

# SANDPIPER PROJECT

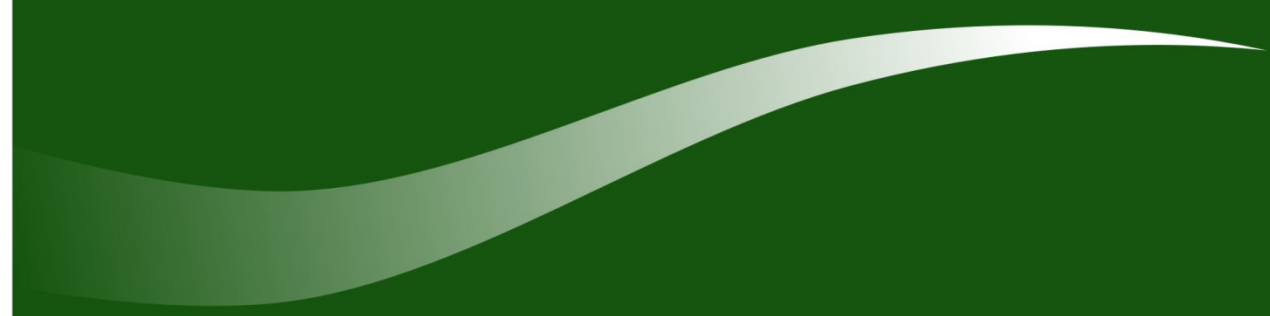
Verification Programme Report:  
Mining Licence Area No. 170

## SECTION D : APPENDICES

# APPENDIX 3

# Geophysics

- 3.1: Geophysical Processing Procedures
- 3.2: Geophysical Habitat Mapping



# APPENDIX 3 – GEOPHYSICS

## 3.1 Geophysical Processing Procedures

### FLEDERMAUS AND GEOCODER TOOLKIT PROCESSING PROCEDURES FOR HABITAT MAPPING FOR NMP VERIFICATION PROGRAMME

#### AREA 1, SANDPIPER PHOSPHATE PROJECT

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## 1 BACKGROUND

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MDC was commissioned by Namibian Marine Phosphate (NMP) on 06 August 2014 to post-process Kongsberg EM710 Multi Beam Echo Sounder (MBES) Bathymetry, EM710 Snippets and EdgeTech Side Scan Sonar Data which were acquired by a third-party. Data supplied to MDC were original raw Kongsberg (\*.all) files and raw \*.xtf EdgeTech files.

## 2 PROCESSING SOFTWARE USED

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Fledermaus V7.4.0d, 64 bit Edition. Build17 May 2014  
QINSy V8.10 Build 2014.03.06.1

## 3 EM710 BATHY PROCESSING PROCEDURE

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- 1) The Kongsberg \*.all files were imported into Fledermaus DMagic and re-projected to WGS84, UTM33S.
- 2) SANHO 10min predicted tides were applied (co-tidal solution using linear interpolation from Lüderitz and Walvis Bay tide stations. All soundings reduced to MSL.
- 3) A 1m Combined Uncertainty and Bathymetry Estimator (CUBE) surface was built in DMagic to IHO Order-1 (S44).
- 4) Blatant “fliers” (noise) were flagged as deleted in Fledermaus 3D Editor and the 1m CUBE updated.
- 5) An automated filter was applied 1m above and below the CUBE surface and all soundings outside 1m from the CUBE surface were flagged as rejected.
- 6) The final 1m CUBE surface was checked for sounding density and standard deviated and exported to ASCII (E,N,Z) for DTM creation and contouring.
- 7) The ASCII (E,N,Z) file was imported into QINSy Sounding Grid Utility for contouring (DXF) and Geotiff/KML Raster file creation.

A final 5mx5m bathy DTM grid was produced from the processed bathymetry and color-shaded by water depth.

## 4 DIGITAL DATA DELIVERABLES

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### 4.1 BACKSCATTER MOSAICS

- NMP\_Edgetech\_SSS\_Mosaic\_30cm\_Copper.tiff
- NMP\_Edgetech\_SSS\_Mosaic\_30cm\_Grey.tiff
- NMP\_Edgetech\_SSS\_Mosaic\_30cm\_Grey\_crop.tif
- NMP\_EM710\_Snippets\_Mosaic\_50cm\_Copper.tiff
- NMP\_EM710\_Snippets\_Mosaic\_50cm\_Grey.tiff
- NMP\_EM710\_Snippets\_Mosaic\_50cm\_Grey\_crop.tif

## 4.2 EM710 MULTIBEAM BATHY DATA

- NMP\_5m\_Bathy\_CUBE\_edit\_Area1.xyz
- DTM Geotiff -190 to -225m Delivery SG 5x5m.tif
- DTM Geotiff -190 to -225m Delivery SG 5x5m.tfw
- DTM Geotiff -190 to -225m Delivery SG 5x5m.kml
- Contours 1m.dxf
- Colour Bar -190 to -225m.jpg
- Bathymetry\_20140807100844.dxf