone 1
- Survey extent

Concession

- Zone Parc AO6
- Zone corridors AO6

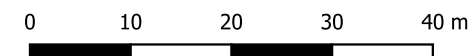
ALARP

- ⊗ AO6_Z1_OWF_SSS_targets
- ⊕ AO6_Z1_OWF_SBP_targets
- AO6_Z1_OWF_ALARP
- AO6_Z1_OWF_avoidance

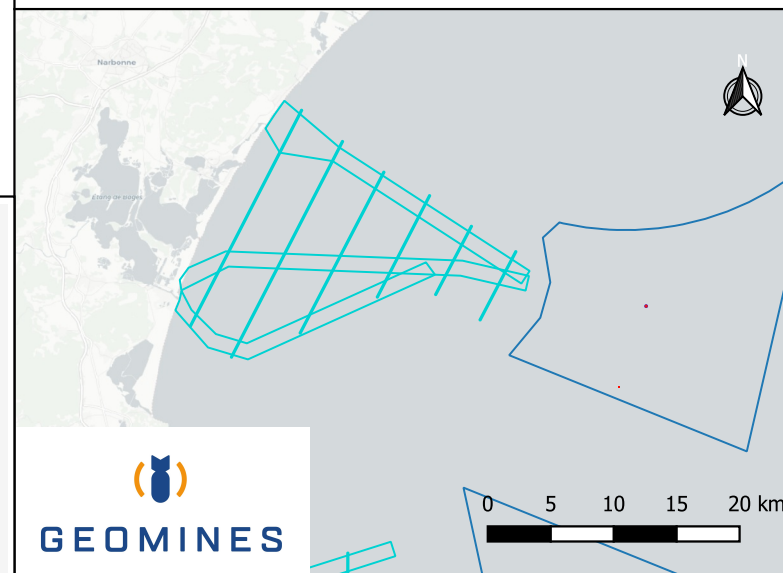


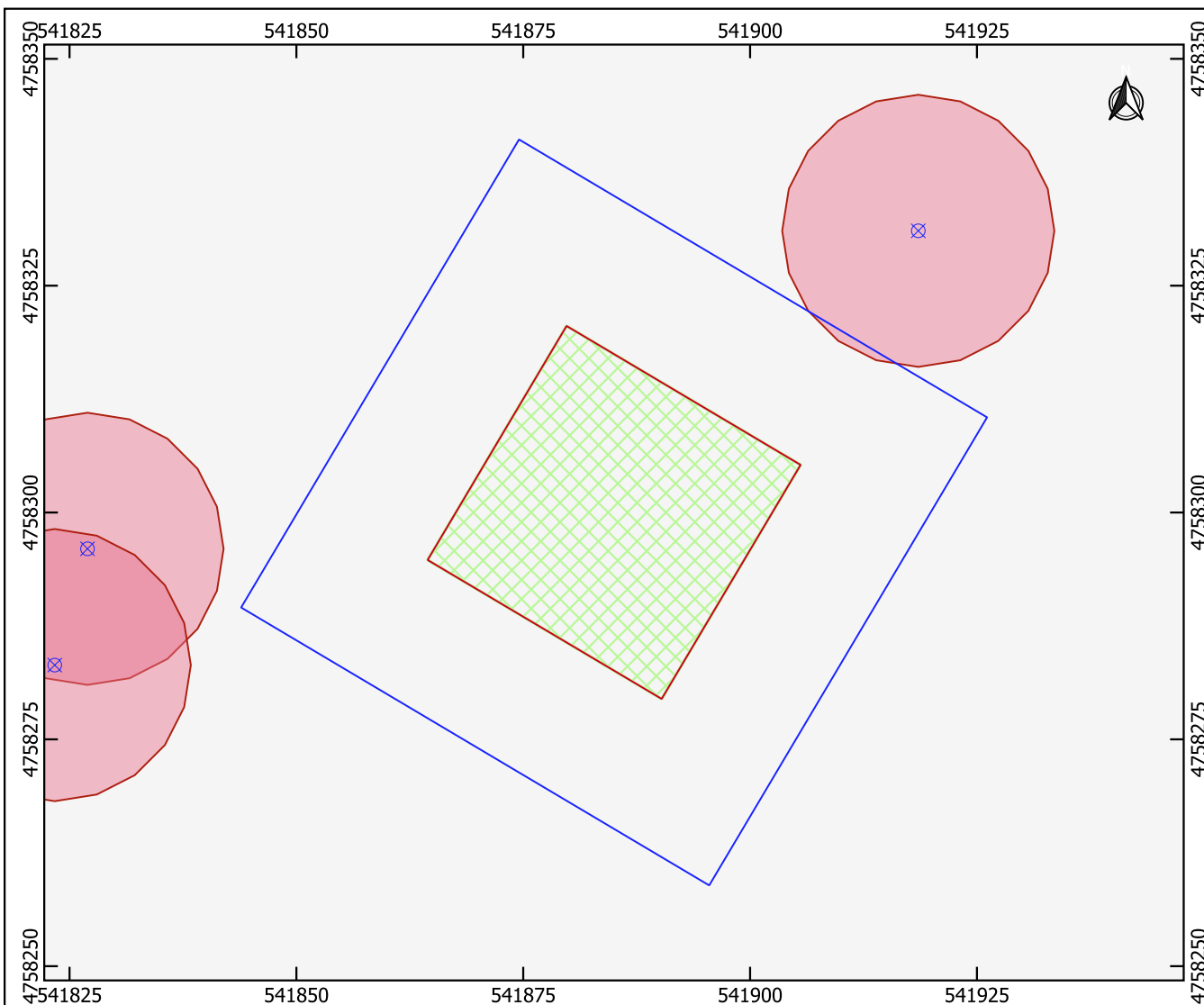
ANNEXE A: Z1_OWF_B03 ALARP CERTIFICATE GIS

Scale: 1/750 Date: 2023-03-18
Geodesy : WGS 84 - UTM 31N Version: V0



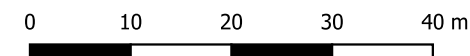
Original LOCATION
x=540174, y=4755418





ANNEXE A: Z1_OWF_B04 ALARP CERTIFICATE GIS

Scale: 1/750 Date: 2023-03-18
Geodesy : WGS 84 - UTM 31N Version: V0



Original LOCATION
x=541885, y=4758300

OWF Zone 1

Geotechnical Boxes OWF zone 1

Survey extent

Concession

Zone Parc AO6

Zone corridors AO6

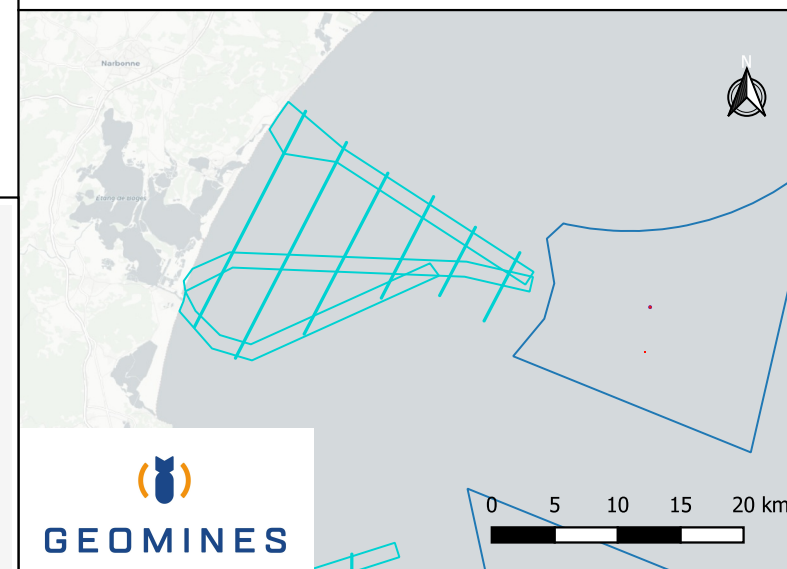
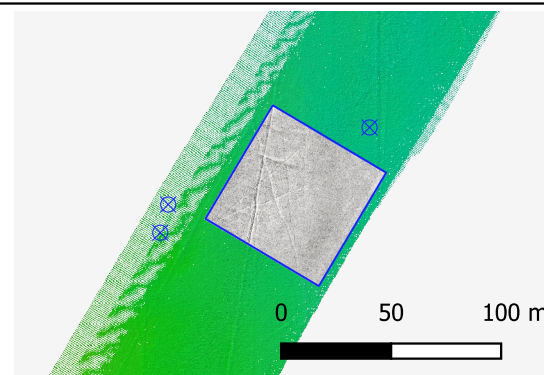
ALARP

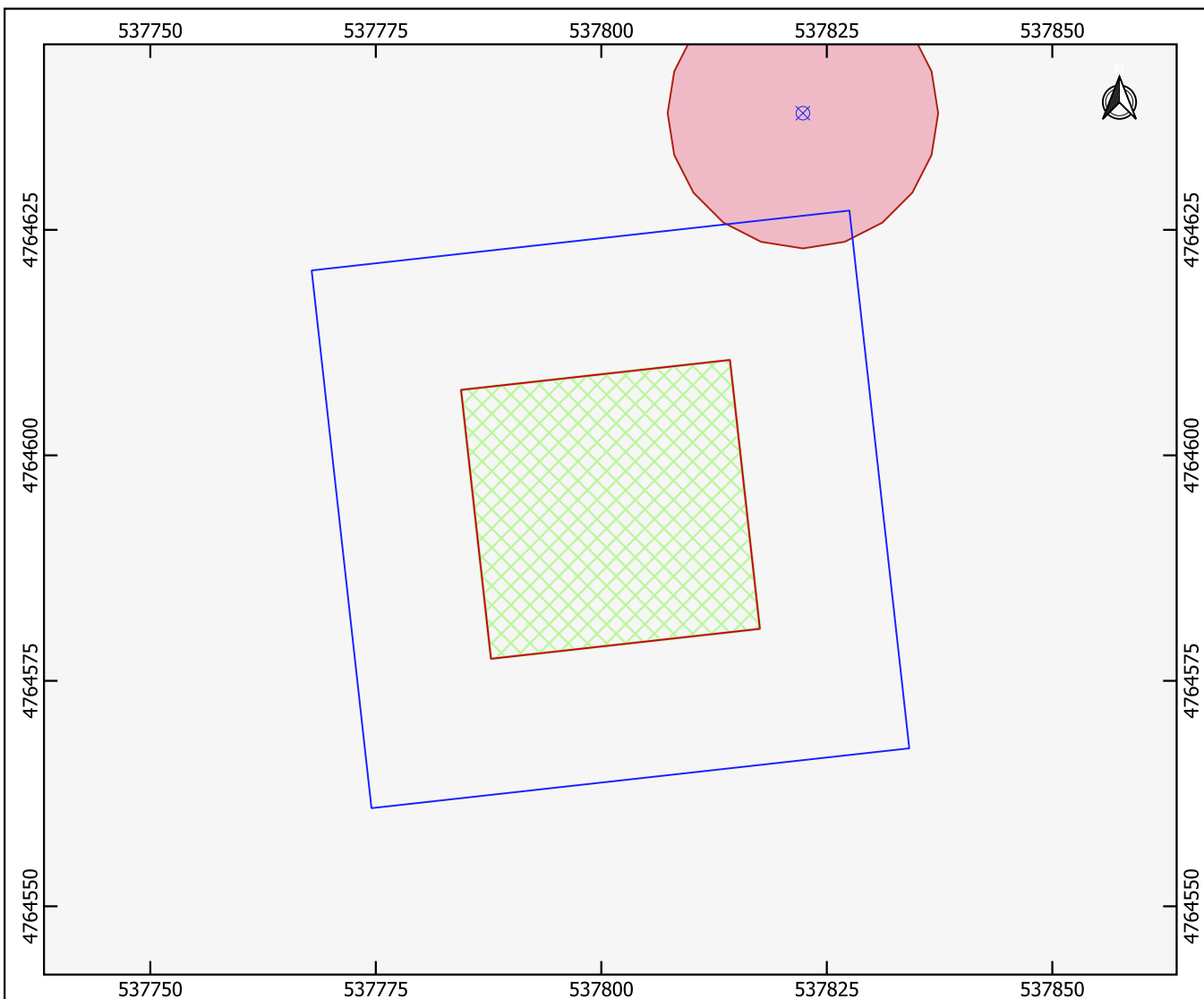
AO6_Z1_OWF_SSS_targets

AO6_Z1_OWF_SBP_targets

AO6_Z1_OWF_ALARP

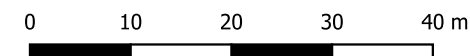
AO6_Z1_OWF_avoidance





ANNEXE A: Z1_OWF_B05 ALARP CERTIFICATE GIS

Scale: 1/750 Date: 2023-03-18
Geodesy : WGS 84 - UTM 31N Version: V0



Original LOCATION
x=537801, y=4764594

OWF Zone 1

Geotechnical Boxes OWF zone 1

Survey extent

Concession

Zone Parc AO6

Zone corridors AO6

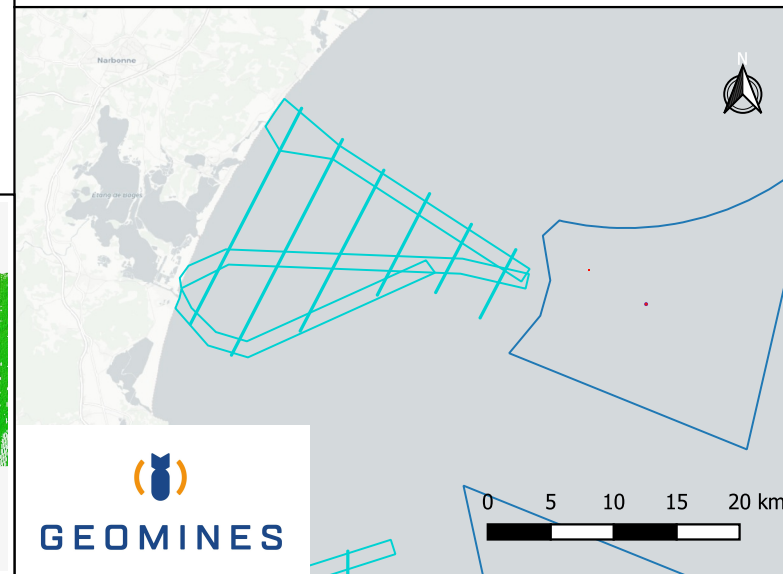
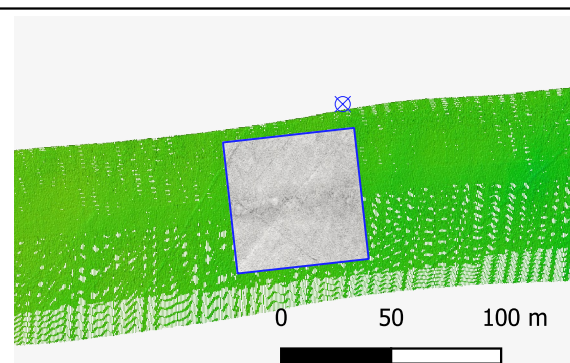
ALARP

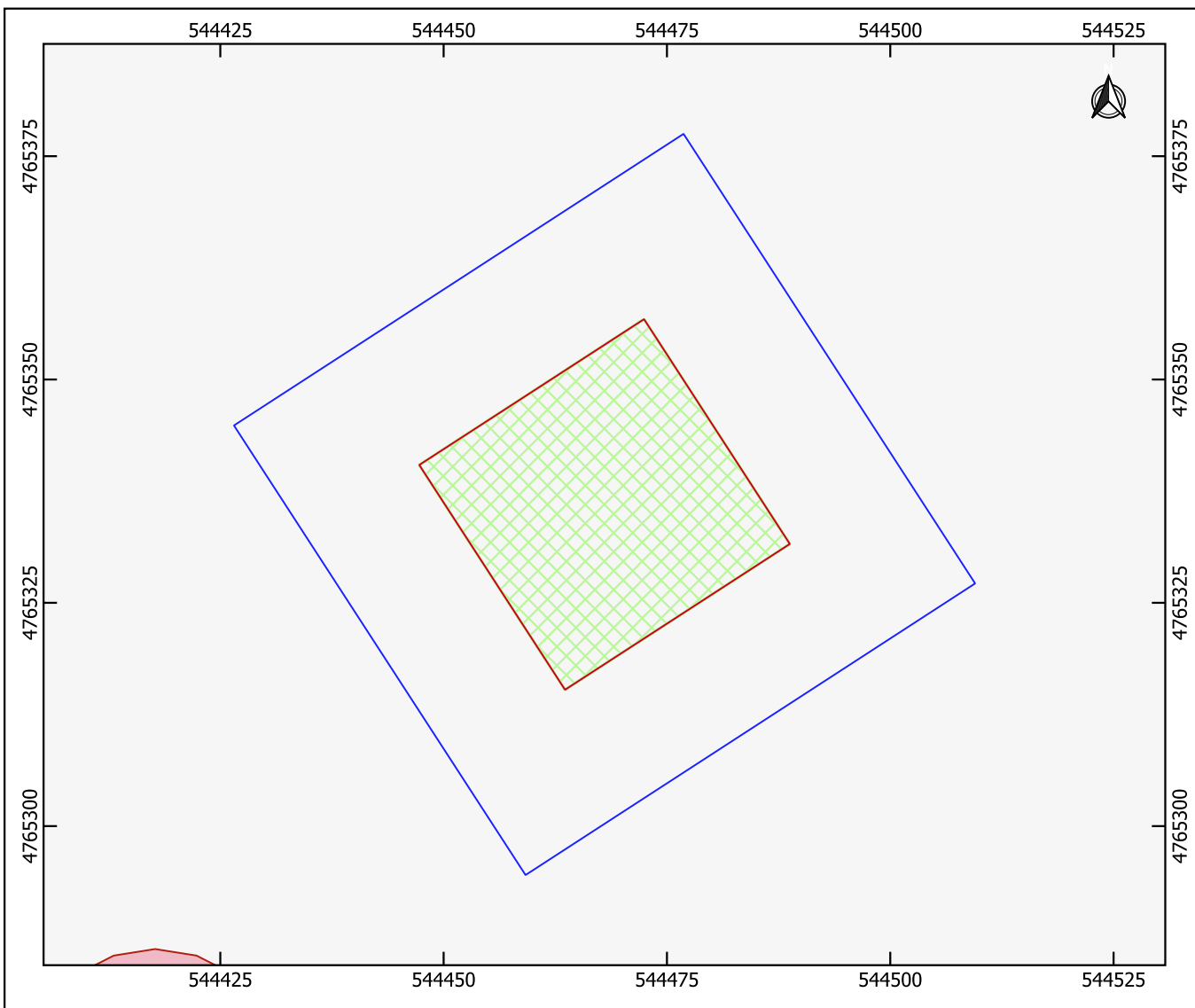
AO6_Z1_OWF_SSS_targets

AO6_Z1_OWF_SBP_targets

AO6_Z1_OWF_ALARP

AO6_Z1_OWF_avoidance





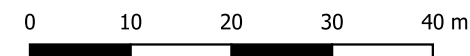
ANNEXE A: Z1_OWF_B06 ALARP CERTIFICATE GIS

Scale: 1/750

Date: 2023-03-18

Geodesy : WGS 84 - UTM 31N

Version: V0



Original LOCATION

x=544468, y=4765336

OWF Zone 1

Geotechnical Boxes OWF zone 1

Survey extent

Concession

Zone Parc AO6

Zone corridors AO6

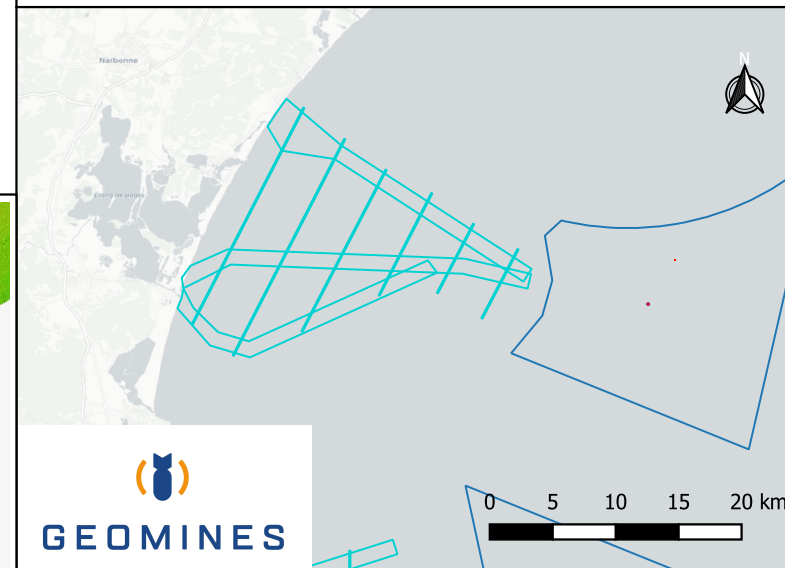
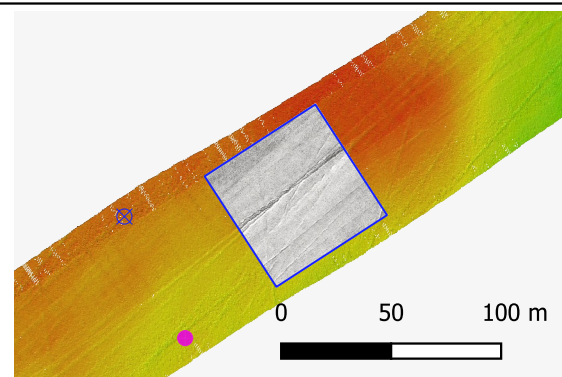
ALARP

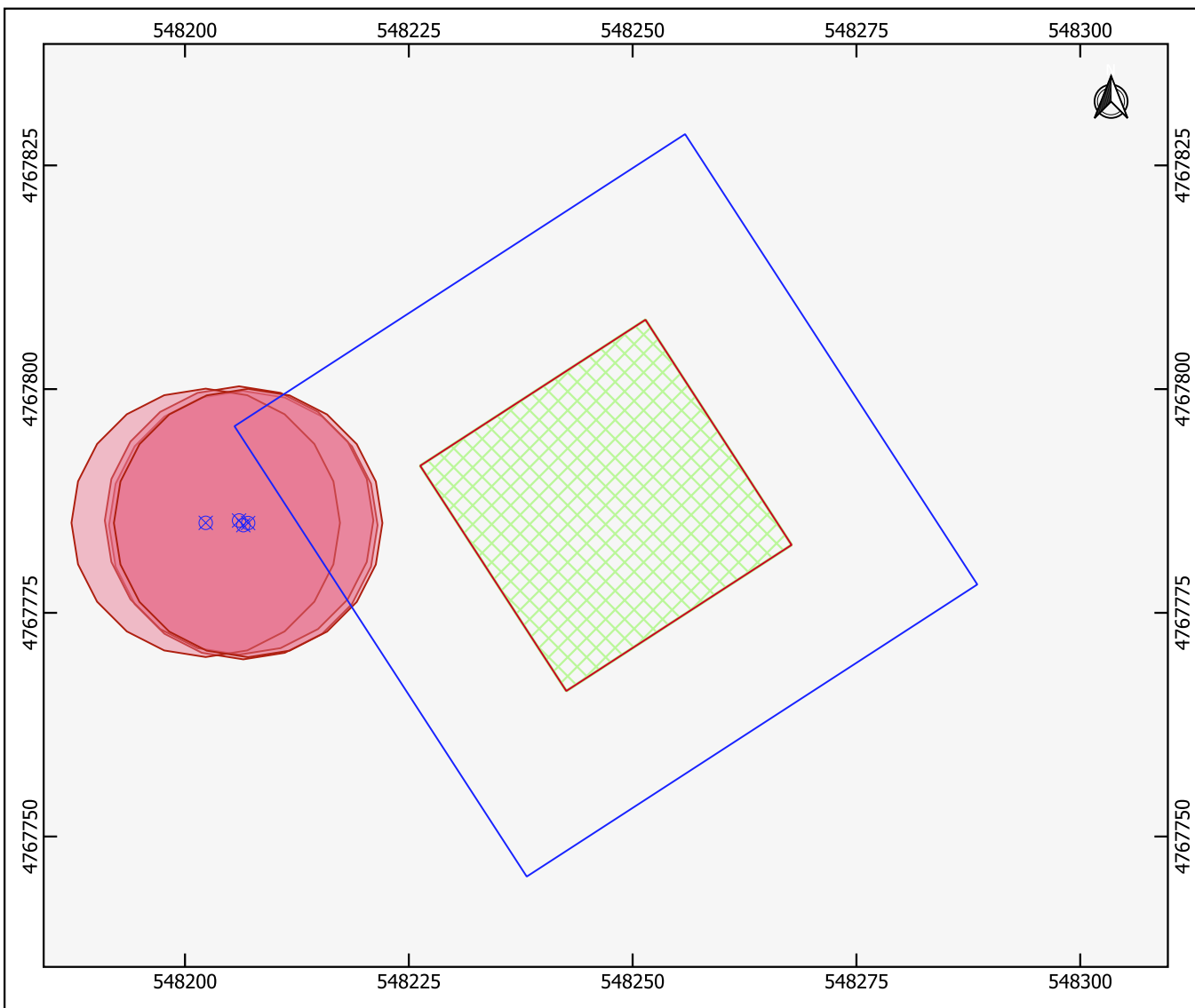
AO6_Z1_OWF_SSS_targets

AO6_Z1_OWF_SBP_targets

AO6_Z1_OWF_ALARP

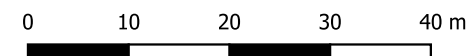
AO6_Z1_OWF_avoidance





ANNEXE A: Z1_OWF_B07 ALARP CERTIFICATE GIS

Scale: 1/750 Date: 2023-03-18
Geodesy : WGS 84 - UTM 31N Version: V0



Original LOCATION
x=548247, y=4767787

OWF Zone 1

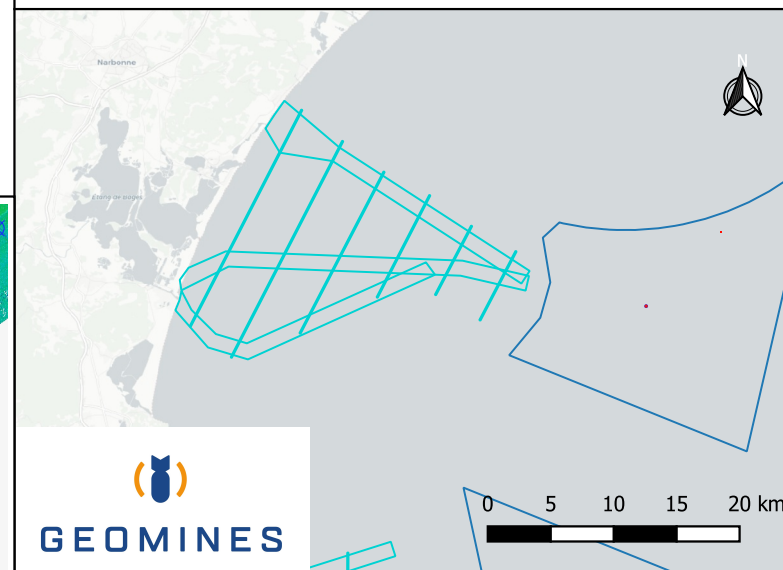
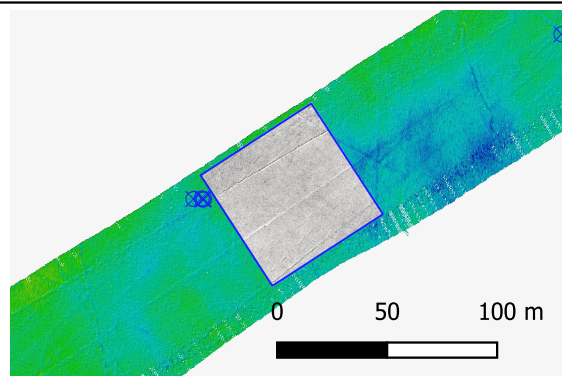
- Geotechnical Boxes OWF zone 1
- Survey extent

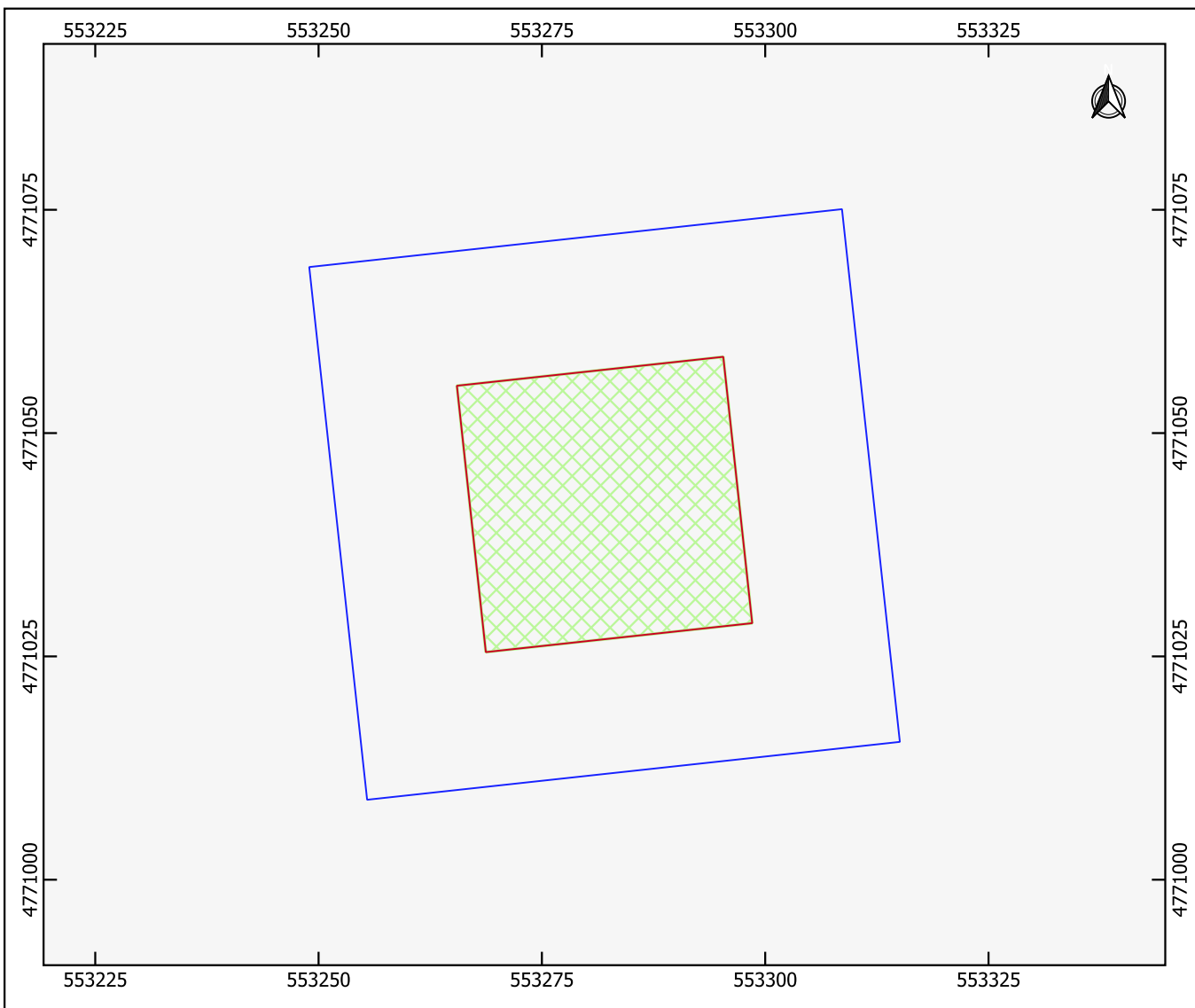
Concession

- Zone Parc AO6
- Zone corridors AO6

ALARP

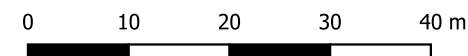
- ⊗ AO6_Z1_OWF_SSS_targets
- ⊕ AO6_Z1_OWF_SBP_targets
- AO6_Z1_OWF_ALARP
- AO6_Z1_OWF_avoidance





ANNEXE A: Z1_OWF_B08 ALARP CERTIFICATE GIS

Scale: 1/750 Date: 2023-03-18
Geodesy : WGS 84 - UTM 31N Version: V0



Original LOCATION
x=553282, y=4771042

OWF Zone 1

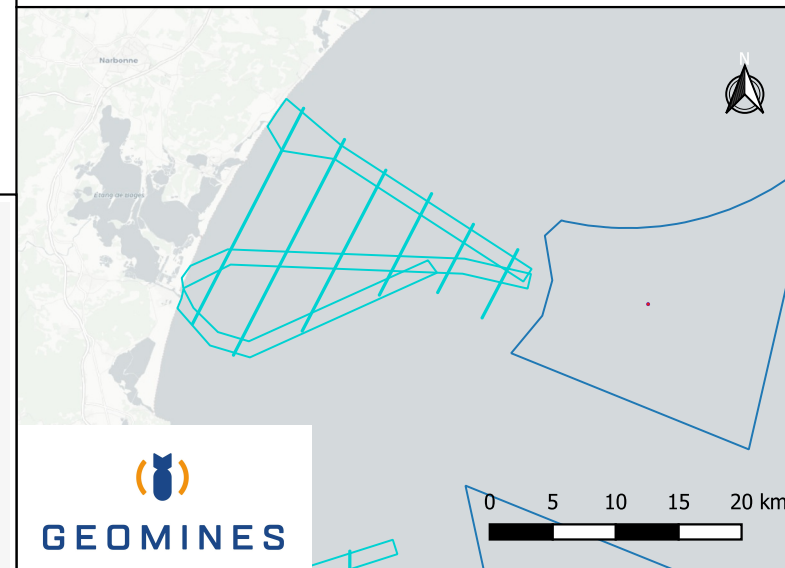
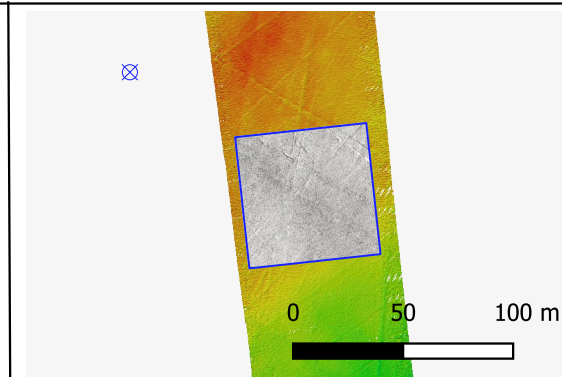
- Geotechnical Boxes OWF zone 1
- Survey extent

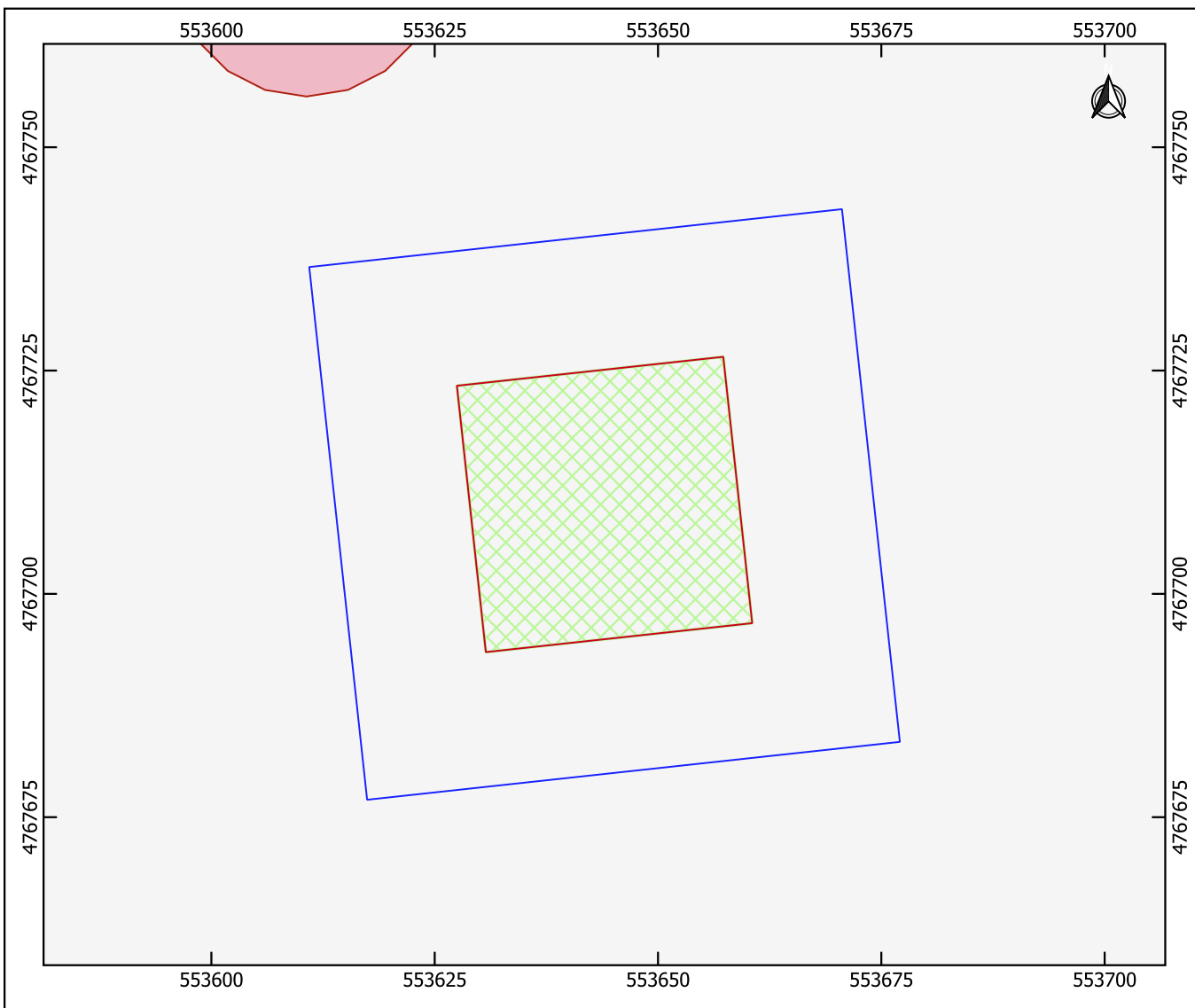
Concession

- Zone Parc AO6
- Zone corridors AO6

ALARP

- ⊗ AO6_Z1_OWF_SSS_targets
- ⊕ AO6_Z1_OWF_SBP_targets
- AO6_Z1_OWF_ALARP
- AO6_Z1_OWF_avoidance





OWF Zone 1

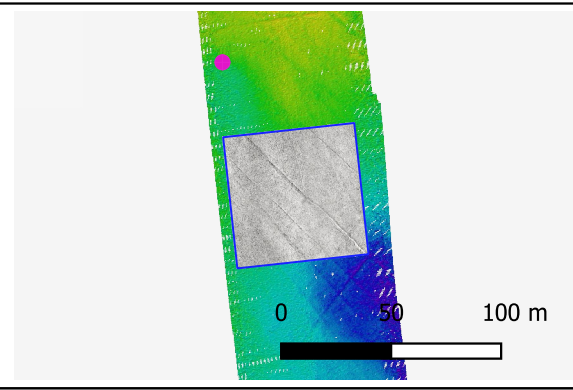
- Geotechnical Boxes OWF zone 1
- Survey extent

Concession

- Zone Parc AO6
- Zone corridors AO6

ALARP

- AO6_Z1_OWF_SSS_targets
- ⊕ AO6_Z1_OWF_SBP_targets
- AO6_Z1_OWF_ALARP
- AO6_Z1_OWF_avoidance



ANNEXE A: Z1_OWF_B09

ALARP CERTIFICATE GIS

Scale: 1/750 Date: 2023-03-18

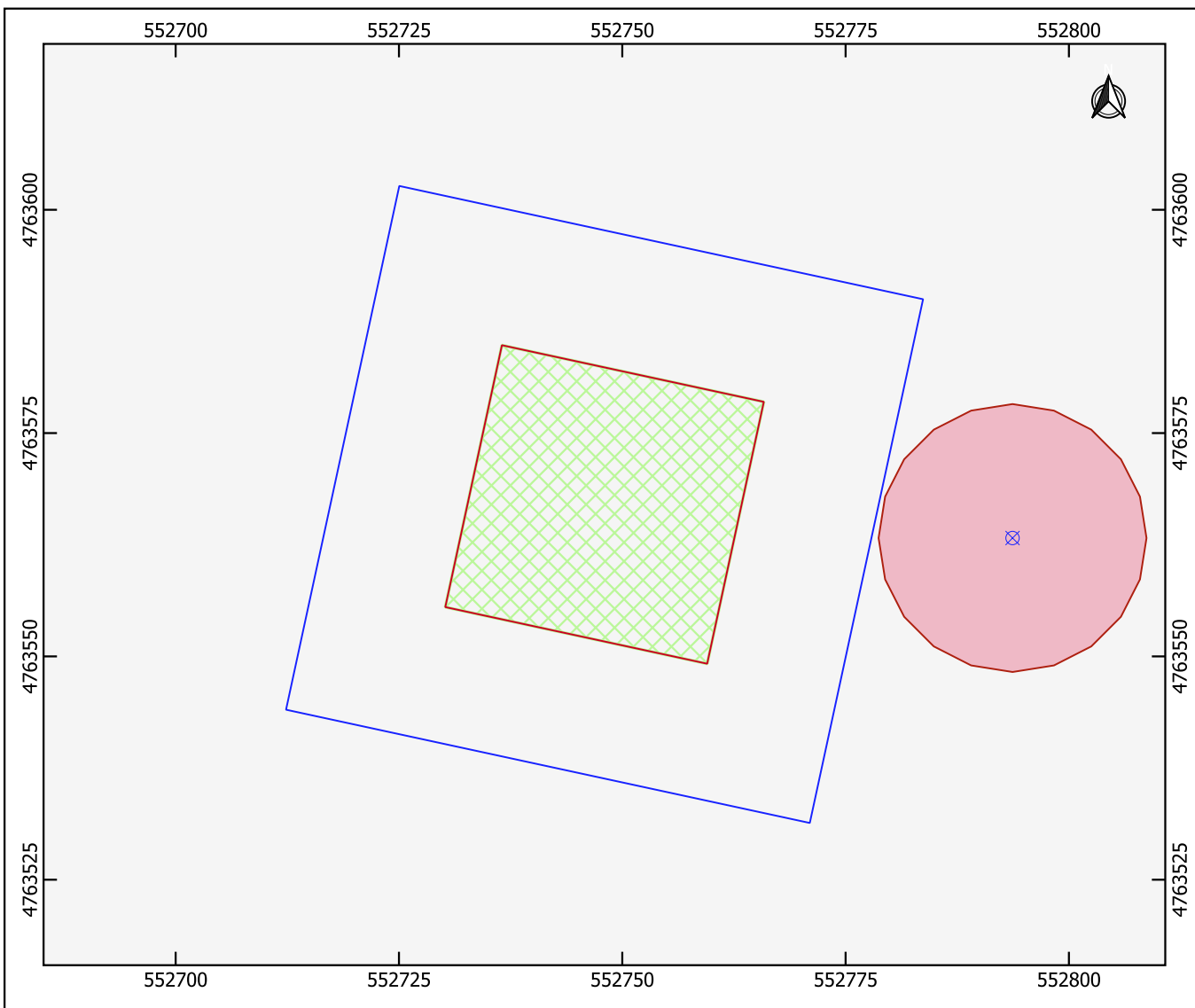
Geodesy : WGS 84 - UTM 31N Version: V0

0 10 20 30 40 m

Original LOCATION

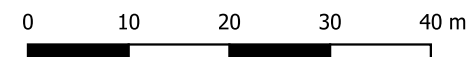
x=553644, y=4767710

Regional map showing the location of the survey area within the context of the surrounding region, including a scale bar from 0 to 20 km.



ANNEXE A: Z1_OWF_B10 ALARP CERTIFICATE GIS

Scale: 1/750 Date: 2023-03-18
Geodesy : WGS 84 - UTM 31N Version: V0



Original LOCATION
x=552748, y=4763567

OWF Zone 1

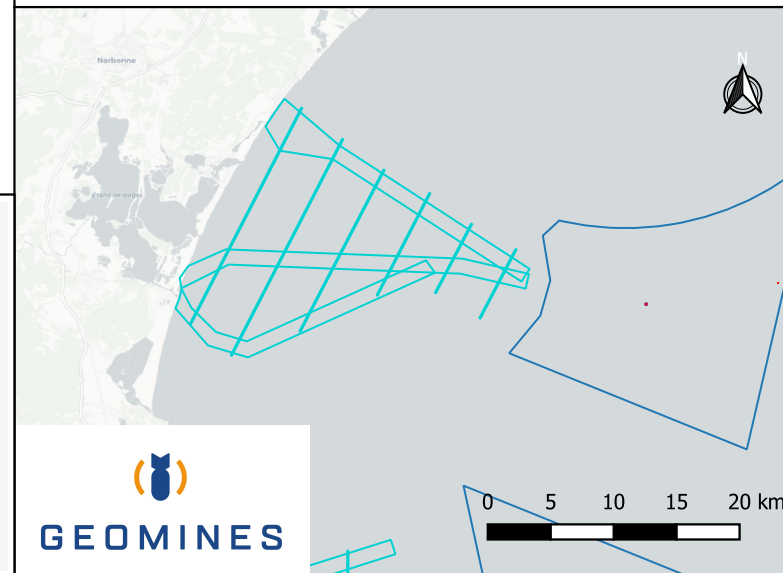
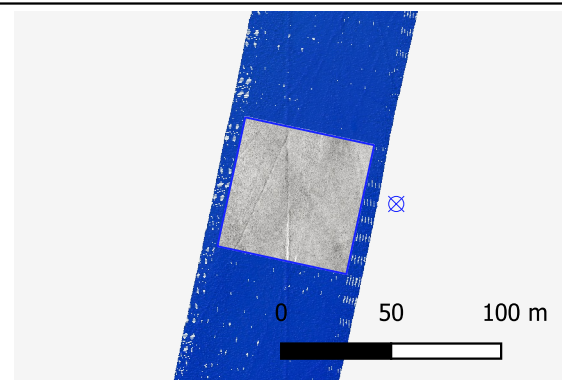
- Geotechnical Boxes OWF zone 1
- Survey extent

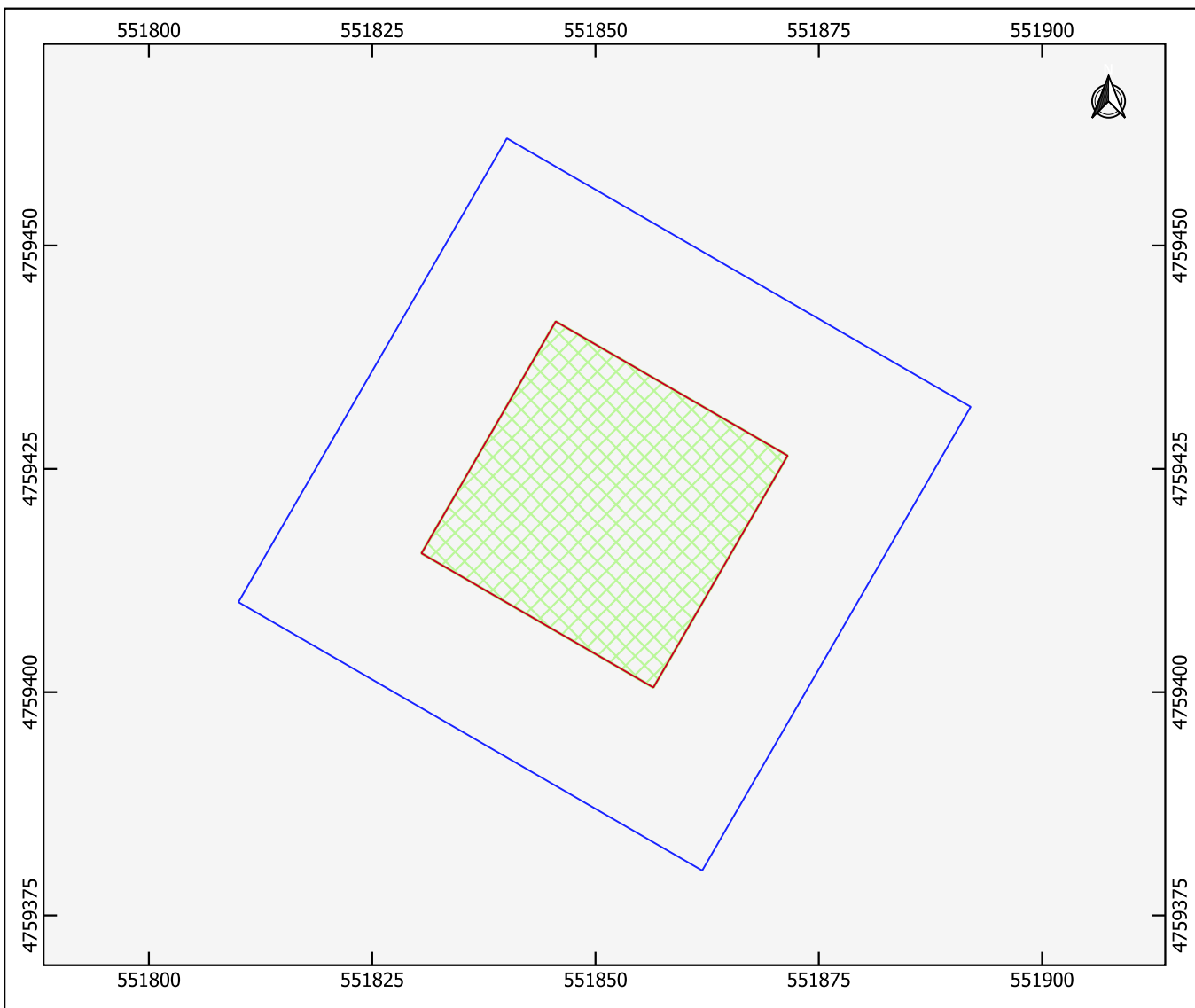
Concession

- Zone Parc AO6
- Zone corridors AO6

ALARP

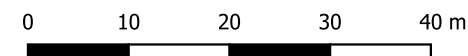
- AO6_Z1_OWF_SSS_targets
- AO6_Z1_OWF_SBP_targets
- AO6_Z1_OWF_ALARP
- AO6_Z1_OWF_avoidance





ANNEXE A: Z1_OWF_B11 ALARP CERTIFICATE GIS

Scale: 1/750 Date: 2023-03-18
Geodesy : WGS 84 - UTM 31N Version: V0



Original LOCATION
x=551851, y=4759421

OWF Zone 1

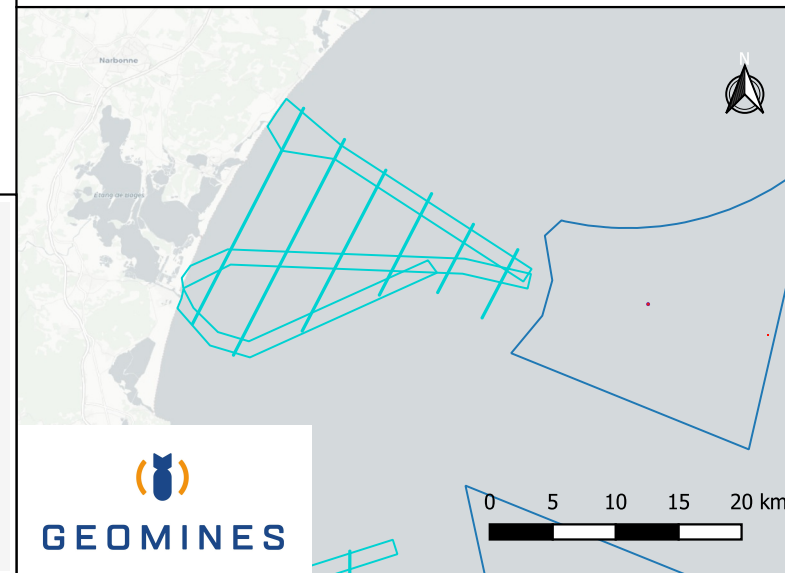
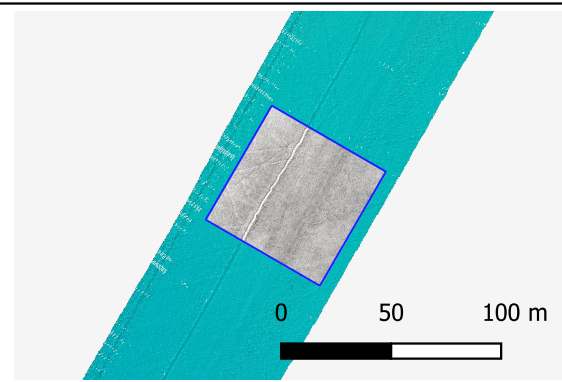
- Geotechnical Boxes OWF zone 1
- Survey extent

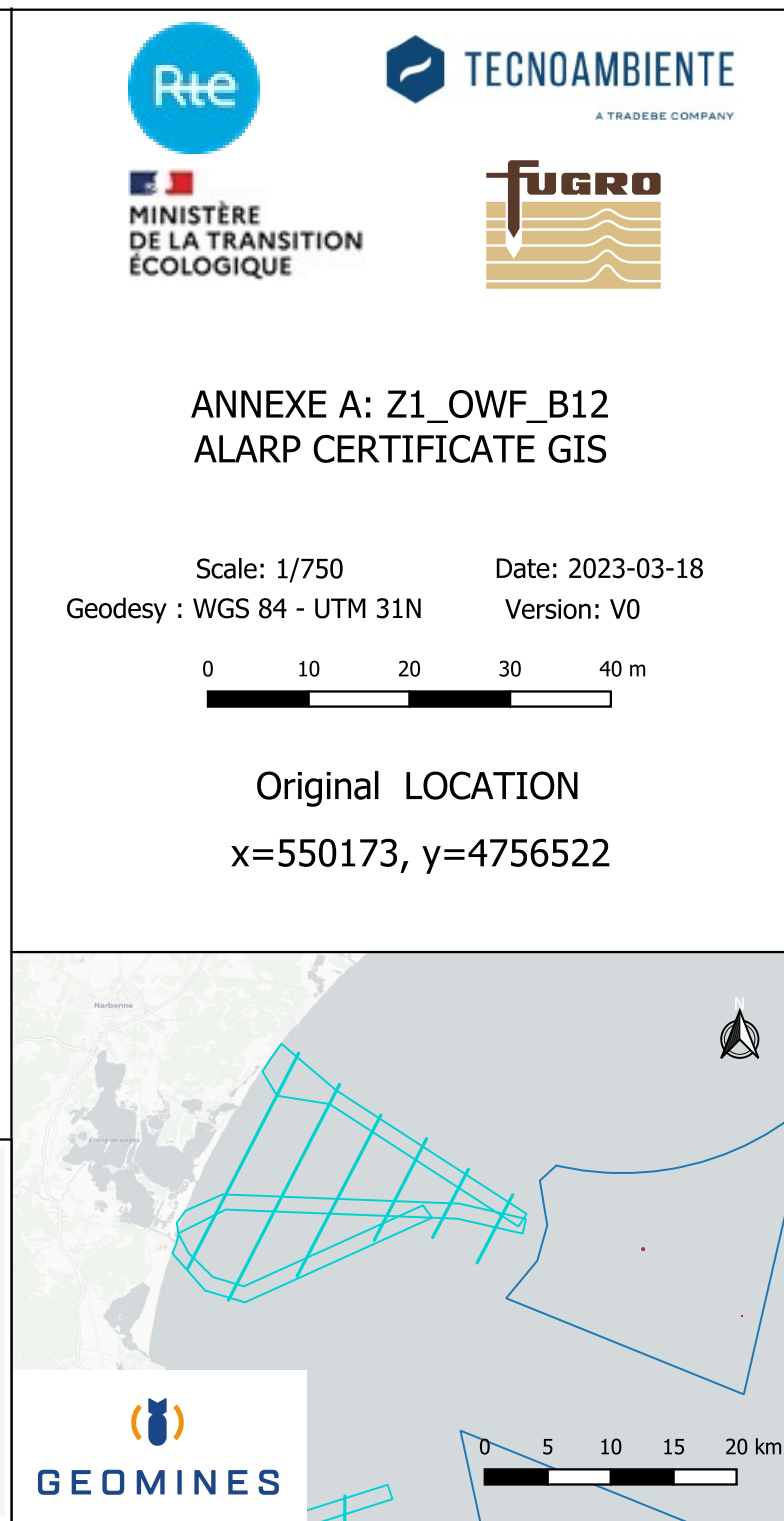
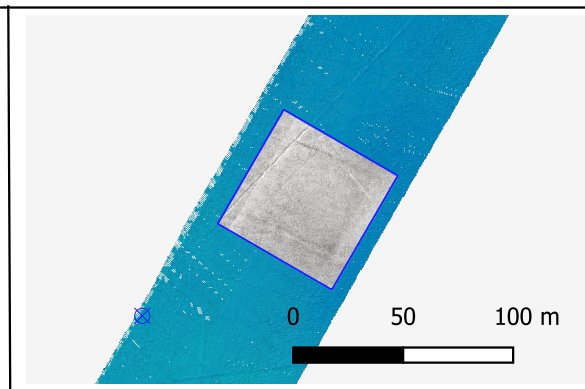
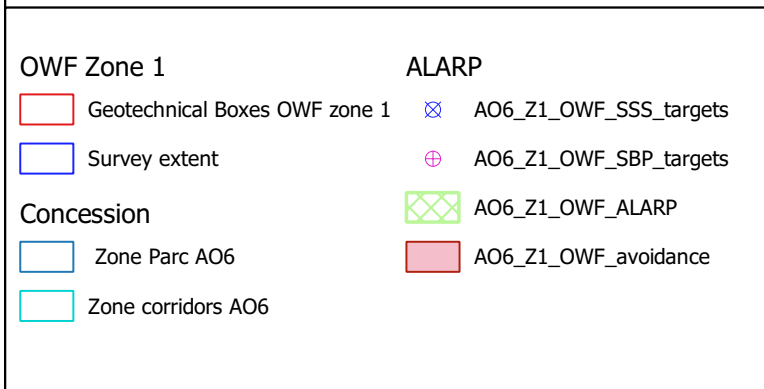
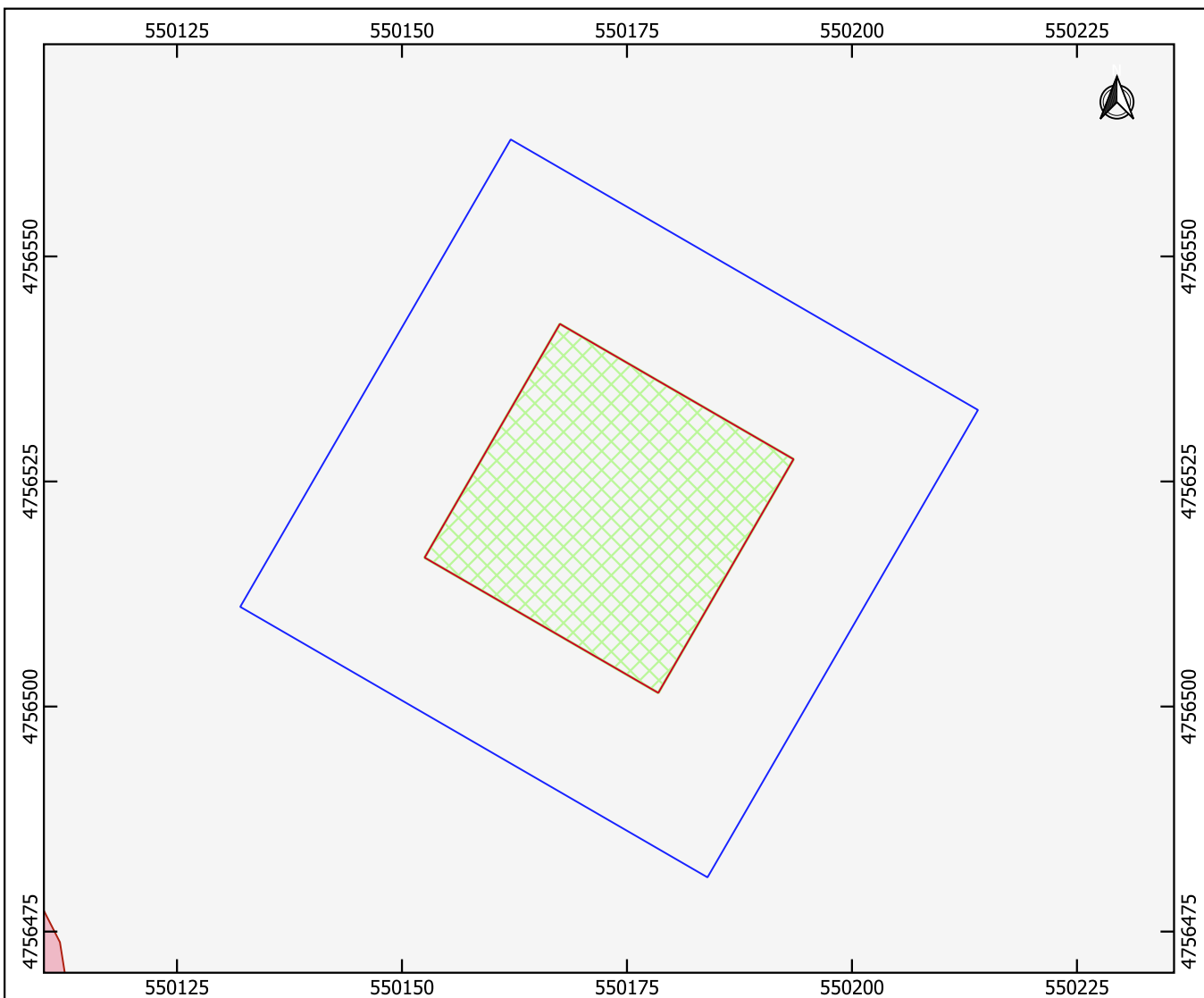
Concession

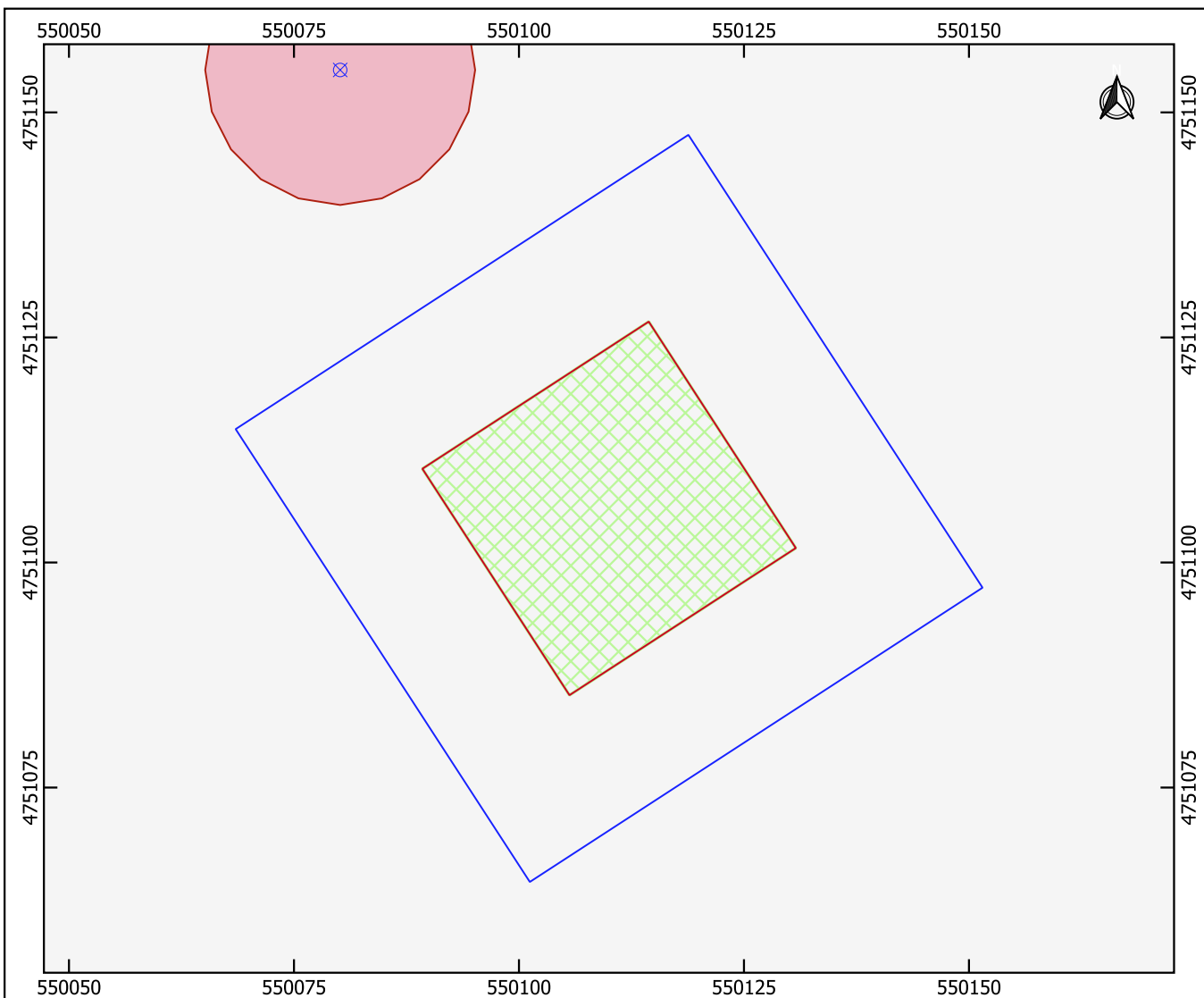
- Zone Parc AO6
- Zone corridors AO6

ALARP

- AO6_Z1_OWF_SSS_targets
- ⊕ AO6_Z1_OWF_SBP_targets
- AO6_Z1_OWF_ALARP
- AO6_Z1_OWF_avoidance







OWF Zone 1

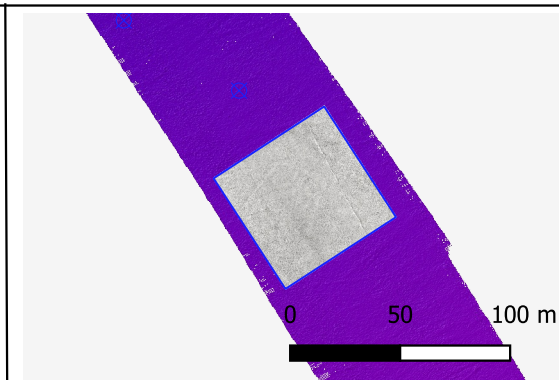
- Geotechnical Boxes OWF zone 1
- Survey extent

Concession

- Zone Parc AO6
- Zone corridors AO6

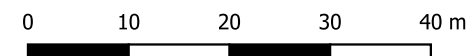
ALARP

- ⊗ AO6_Z1_OWF_SSS_targets
- ⊕ AO6_Z1_OWF_SBP_targets
- AO6_Z1_OWF_ALARP
- AO6_Z1_OWF_avoidance

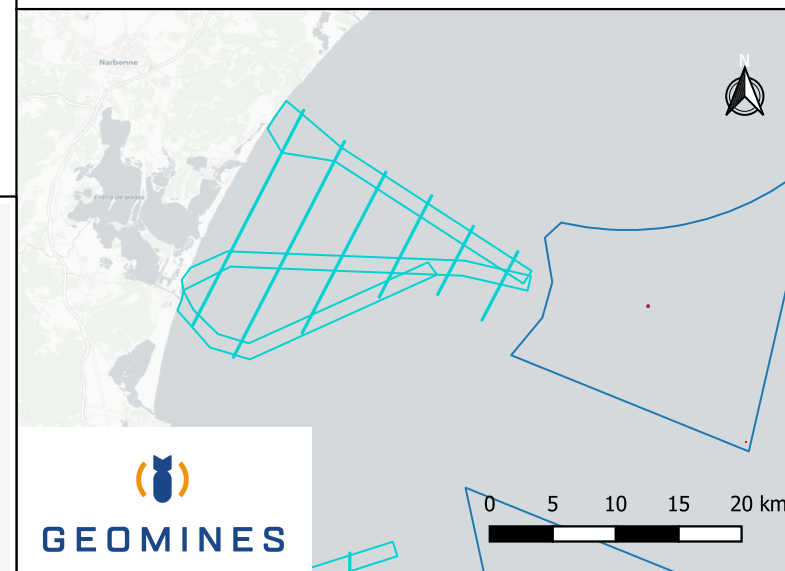


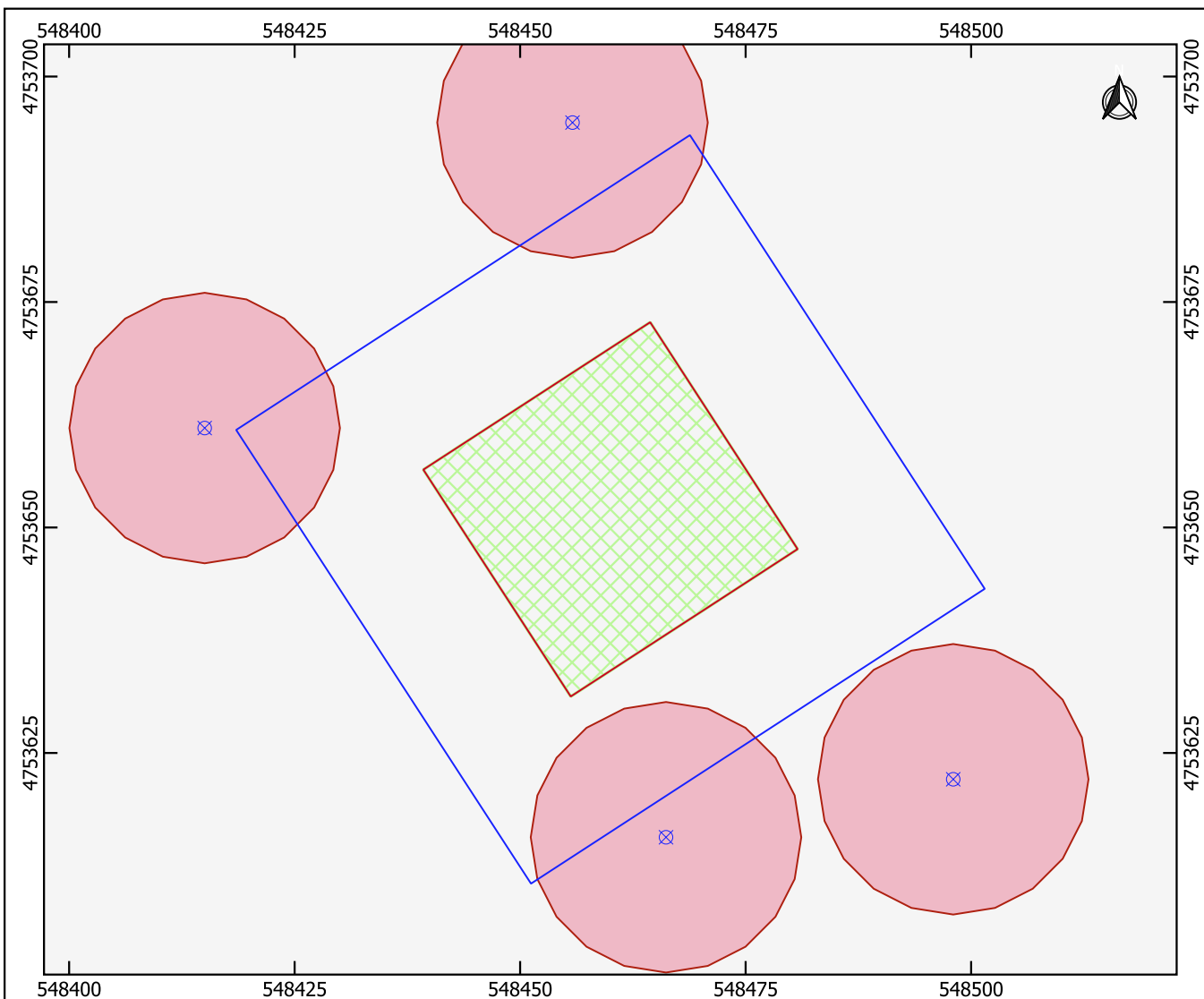
ANNEXE A: Z1_OWF_B13 ALARP CERTIFICATE GIS

Scale: 1/750 Date: 2023-03-18
Geodesy : WGS 84 - UTM 31N Version: V0



Original LOCATION
x=550110, y=4751106





OWF Zone 1

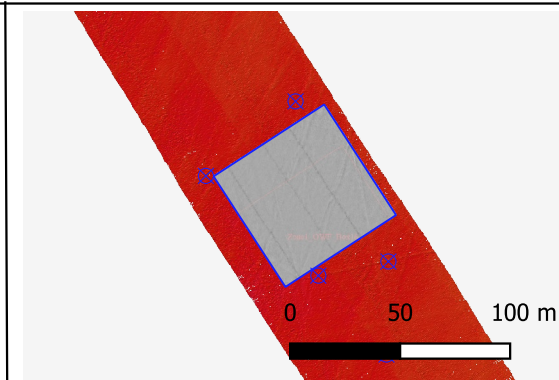
- Geotechnical Boxes OWF zone 1
- Survey extent

Concession

- Zone Parc AO6
- Zone corridors AO6

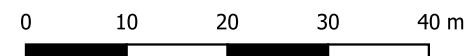
ALARP

- ⊗ AO6_Z1_OWF_SSS_targets
- ⊕ AO6_Z1_OWF_SBP_targets
- AO6_Z1_OWF_ALARP
- AO6_Z1_OWF_avoidance

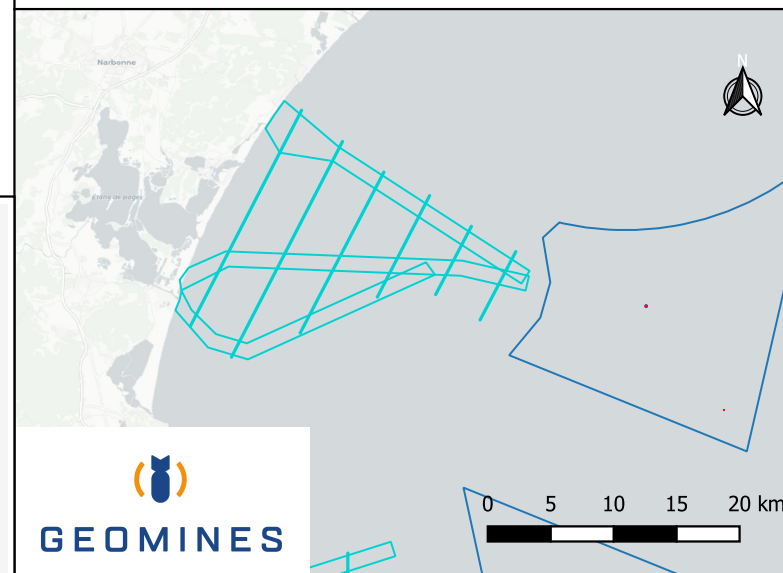


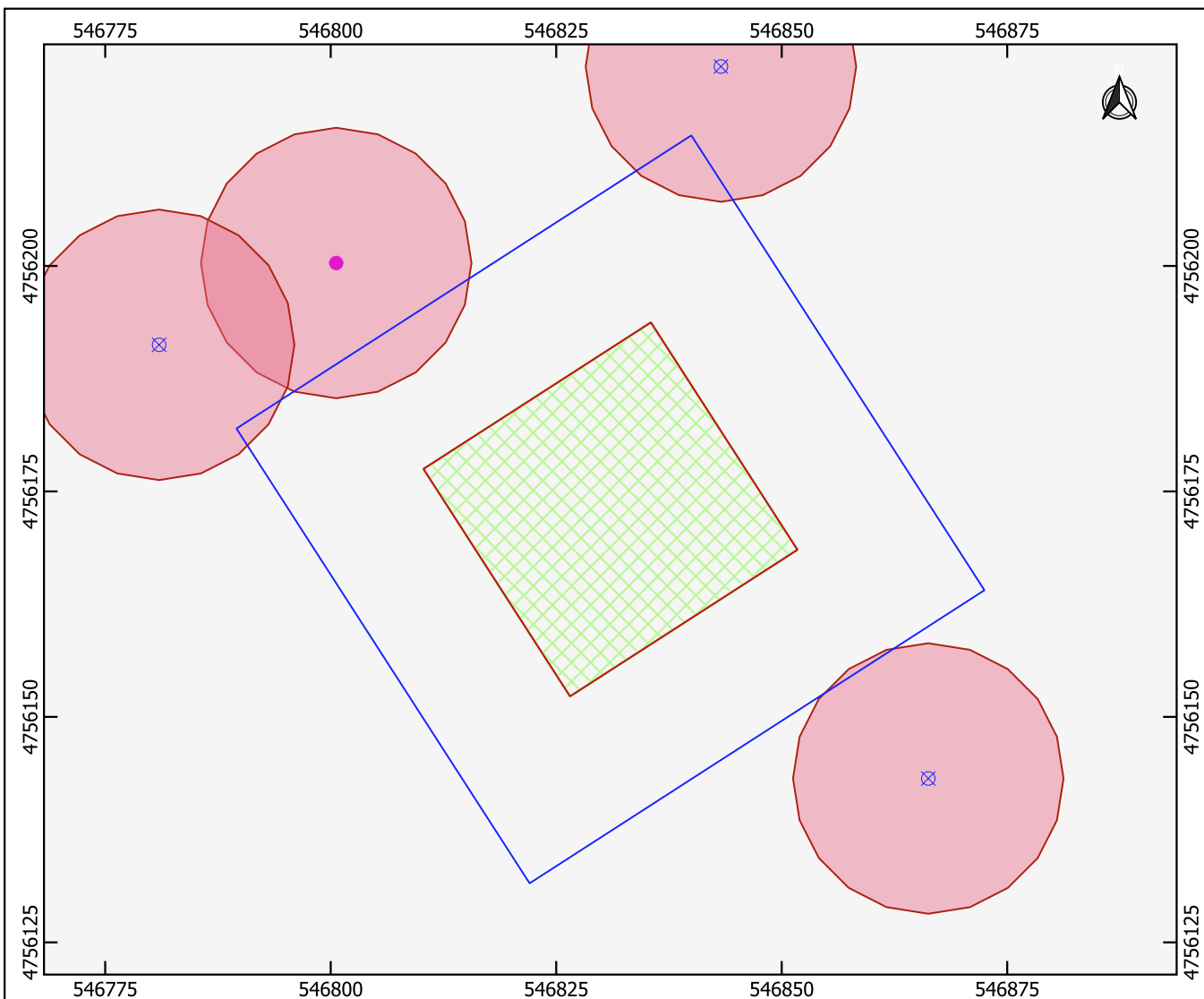
ANNEXE A: Z1_OWF_B14 ALARP CERTIFICATE GIS

Scale: 1/750 Date: 2023-03-18
Geodesy : WGS 84 - UTM 31N Version: V0



Alternate LOCATION
x=548460, y=4753652





OWF Zone 1

Geotechnical Boxes OWF zone 1

Survey extent

Concession

Zone Parc AO6

Zone corridors AO6

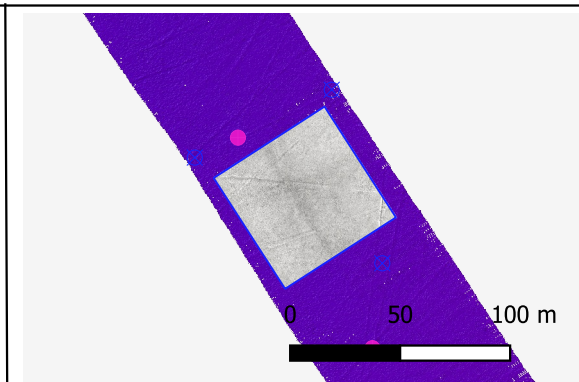
ALARP

AO6_Z1_OWF_SSS_targets

AO6_Z1_OWF_SBP_targets

AO6_Z1_OWF_ALARP

AO6_Z1_OWF_avoidance



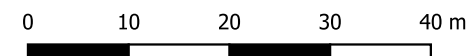
ANNEXE A: Z1_OWF_B15 ALARP CERTIFICATE GIS

Scale: 1/750

Date: 2023-03-18

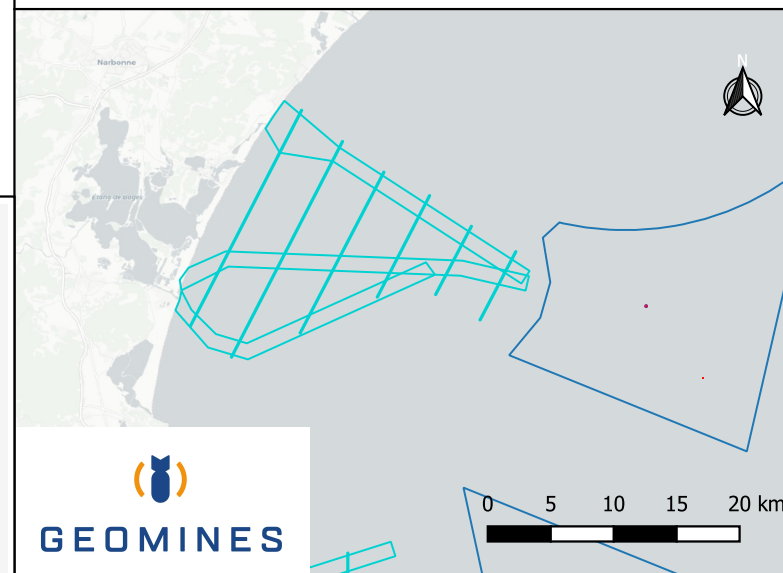
Geodesy : WGS 84 - UTM 31N

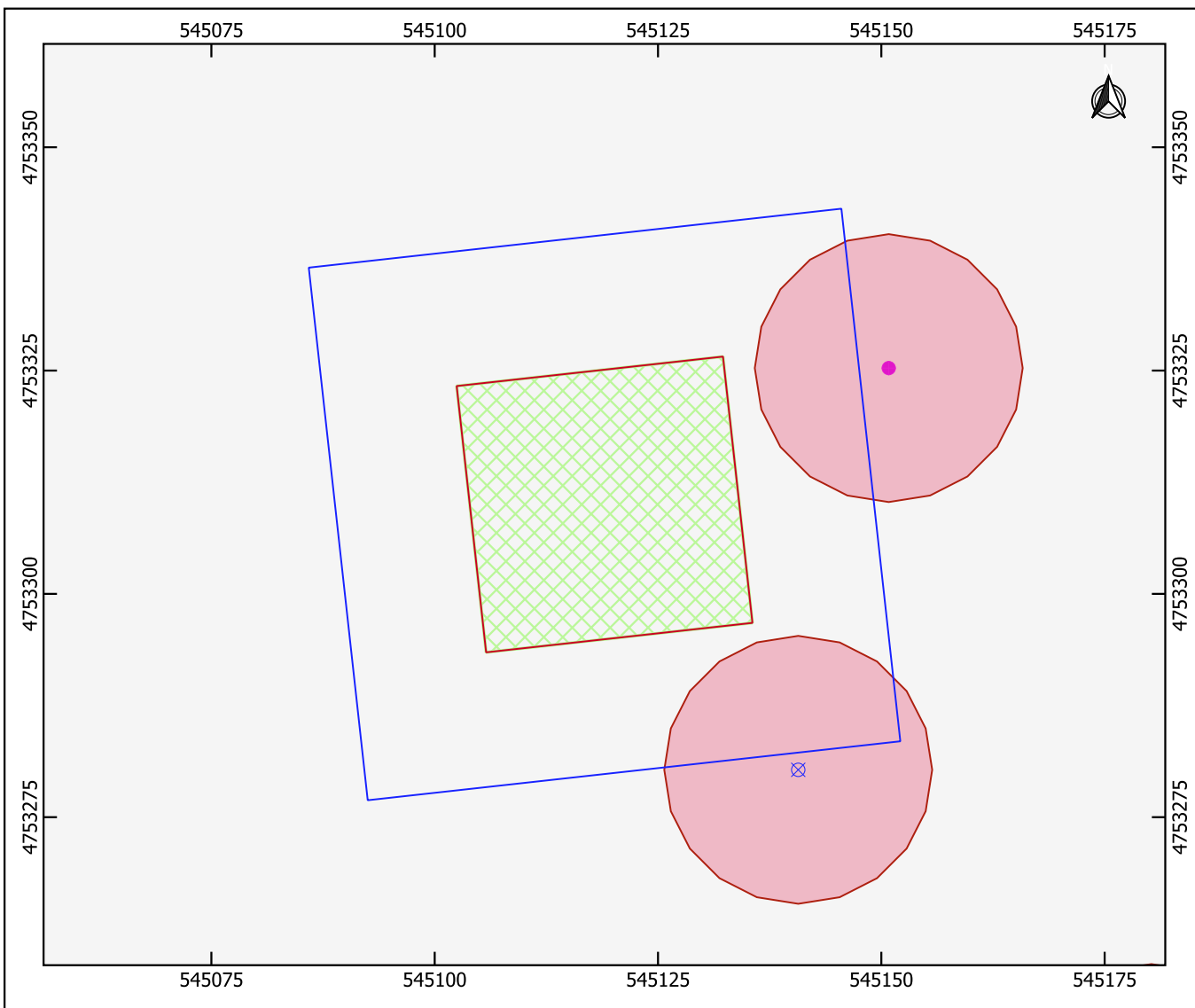
Version: V0



Original LOCATION

x=546831, y=4756173





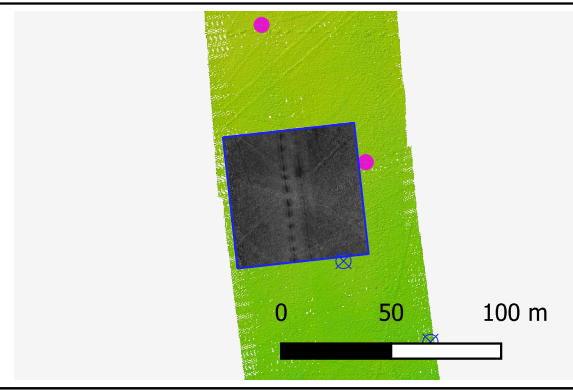
- OWF Zone 1**

 - Geotechnical Boxes OWF zone 1
 - Survey extent

Concession

 - Zone Parc AO6
 - Zone corridors AO6
- ALARP**

 - ⊗ AO6_Z1_OWf_SSS_targets
 - ⊕ AO6_Z1_OWf_SBP_targets
 - AO6_Z1_OWf_ALARP
 - AO6_Z1_OWf_avoidance









ANNEXE A: Z1_OWf_B16

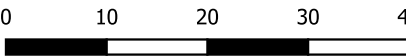
ALARP CERTIFICATE GIS

Scale: 1/750

Date: 2023-03-18

Geodesy : WGS 84 - UTM 31N

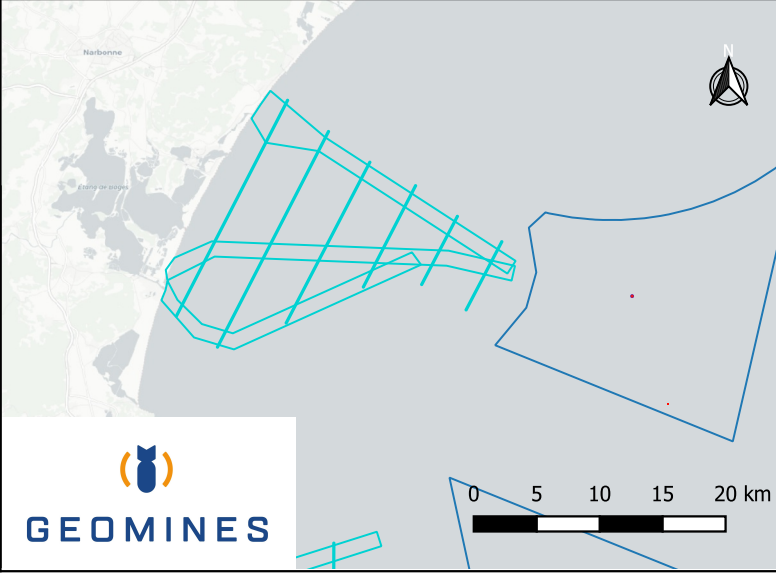
Version: V0

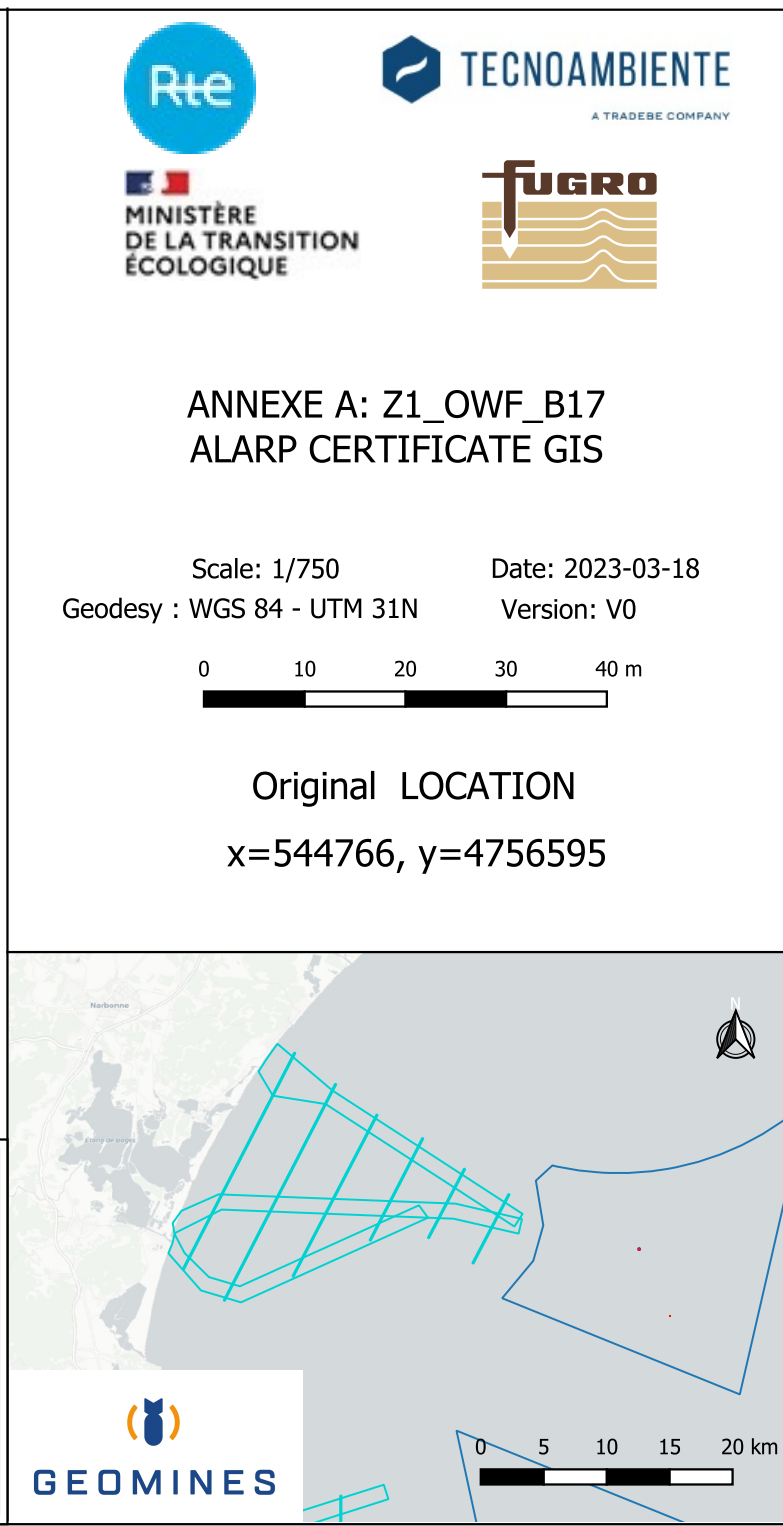
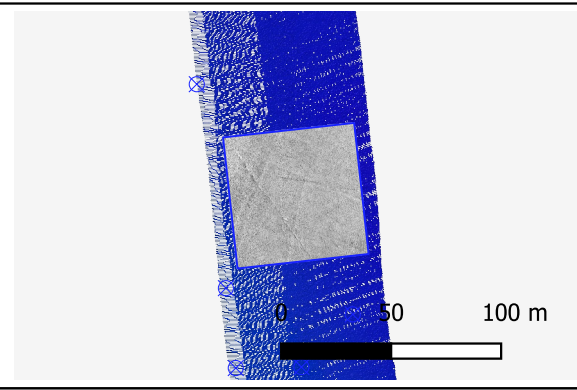
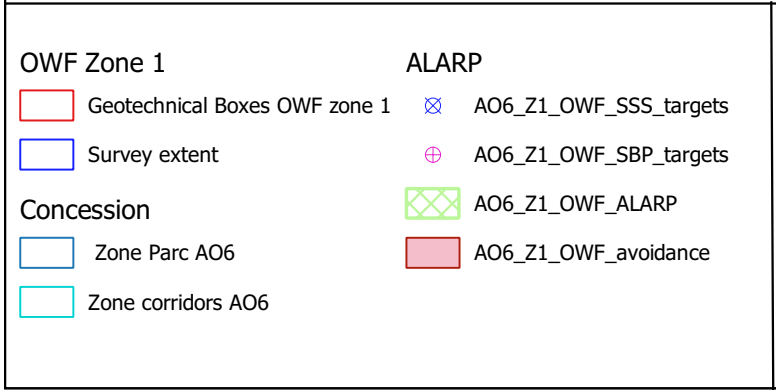
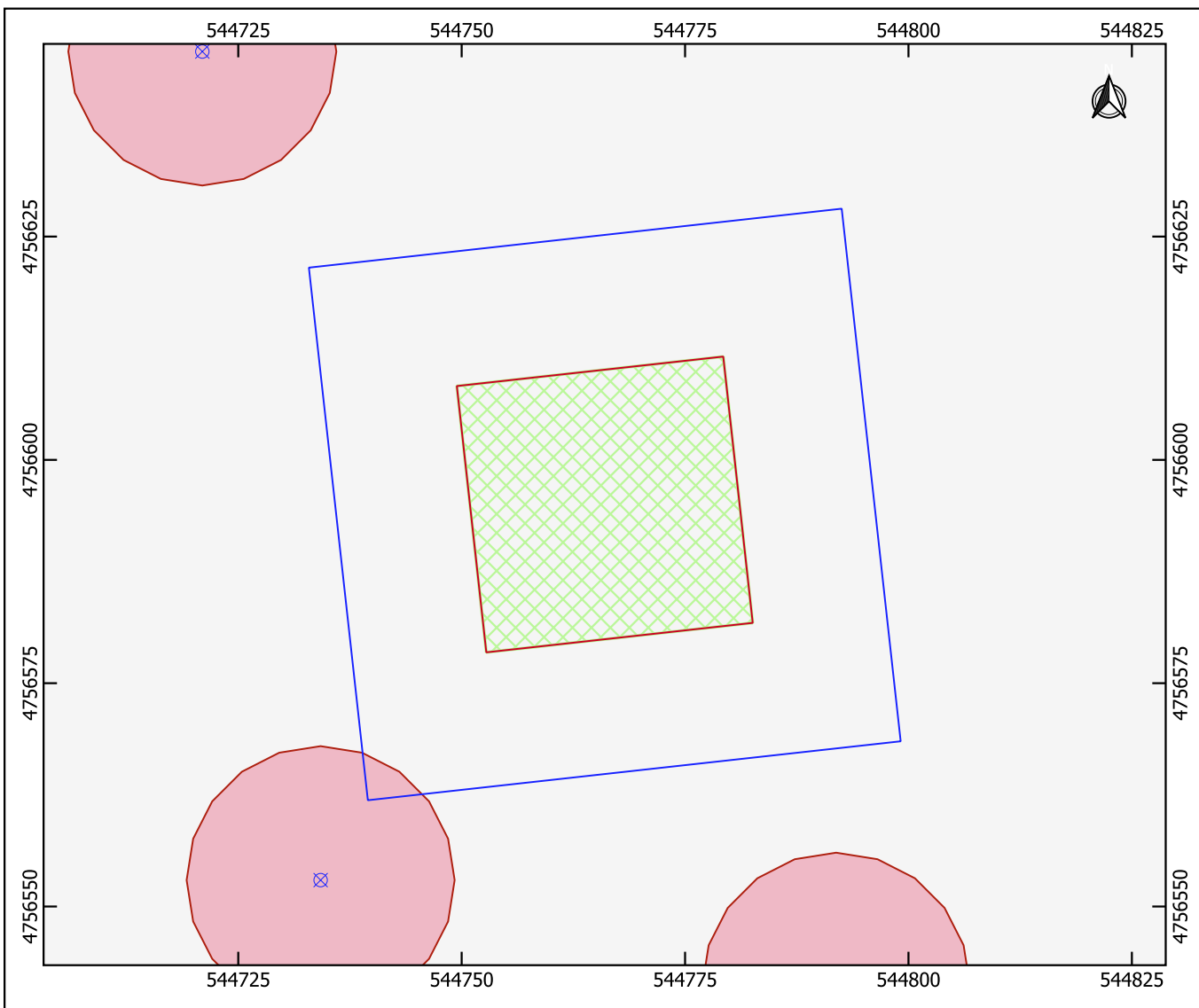


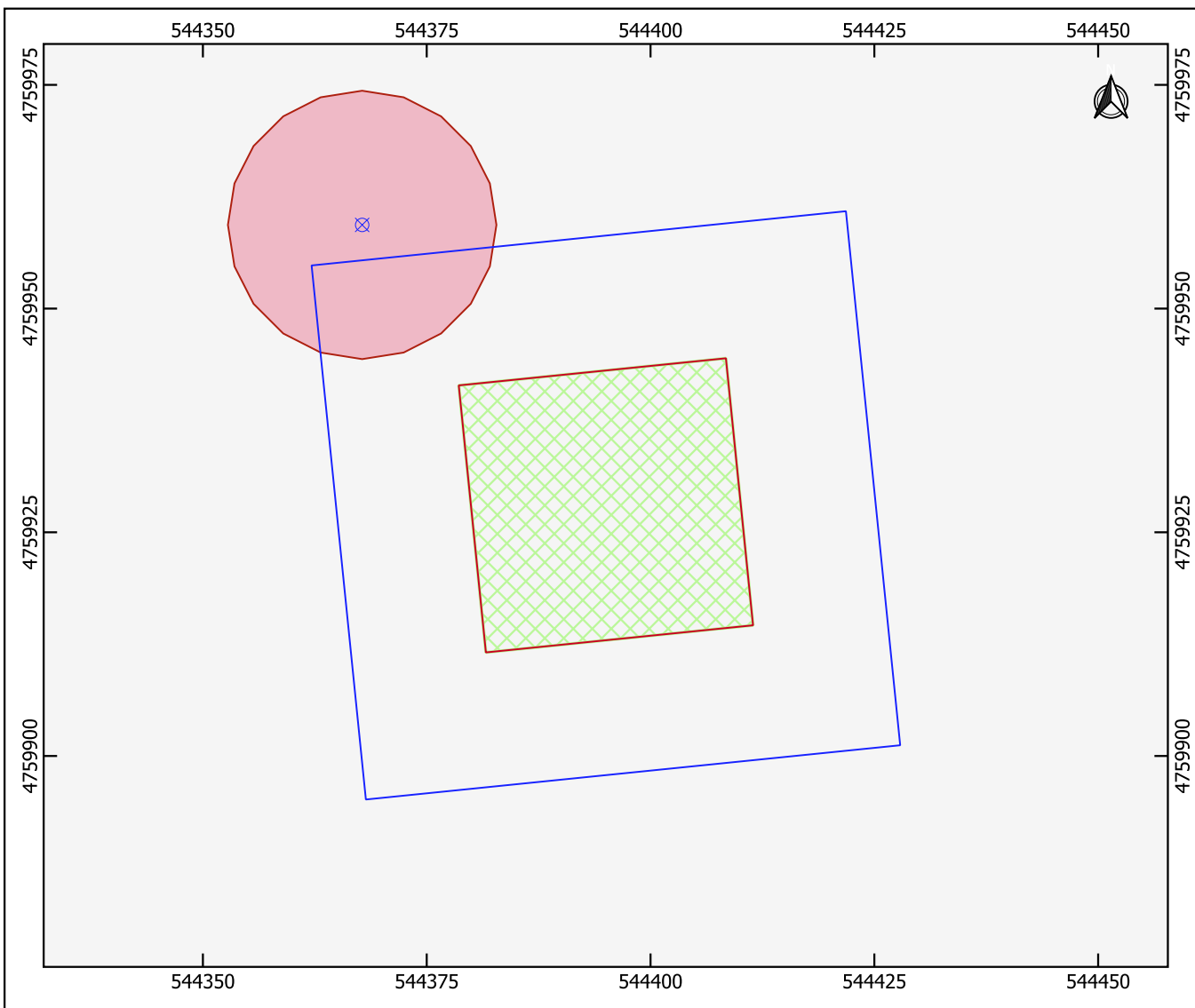
Alternate LOCATION

x=545119, y=4753310









OWF Zone 1

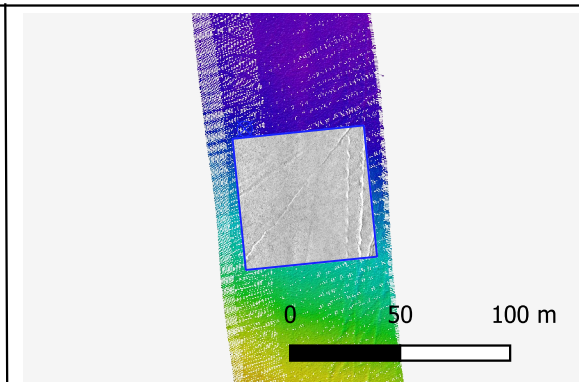
- Geotechnical Boxes OWF zone 1
- Survey extent

Concession

- Zone Parc AO6
- Zone corridors AO6

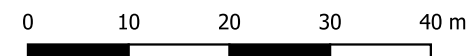
ALARP

- ⊗ AO6_Z1_OWf_SSS_targets
- ⊕ AO6_Z1_OWf_SBP_targets
- AO6_Z1_OWf_ALARP
- AO6_Z1_OWf_avoidance

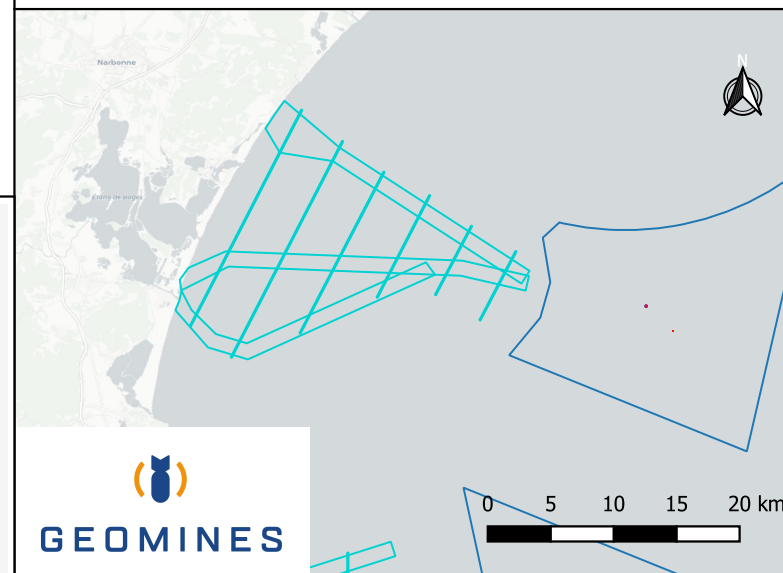


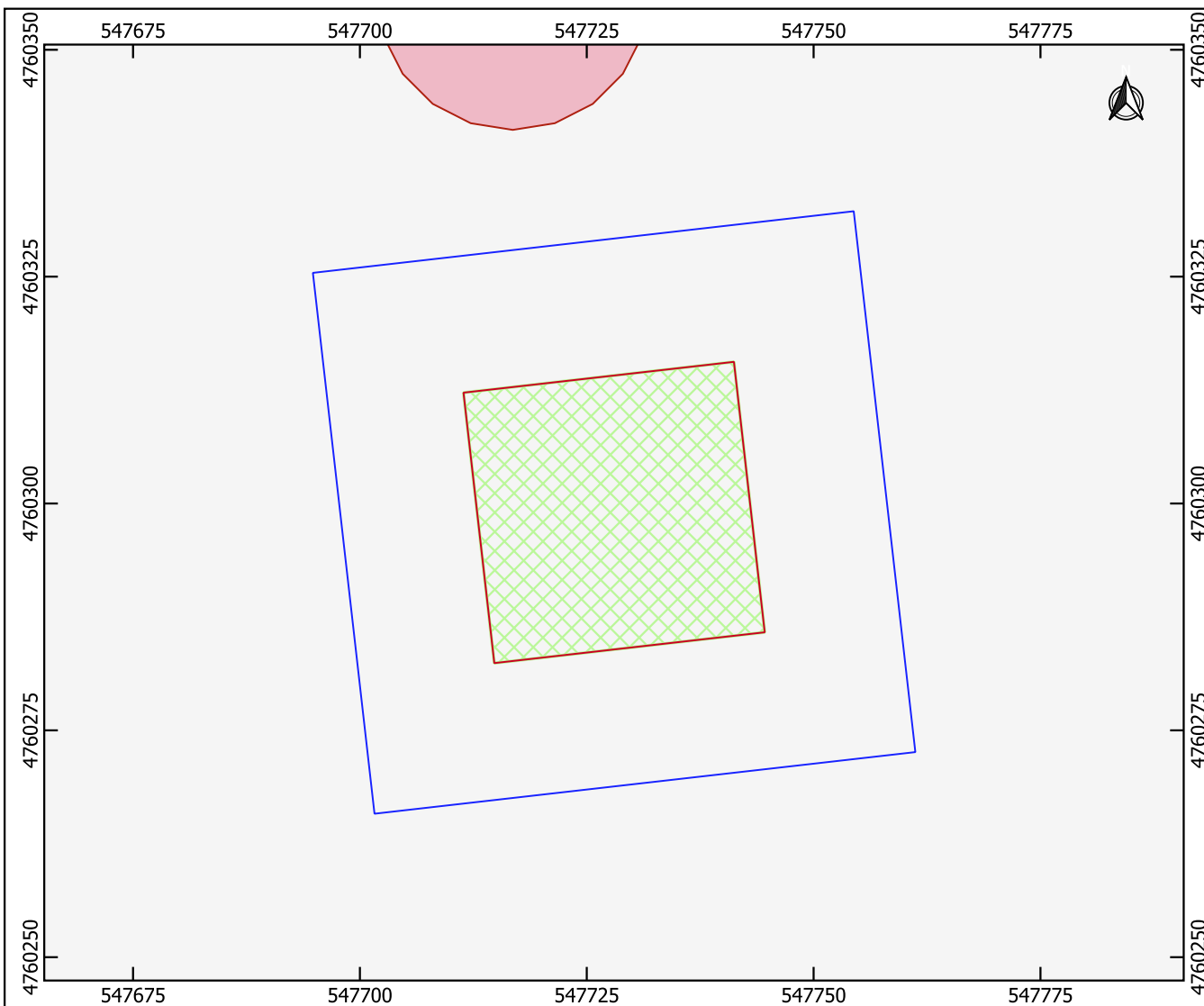
ANNEXE A: Z1_OWf_B18 ALARP CERTIFICATE GIS

Scale: 1/750 Date: 2023-03-18
Geodesy : WGS 84 - UTM 31N Version: V0



Original LOCATION
x=544395, y=4759928





OWF Zone 1

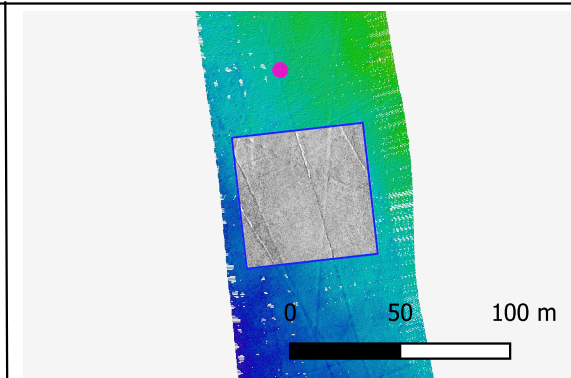
- Geotechnical Boxes OWF zone 1
- Survey extent

Concession

- Zone Parc AO6
- Zone corridors AO6

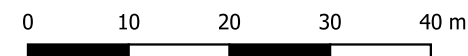
ALARP

- AO6_Z1_OWF_SSS_targets
- ⊕ AO6_Z1_OWF_SBP_targets
- AO6_Z1_OWF_ALARP
- AO6_Z1_OWF_avoidance

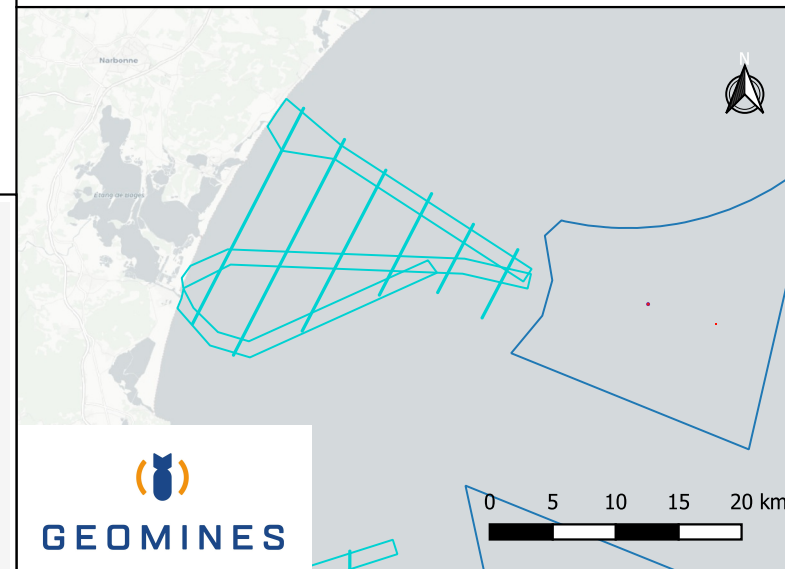


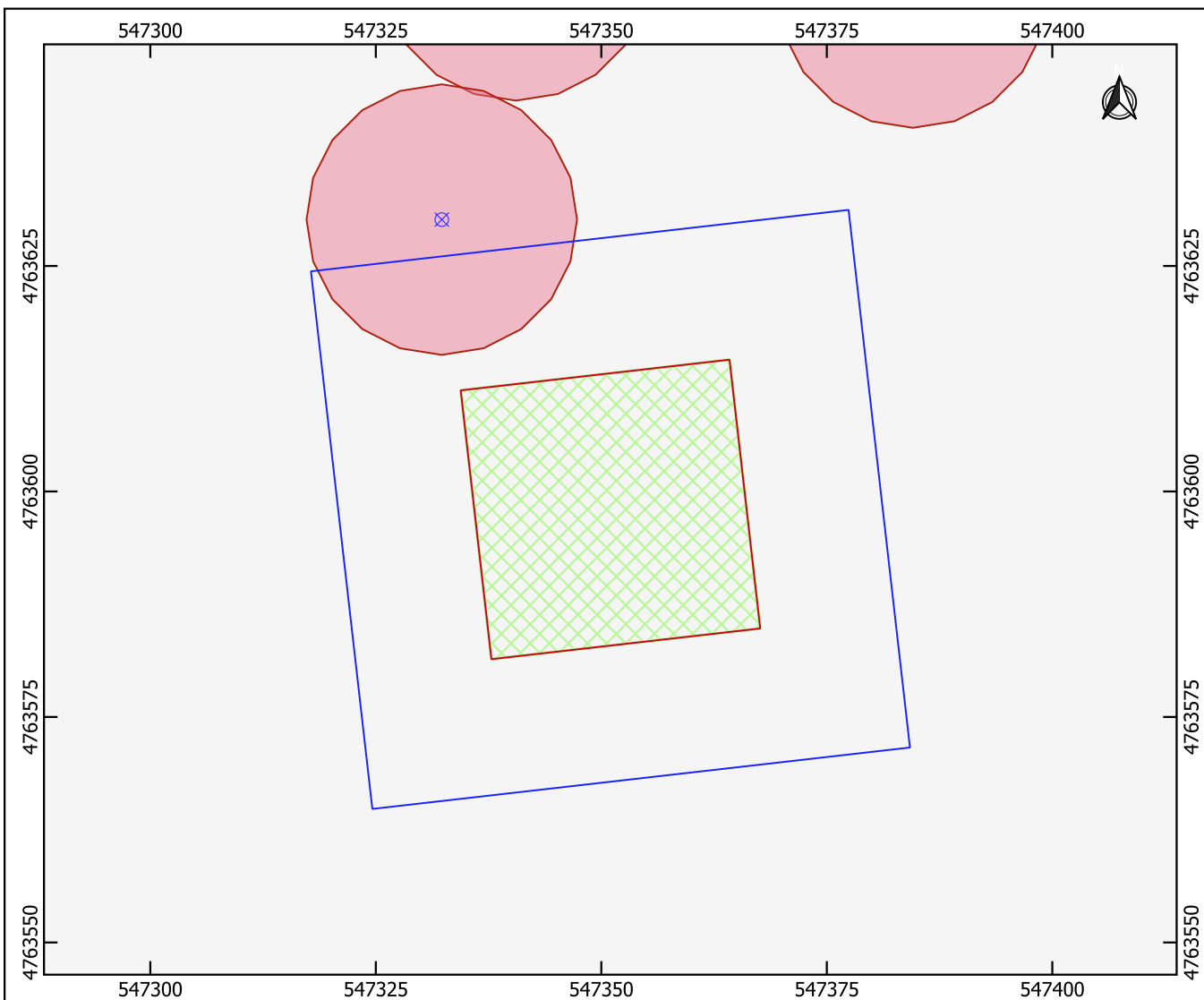
ANNEXE A: Z1_OWF_B19 ALARP CERTIFICATE GIS

Scale: 1/750 Date: 2023-03-18
Geodesy : WGS 84 - UTM 31N Version: V0



Original LOCATION
x=547728, y=4760299





OWF Zone 1

Geotechnical Boxes OWF zone 1

Survey extent

Concession

Zone Parc AO6

Zone corridors AO6

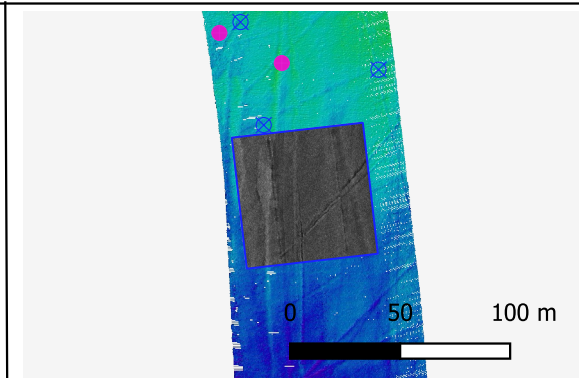
ALARP

AO6_Z1_OWF_SSS_targets

AO6_Z1_OWF_SBP_targets

AO6_Z1_OWF_ALARP

AO6_Z1_OWF_avoidance



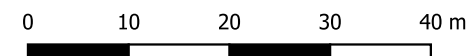
ANNEXE A: Z1_OWF_B20 ALARP CERTIFICATE GIS

Scale: 1/750

Date: 2023-03-18

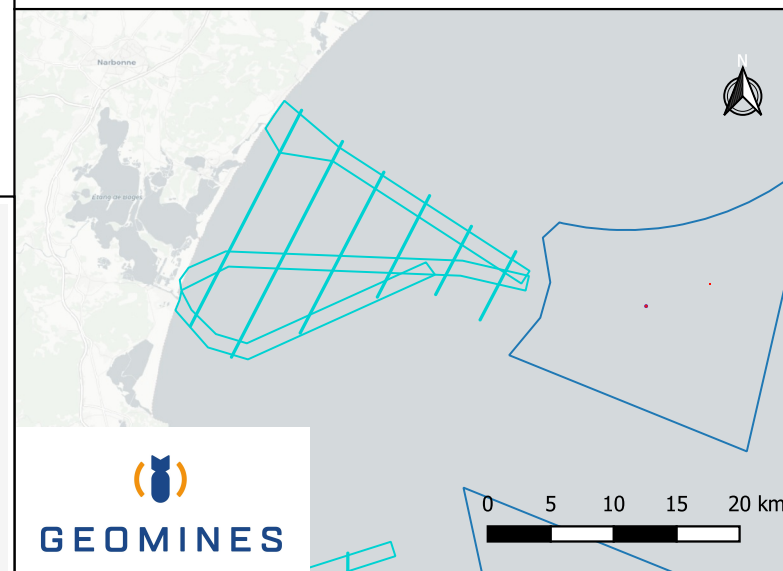
Geodesy : WGS 84 - UTM 31N

Version: V0



Alternate LOCATION

x=547351, y=4763598



APPENDIX II – TARGET LIST

SIDE SCAN SONAR TARGETS

#	Name	X	Y
1	AO6_Z1_OWF_0001	535677.232	4759373.311
2	AO6_Z1_OWF_0003	535669.539	4759505.671
3	AO6_Z1_OWF_0004	535672.453	4759512.807
4	AO6_Z1_OWF_0008	535620.972	4759795.656
5	AO6_Z1_OWF_0009	535701.44	4759670.1
6	AO6_Z1_OWF_0011	535584.575	4759814.843
7	AO6_Z1_OWF_0012	535679.089	4759437.199
8	AO6_Z1_OWF_0013	536010.033	4756477.714
9	AO6_Z1_OWF_0014	535987.089	4756343.997
10	AO6_Z1_OWF_0015	535993.001	4756367.727
11	AO6_Z1_OWF_0016	536003.295	4756209.4
12	AO6_Z1_OWF_0017	536048.379	4756242.997
13	AO6_Z1_OWF_0018	536012.633	4756221.045
14	AO6_Z1_OWF_0019	536051.616	4756206.821
15	AO6_Z1_OWF_0020	535999.593	4756264.344
16	AO6_Z1_OWF_0021	535997.699	4756299.249
17	AO6_Z1_OWF_0022	536040.725	4756288.249
18	AO6_Z1_OWF_0023	535980.942	4756306.189
19	AO6_Z1_OWF_0024	536025.004	4756097.291
20	AO6_Z1_OWF_0025	535997.641	4756211.748
21	AO6_Z1_OWF_0026	536013.227	4756139.629
22	AO6_Z1_OWF_0027	536075.51	4756165.613
23	AO6_Z1_OWF_0028	536017.73	4756397.444
24	AO6_Z1_OWF_0029	536029.081	4756313.031
25	AO6_Z1_OWF_0030	536048.203	4756282.782
26	AO6_Z1_OWF_0031	536038.322	4756269.584
27	AO6_Z1_OWF_0032	536034.276	4756308.399
28	AO6_Z1_OWF_0033	535999.228	4756253.721
29	AO6_Z1_OWF_0034	536008.385	4756242.695
30	AO6_Z1_OWF_0035	535989.58	4756249.155
31	AO6_Z1_OWF_0036	536002.246	4756282.374
32	AO6_Z1_OWF_0037	536004.829	4756111.339
33	AO6_Z1_OWF_0038	536005.925	4756095.998
34	AO6_Z1_OWF_0039	536001.904	4756234.686
35	AO6_Z1_OWF_0040	535999.786	4756250.605
36	AO6_Z1_OWF_0041	535992.544	4756231.068
37	AO6_Z1_OWF_0042	535982.586	4756220.741

#	Name	X	Y
38	AO6_Z1_OWF_0043	535997.256	4756198.309
39	AO6_Z1_OWF_0044	536002.12	4756223.602
40	AO6_Z1_OWF_0045	535992.302	4756218.736
41	AO6_Z1_OWF_0046	536011.873	4756205.071
42	AO6_Z1_OWF_0047	536013.111	4756293.449
43	AO6_Z1_OWF_0048	536027.013	4756138.104
44	AO6_Z1_OWF_0049	536027.596	4756140.35
45	AO6_Z1_OWF_0050	536025.554	4756116.093
46	AO6_Z1_OWF_0051	536003.254	4756328.541
47	AO6_Z1_OWF_0052	536032.847	4756103.254
48	AO6_Z1_OWF_0053	536008.345	4756079.041
49	AO6_Z1_OWF_0054	535999.267	4756701.769
50	AO6_Z1_OWF_0055	535981.398	4756269.962
51	AO6_Z1_OWF_0056	536011.208	4756227.49
52	AO6_Z1_OWF_0057	536035.414	4756223.872
53	AO6_Z1_OWF_0058	536030.797	4756111.346
54	AO6_Z1_OWF_0060	535976.007	4756276.695
55	AO6_Z1_OWF_0061	535980.562	4756113.778
56	AO6_Z1_OWF_0062	536036.167	4756160.39
57	AO6_Z1_OWF_0063	536020.579	4756320.374
58	AO6_Z1_OWF_0064	536007.109	4756293.78
59	AO6_Z1_OWF_0065	535959.405	4756278.465
60	AO6_Z1_OWF_0066	535958.819	4756309.376
61	AO6_Z1_OWF_0067	535959.745	4756325.169
62	AO6_Z1_OWF_0068	535969.404	4756228.921
63	AO6_Z1_OWF_0069	535959.722	4756233.402
64	AO6_Z1_OWF_0070	535963.236	4756217.61
65	AO6_Z1_OWF_0071	535962.335	4756190.883
66	AO6_Z1_OWF_0072	535973.015	4756304.092
67	AO6_Z1_OWF_0073	535954.136	4756280.142
68	AO6_Z1_OWF_0074	535963.172	4756221.334
69	AO6_Z1_OWF_0075	535979.325	4756249.235
70	AO6_Z1_OWF_0076	535977.647	4756144.45
71	AO6_Z1_OWF_0077	535969.073	4756000.031
72	AO6_Z1_OWF_0078	535972.031	4756016.361
73	AO6_Z1_OWF_0080	536002.475	4755933.399
74	AO6_Z1_OWF_0081	535976.531	4756000.622
75	AO6_Z1_OWF_0082	536029.298	4756126.895
76	AO6_Z1_OWF_0083	536025.958	4756307.966

#	Name	X	Y
77	AO6_Z1_OWF_0085	540280.551	4755455.505
78	AO6_Z1_OWF_0086	539989.718	4755148.157
79	AO6_Z1_OWF_0087	539988.382	4755149.397
80	AO6_Z1_OWF_0089	540196.017	4755365.267
81	AO6_Z1_OWF_0090	540250.682	4755687.507
82	AO6_Z1_OWF_0091	540199.352	4755454.932
83	AO6_Z1_OWF_0094	542066.302	4758690.6
84	AO6_Z1_OWF_0095	541918.527	4758331.042
85	AO6_Z1_OWF_0097	541826.956	4758295.991
86	AO6_Z1_OWF_0098	541823.345	4758283.171
87	AO6_Z1_OWF_0099	542097.826	4758539.488
88	AO6_Z1_OWF_0100	542049.195	4758483.925
89	AO6_Z1_OWF_0102	537822.338	4764637.936
90	AO6_Z1_OWF_0103	537976.316	4764610.925
91	AO6_Z1_OWF_0104	538029.065	4764678.742
92	AO6_Z1_OWF_0106	537649.618	4764544.464
93	AO6_Z1_OWF_0108	543916.872	4764998.013
94	AO6_Z1_OWF_0109	544390.039	4765326.519
95	AO6_Z1_OWF_0110	544207.313	4765244.498
96	AO6_Z1_OWF_0111	544236.173	4765272.784
97	AO6_Z1_OWF_0112	544642.25	4765472.25
98	AO6_Z1_OWF_0113	544536.867	4765448.794
99	AO6_Z1_OWF_0114	547942.948	4767611.646
100	AO6_Z1_OWF_0115	547939.202	4767620.511
101	AO6_Z1_OWF_0116	548206.492	4767784.785
102	AO6_Z1_OWF_0117	548206.02	4767785.308
103	AO6_Z1_OWF_0118	548202.293	4767785.046
104	AO6_Z1_OWF_0119	548207.033	4767785.025
105	AO6_Z1_OWF_0120	548382.297	4767847.485
106	AO6_Z1_OWF_0121	548401.52	4767919.317
107	AO6_Z1_OWF_0122	548425.494	4767943.578
108	AO6_Z1_OWF_0124	548779.605	4768135.917
109	AO6_Z1_OWF_0125	548369.686	4767859.981
110	AO6_Z1_OWF_0126	548173.271	4767664.48
111	AO6_Z1_OWF_0127	548452.638	4767992.37
112	AO6_Z1_OWF_0128	553190.661	4771257.304
113	AO6_Z1_OWF_0129	553200.368	4771134.917
114	AO6_Z1_OWF_0130	553201.082	4771098.153
115	AO6_Z1_OWF_0131	553286.088	4770676.194

#	Name	X	Y
116	AO6_Z1_OWF_0132	553291.326	4770684.628
117	AO6_Z1_OWF_0133	553302.176	4771362.623
118	AO6_Z1_OWF_0134	553310.16	4771360.765
119	AO6_Z1_OWF_0137	553656.495	4767905.71
120	AO6_Z1_OWF_0138	553580.66	4767625.795
121	AO6_Z1_OWF_0139	553598.397	4767466.623
122	AO6_Z1_OWF_0141	553675.214	4768013.558
123	AO6_Z1_OWF_0142	553585.236	4767589.804
124	AO6_Z1_OWF_0145	552625.191	4762987.345
125	AO6_Z1_OWF_0147	552793.682	4763563.242
126	AO6_Z1_OWF_0150	551994.835	4759529.752
127	AO6_Z1_OWF_0151	551990.66	4759560.992
128	AO6_Z1_OWF_0152	551985.271	4759640.021
129	AO6_Z1_OWF_0154	550434.146	4756895.298
130	AO6_Z1_OWF_0155	550097.705	4756469.167
131	AO6_Z1_OWF_0156	550226.316	4756695.109
132	AO6_Z1_OWF_0157	550358.392	4756838.868
133	AO6_Z1_OWF_0158	550333.044	4756822.311
134	AO6_Z1_OWF_0159	550127.119	4756309.614
135	AO6_Z1_OWF_0161	549902.528	4751380.785
136	AO6_Z1_OWF_0162	548319.809	4753928.261
137	AO6_Z1_OWF_0163	548466.16	4753615.638
138	AO6_Z1_OWF_0165	547012.449	4755870.056
139	AO6_Z1_OWF_0166	546950.022	4755981.857
140	AO6_Z1_OWF_0167	546843.25	4756222.106
141	AO6_Z1_OWF_0168	546690.866	4756380.065
142	AO6_Z1_OWF_0170	546545.391	4756696.518
143	AO6_Z1_OWF_0172	546782.95	4756320.678
144	AO6_Z1_OWF_0173	546745.355	4756288.478
145	AO6_Z1_OWF_0175	546652.979	4756381.615
146	AO6_Z1_OWF_0177	546780.954	4756191.248
147	AO6_Z1_OWF_0178	546876.534	4756047.993
148	AO6_Z1_OWF_0180	546866.241	4756143.156
149	AO6_Z1_OWF_0181	546707.392	4756400.04
150	AO6_Z1_OWF_0182	546652.983	4756472.329
151	AO6_Z1_OWF_0186	548183.171	4754086.589
152	AO6_Z1_OWF_0187	548184.37	4754086.59
153	AO6_Z1_OWF_0188	548183.847	4754086.419
154	AO6_Z1_OWF_0189	548201.775	4754021.053

#	Name	X	Y
155	AO6_Z1_OWF_0190	548202.903	4754021.83
156	AO6_Z1_OWF_0191	548393.582	4753753.355
157	AO6_Z1_OWF_0192	548415.005	4753661.019
158	AO6_Z1_OWF_0193	548497.142	4753579.743
159	AO6_Z1_OWF_0194	548543.568	4753518.469
160	AO6_Z1_OWF_0199	549925.363	4751325.115
161	AO6_Z1_OWF_0200	550027.661	4751186.629
162	AO6_Z1_OWF_0201	550080.114	4751154.712
163	AO6_Z1_OWF_0202	550263.974	4750801.948
164	AO6_Z1_OWF_0203	545167.734	4752816.068
165	AO6_Z1_OWF_0204	545166.316	4752817.912
166	AO6_Z1_OWF_0205	545168.506	4752812.681
167	AO6_Z1_OWF_0206	545164.338	4752814.619
168	AO6_Z1_OWF_0208	545217.969	4752837.432
169	AO6_Z1_OWF_0209	545215.09	4752844.462
170	AO6_Z1_OWF_0210	545199.615	4752915.43
171	AO6_Z1_OWF_0212	545161.367	4752990.878
172	AO6_Z1_OWF_0213	545152.65	4753091.448
173	AO6_Z1_OWF_0215	545139.283	4753221.326
174	AO6_Z1_OWF_0217	544804.388	4756121.59
175	AO6_Z1_OWF_0218	544809.827	4756133.053
176	AO6_Z1_OWF_0220	544852.419	4756203.511
177	AO6_Z1_OWF_0221	544845.952	4756203.71
178	AO6_Z1_OWF_0223	544846.528	4756259.297
179	AO6_Z1_OWF_0224	544830.352	4756286.463
180	AO6_Z1_OWF_0225	544775.357	4756424.094
181	AO6_Z1_OWF_0226	544823.18	4756465.595
182	AO6_Z1_OWF_0227	544786.01	4756468.299
183	AO6_Z1_OWF_0229	544738.416	4756772.311
184	AO6_Z1_OWF_0231	544792.958	4756752.147
185	AO6_Z1_OWF_0232	544792.049	4756756.264
186	AO6_Z1_OWF_0233	544792.444	4756750.058
187	AO6_Z1_OWF_0234	544738.023	4756797.105
188	AO6_Z1_OWF_0236	544488.193	4759411.964
189	AO6_Z1_OWF_0240	544483.432	4759453.246
190	AO6_Z1_OWF_0241	544432.582	4759456.763
191	AO6_Z1_OWF_0242	544480.781	4759465.214
192	AO6_Z1_OWF_0243	544427.117	4759557.666
193	AO6_Z1_OWF_0245	544452.463	4759652.056

#	Name	X	Y
194	AO6_Z1_OWF_0277	544325.926	4760356.658
195	AO6_Z1_OWF_0280	544332.062	4760266.551
196	AO6_Z1_OWF_0281	544340.512	4760241.167
197	AO6_Z1_OWF_0284	544373.563	4760195.767
198	AO6_Z1_OWF_0285	544379.143	4760192.861
199	AO6_Z1_OWF_0286	544352.053	4760134.438
200	AO6_Z1_OWF_0287	544398.74	4760120.889
201	AO6_Z1_OWF_0288	544355.304	4760114.924
202	AO6_Z1_OWF_0290	544402.902	4760106.667
203	AO6_Z1_OWF_0291	544367.771	4759959.345
204	AO6_Z1_OWF_0294	544408.322	4759516.319
205	AO6_Z1_OWF_0296	544691.495	4757063.495
206	AO6_Z1_OWF_0298	544696.41	4757031.161
207	AO6_Z1_OWF_0299	544743.193	4757037.828
208	AO6_Z1_OWF_0302	544755.608	4756913.589
209	AO6_Z1_OWF_0305	544768.799	4756785.897
210	AO6_Z1_OWF_0306	544726.64	4756741.96
211	AO6_Z1_OWF_0308	544791.895	4756541.01
212	AO6_Z1_OWF_0310	544826.557	4756287.076
213	AO6_Z1_OWF_0311	545054.936	4753750.106
214	AO6_Z1_OWF_0313	545050.975	4753706.083
215	AO6_Z1_OWF_0314	545103.391	4753616.688
216	AO6_Z1_OWF_0315	545059.824	4753621.083
217	AO6_Z1_OWF_0317	545082.811	4753454.666
218	AO6_Z1_OWF_0319	545144.436	4752802.136
219	AO6_Z1_OWF_0320	545142.785	4752816.131
220	AO6_Z1_OWF_0322	545135.019	4752888.305
221	AO6_Z1_OWF_0323	545179.764	4752928.88
222	AO6_Z1_OWF_0325	545114.78	4753093.17
223	AO6_Z1_OWF_0327	545104.028	4753175.272
224	AO6_Z1_OWF_0328	545140.688	4753280.287
225	AO6_Z1_OWF_0329	545112.645	4753499.858
226	AO6_Z1_OWF_0330	545084.687	4753497.874
227	AO6_Z1_OWF_0331	545120.886	4753505.928
228	AO6_Z1_OWF_0334	545062.362	4753586.545
229	AO6_Z1_OWF_0336	544787.769	4756381.893
230	AO6_Z1_OWF_0339	544746.982	4756416.839
231	AO6_Z1_OWF_0340	544737.814	4756410.466
232	AO6_Z1_OWF_0343	544746.731	4756440.952

#	Name	X	Y
233	AO6_Z1_OWF_0344	544739.699	4756453.509
234	AO6_Z1_OWF_0346	544768.546	4756517.075
235	AO6_Z1_OWF_0348	544738.69	4756516.618
236	AO6_Z1_OWF_0351	544734.197	4756552.938
237	AO6_Z1_OWF_0352	544720.955	4756645.714
238	AO6_Z1_OWF_0355	544739.34	4756930.031
239	AO6_Z1_OWF_0356	544680.819	4756954.418
240	AO6_Z1_OWF_0359	544401.583	4759473.181
241	AO6_Z1_OWF_0360	544450.412	4759538.103
242	AO6_Z1_OWF_0361	544392.364	4759542.226
243	AO6_Z1_OWF_0365	547291.445	4764275.688
244	AO6_Z1_OWF_0366	547293.217	4764277.474
245	AO6_Z1_OWF_0367	547295.342	4764166.154
246	AO6_Z1_OWF_0368	547295.674	4764167.527
247	AO6_Z1_OWF_0369	547334.353	4763406.006
248	AO6_Z1_OWF_0370	547629.502	4760900.012
249	AO6_Z1_OWF_0371	547644.213	4760683.131
250	AO6_Z1_OWF_0372	547680.063	4760430.014
251	AO6_Z1_OWF_0374	547792.116	4759727.874
252	AO6_Z1_OWF_0375	547824.059	4759774.898
253	AO6_Z1_OWF_0376	547801.167	4759880.299
254	AO6_Z1_OWF_0377	547794.181	4760009.361
255	AO6_Z1_OWF_0378	547421.414	4762918.785
256	AO6_Z1_OWF_0379	547421.576	4762917.441
257	AO6_Z1_OWF_0380	547415.532	4762949.815
258	AO6_Z1_OWF_0381	547384.531	4763655.315
259	AO6_Z1_OWF_0382	547363.135	4763743.484
260	AO6_Z1_OWF_0383	547290.848	4764005.812
261	AO6_Z1_OWF_0384	547287.352	4764286.922
262	AO6_Z1_OWF_0385	547265.61	4764204.447
263	AO6_Z1_OWF_0386	547314.294	4764116.216
264	AO6_Z1_OWF_0387	547276.105	4764068.76
265	AO6_Z1_OWF_0388	547321.751	4763676.959
266	AO6_Z1_OWF_0389	547384.739	4763435.373
267	AO6_Z1_OWF_0390	547350.661	4763392.871
268	AO6_Z1_OWF_0392	547693.32	4760808.09
269	AO6_Z1_OWF_0393	547696.747	4760763.585
270	AO6_Z1_OWF_0394	547719.961	4760592.817
271	AO6_Z1_OWF_0395	547737.861	4760415.037

#	Name	X	Y
272	AO6_Z1_OWF_0396	547764.766	4760170.992
273	AO6_Z1_OWF_0398	547789.221	4759973.996
274	AO6_Z1_OWF_0399	545044.338	4753963.991
275	AO6_Z1_OWF_0400	545041.31	4753959.666
276	AO6_Z1_OWF_0401	545098.534	4753953.875
277	AO6_Z1_OWF_0402	545132.018	4753634.821
278	AO6_Z1_OWF_0403	545180.231	4753243.535
279	AO6_Z1_OWF_0404	545198.78	4752998.176
280	AO6_Z1_OWF_0405	548763.632	4753151.865
281	AO6_Z1_OWF_0406	548546.386	4753461.669
282	AO6_Z1_OWF_0407	548498.007	4753622.069
283	AO6_Z1_OWF_0408	548455.791	4753694.895
284	AO6_Z1_OWF_0409	548430.875	4753742.687
285	AO6_Z1_OWF_0410	552658.335	4763337.592
286	AO6_Z1_OWF_0411	547332.297	4763630.136

SUB-BOTTOM PROFILER TARGETS

#	NAME	X	Y
1	AO6_Z1_OWF_SBP1	535652.35	4759529.09
2	AO6_Z1_OWF_SBP2	536025.98	4756410.08
3	AO6_Z1_OWF_SBP3	540165.92	4755381.2
4	AO6_Z1_OWF_SBP4	542106.06	4758695.29
5	AO6_Z1_OWF_SBP5	542129.74	4758678.85
6	AO6_Z1_OWF_SBP6	541993.49	4758463.05
7	AO6_Z1_OWF_SBP7	537599.89	4764524.21
8	AO6_Z1_OWF_SBP8	537291.49	4764545.88
9	AO6_Z1_OWF_SBP9	538049.55	4764640.69
10	AO6_Z1_OWF_SBP10	537435.41	4764535.24
11	AO6_Z1_OWF_SBP11	544417.68	4765271.22
12	AO6_Z1_OWF_SBP12	548571.75	4767957.69
13	AO6_Z1_OWF_SBP13	547859.95	4767494.63
14	AO6_Z1_OWF_SBP14	553288.98	4770753.43
15	AO6_Z1_OWF_SBP15	553607.68	4767799.88
16	AO6_Z1_OWF_SBP16	553610.63	4767770.68
17	AO6_Z1_OWF_SBP17	552905.04	4764124.05
18	AO6_Z1_OWF_SBP18	552648.17	4763060.89
19	AO6_Z1_OWF_SBP19	552725.6	4763423.38
20	AO6_Z1_OWF_SBP20	551966	4759593.88

#	NAME	X	Y
21	AO6_Z1_OWF_SBP21	551623.4	4759045.77
22	AO6_Z1_OWF_SBP22	551668.38	4759078.04
23	AO6_Z1_OWF_SBP23	549841.55	4756025.74
24	AO6_Z1_OWF_SBP24	549939.8	4751335.33
25	AO6_Z1_OWF_SBP25	550328.16	4750727.62
26	AO6_Z1_OWF_SBP26	550343.54	4750703.97
27	AO6_Z1_OWF_SBP27	549952.39	4751341.81
28	AO6_Z1_OWF_SBP28	550298	4750841.56
29	AO6_Z1_OWF_SBP29	548698	4753234.88
30	AO6_Z1_OWF_SBP30	548280.74	4753874.22
31	AO6_Z1_OWF_SBP31	548583.52	4753442.46
32	AO6_Z1_OWF_SBP32	548681.4	4753297.34
33	AO6_Z1_OWF_SBP33	548691.12	4753282.82
34	AO6_Z1_OWF_SBP34	548550.81	4753518.93
35	AO6_Z1_OWF_SBP35	548275.17	4753944.22
36	AO6_Z1_OWF_SBP36	546553.09	4756575.33
37	AO6_Z1_OWF_SBP37	546978.23	4755924.55
38	AO6_Z1_OWF_SBP38	546861.74	4756104.56
39	AO6_Z1_OWF_SBP39	546800.59	4756200.32
40	AO6_Z1_OWF_SBP40	546653.33	4756409.26
41	AO6_Z1_OWF_SBP41	546955.87	4755921.19
42	AO6_Z1_OWF_SBP42	546955.87	4755921.19
43	AO6_Z1_OWF_SBP43	546868.04	4756064.72
44	AO6_Z1_OWF_SBP44	547083.36	4755720.15
45	AO6_Z1_OWF_SBP45	547116.16	4755668.7
46	AO6_Z1_OWF_SBP46	545132.44	4753090.24
47	AO6_Z1_OWF_SBP47	545131.44	4753109.32
48	AO6_Z1_OWF_SBP48	545051.92	4753820.67
49	AO6_Z1_OWF_SBP49	545103.44	4753387.69
50	AO6_Z1_OWF_SBP50	545094.86	4753430.64
51	AO6_Z1_OWF_SBP51	545051.92	4753820.67
52	AO6_Z1_OWF_SBP52	545149.03	4753033.69
53	AO6_Z1_OWF_SBP53	545073.71	4753618.65
54	AO6_Z1_OWF_SBP54	545164.43	4752803.6
55	AO6_Z1_OWF_SBP55	545150.82	4753325.27
56	AO6_Z1_OWF_SBP56	545142.81	4753395.29
57	AO6_Z1_OWF_SBP57	544660.7	4757232.52
58	AO6_Z1_OWF_SBP58	544681.88	4757042.88
59	AO6_Z1_OWF_SBP59	544711.78	4756775.87

#	NAME	X	Y
60	AO6_Z1_OWF_SBP60	544759.9	4756352.42
61	AO6_Z1_OWF_SBP61	544766.2	4756245.69
62	AO6_Z1_OWF_SBP62	544770.25	4756367.19
63	AO6_Z1_OWF_SBP63	544806.3	4756037.95
64	AO6_Z1_OWF_SBP64	544757.49	4756491.57
65	AO6_Z1_OWF_SBP65	544780.19	4756436.42
66	AO6_Z1_OWF_SBP66	544722.57	4756981.03
67	AO6_Z1_OWF_SBP67	544381.86	4759822.4
68	AO6_Z1_OWF_SBP68	544395.18	4759828.56
69	AO6_Z1_OWF_SBP69	544404.37	4759714.35
70	AO6_Z1_OWF_SBP70	544364.89	4760131.15
71	AO6_Z1_OWF_SBP71	544310.61	4760322.88
72	AO6_Z1_OWF_SBP72	544318.21	4760246.53
73	AO6_Z1_OWF_SBP73	544365.36	4759785.96
74	AO6_Z1_OWF_SBP74	544357.23	4760066.41
75	AO6_Z1_OWF_SBP75	547737.27	4760049.66
76	AO6_Z1_OWF_SBP76	547716.83	4760356.17
77	AO6_Z1_OWF_SBP77	547670.42	4760771.36
78	AO6_Z1_OWF_SBP78	547676.45	4760721.92
79	AO6_Z1_OWF_SBP79	547770.24	4759883.95
80	AO6_Z1_OWF_SBP80	547657.25	4760596.56
81	AO6_Z1_OWF_SBP81	547662.03	4760563.48
82	AO6_Z1_OWF_SBP82	547667.6	4760522.26
83	AO6_Z1_OWF_SBP83	547737.1	4759910.63
84	AO6_Z1_OWF_SBP84	547663.66	4760551.92
85	AO6_Z1_OWF_SBP85	547272.38	4764096.19
86	AO6_Z1_OWF_SBP86	547372.32	4763227.34
87	AO6_Z1_OWF_SBP87	547340.53	4763658.33
88	AO6_Z1_OWF_SBP88	547283.85	4763914.84
89	AO6_Z1_OWF_SBP89	547297.18	4763823.74
90	AO6_Z1_OWF_SBP90	547309.68	4763696.39
91	AO6_Z1_OWF_SBP91	547312.13	4763672.03
92	AO6_Z1_OWF_SBP92	547274.89	4763976.79