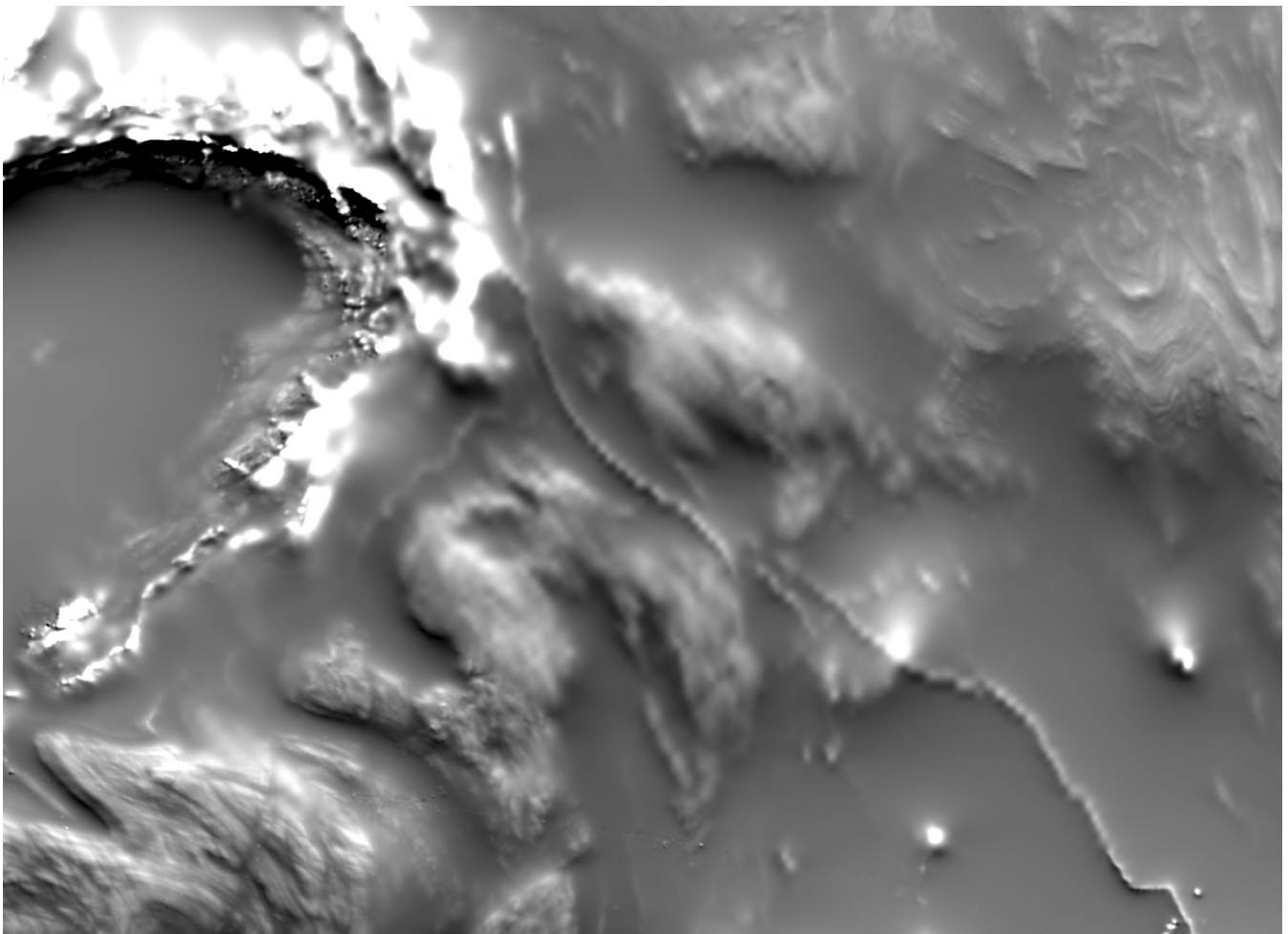


## Compilation of geophysical data in the broader Pine Creek region, Northern Territory



**Digital Information Package 046 (DIP 046)**

March 2026

DEPARTMENT OF MINING AND ENERGY  
MINISTER: Hon. Gerard Maley, MLA  
CHIEF EXECUTIVE OFFICER: Alister Trier

NORTHERN TERRITORY GEOLOGICAL SURVEY  
SENIOR EXECUTIVE DIRECTOR: Ian Scrimgeour

BIBLIOGRAPHIC REFERENCE: Compilation of geophysical data in the broader Pine Creek region, Northern Territory.  
*Northern Territory Geological Survey, Digital Information Package 046.*

(Digital Information Package / Northern Territory Geological Survey ISSN 1445-5358)

Version: March 2026

DATA FORMATS: MS Excel, ArcGIS

Keywords: Airborne magnetic data, airborne radiometric data, magnetic grids, radiometric grids, ground gravity data, ground gravity grids, induced polarisation data, airborne electromagnetics, geophysical data, Pine Creek, Northern Territory, Australia.

Graphics and layout: KJ Johnston

#### **Northern Territory Geological Survey**

3rd floor Paspalis Centrepoint Building  
Smith Street Mall, Darwin  
GPO Box 4550  
Darwin NT 0801, Australia

Arid Zone Research Institute  
South Stuart Highway, Alice Springs  
PO Box 8760  
Alice Springs NT 0871, Australia

For further information contact:

Minerals and Energy InfoCentre

Phone +61 8 8999 6443

Website: <https://dme.nt.gov.au>

<https://resourcingtheterritory.nt.gov.au>

Email: [geoscience.info@nt.gov.au](mailto:geoscience.info@nt.gov.au)

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## TABLE OF CONTENTS

<b>Release notes</b> .....	1
<b>Digital data package contents</b> .....	2
<b>GIS</b> .....	2
<b>Gravity</b> .....	2
<b>Induced Polarisation</b> .....	3
<b>Magnetics and radiometrics</b> .....	3
Airborne electromagnetics.....	3
<b>References</b> .....	3

### **NTGS-DIP046-Digital-Data (folder)**

- NTGS-DIP046-DataDictionary.xlsx
- NTGS-DIP046-GIS-Index (folder)
- NTGS-DIP046-Gravity.zip (folder)
- NTGS-DIP046-IP (folder)
- NTGS-DIP046-MagImages.zip (folder)
- NTGS-DIP046-MagMerge.zip (folder)
- NTGS-DIP046-MagRad.zip (folder)
- NTGS-DIP046-RadImages.zip (folder)
- NTGS-DIP046-RadMerge.zip (folder)

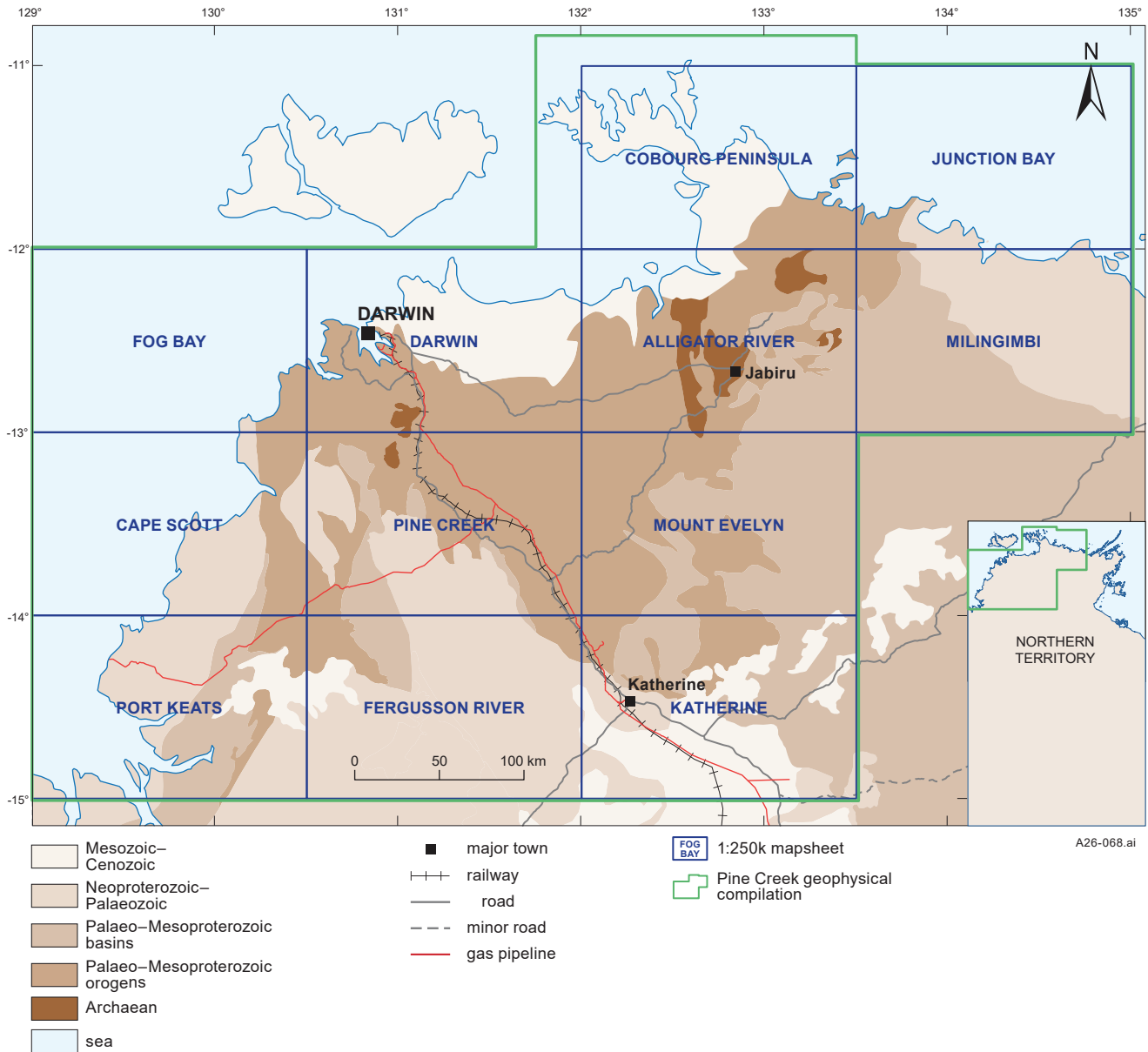
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## RELEASE NOTES

The Northern Territory Geological Survey (NTGS) has performed an audit of geophysical data available over the Pine Creek Orogen, defined by **Figure 1**. This area encompasses the northern section of the NT.

This Digital Information Package (DIP) has been developed to assist industry in locating and utilising the NTGS archive of geophysical data across the region. This DIP contains gravity, magnetic, radiometric, and induced polarisation (IP) survey data from open file company reports and government acquired geophysical surveys. Supplementary airborne electromagnetic (AEM) data is also referenced from external government acquired geophysical surveys.

The supplied GIS files specify geophysical survey extents and include tabulated survey information for the ground gravity, airborne magnetic (+/- radiometric), gradient array IP, dipole-dipole IP and pole-dipole IP surveys, and AEM. Users of this DIP can acquire digital copies of individual surveys via the NTGS Geoscience Exploration and Mining Information System (GEMIS). The AEM data can be accessed from Geoscience Australia.



**Figure 1.** The broader Pine Creek region (green), encompassing the following 1:250 000 mapsheets: Alligator River, Cape Scott, Cobourg Peninsula, Darwin, Fergusson River, Fog Bay, Junction Bay, Katherine, Milingimbi, Mount Evelyn, Pine Creek, Port Keats. NTGS-defined geological regions are shown in brown shades.

Products provided in this data package are in the GDA94 MGA Zone 52 or 53 (EPSG:28352 or EPSG:28353, respectively). Please refer any data quality, integrity or accessibility issues to:

Department of <b>Mining and Energy</b> Northern Territory Geological Survey	
GPO Box 4550 Darwin NT 0801	
Phone:	+61 8 8999 6443
Email:	<a href="mailto:geoscience.info@nt.gov.au">geoscience.info@nt.gov.au</a>

## DIGITAL DATA PACKAGE CONTENTS

This data package includes GIS files (shapefile format), ASCII data (ASEG GDF format), ER Mapper grid files, GeoTIFF images and georeferenced JPEG images.

### GIS

The folder NTGS-DIP046-GIS-Index contains survey index shapefiles for each geophysical method. These shapefiles provide spatial outlines of available surveys, enabling the user to identify datasets of interest before navigating to the corresponding folders to access the full survey data.

All GIS files consist of a geometry (point, polygon, line) showing survey location and an attribute table containing survey information. Each survey method is encapsulated in a separate shapefile. Naming conventions and attribution are described in the NTGS-DIP046-DataDictionary.xlsx file.

### GRAVITY

The folder NTGS-DIP046-Gravity contains a ground gravity grid subset from the 2026 NT-wide ground gravity grid. The Generic Mapping Tools gridding algorithm was used to create the base gravity grid. Derivative products were created using Intrepid Geophysics two-dimensional Fourier filtering (**Table 1**). All grids have a cell size of ~100 m. Data are provided in the following folders:

- Grids – Gridded and filtered data for each survey (ERMMapper format)
- Images – Images of gridded and filtered data for each survey (GeoTIFF format)
- LocatedData – CSV format point data used to create the gridded data.

**Table 1.** Gravity grid names and brief description. GeoTIFFs of the above grids are also provided.

Grid name	Description
PineCreekDIP_AOI_BA_GDA94Z52_GRD.ers	Spherical cap Bouguer anomaly grid.
PineCreekDIP_AOI_BA_1VD_GDA94Z52_GRD.ers	First vertical derivative of the spherical cap Bouguer anomaly grid.
PineCreekDIP_AOI_BA_UC250m_GDA94Z52_GRD.ers	Spherical cap Bouguer anomaly grid upward continued 250 m.
PineCreekDIP_AOI_BA_UC250m_1VD_GDA94Z52_GRD.ers	First vertical derivative of the upward continued spherical cap Bouguer anomaly grid.
PineCreekDIP_AOI_BA_residual_GDA94Z52_GRD.ers	Residual spherical cap Bouguer anomaly grid created by removing a first order polynomial trend from the spherical cap Bouguer anomaly grid.
PineCreekDIP_AOI_BA_residual_1VD_GDA94Z52_GRD.ers	First vertical derivative of the residual spherical cap Bouguer anomaly grid
PineCreekDIP_AOI_BA_residual_UC250m_GDA94Z52_GRD.ers	Residual spherical cap Bouguer anomaly grid upward continued 250 m.
PineCreekDIP_AOI_BA_residual_UC250m_1VD_GDA94Z52_GRD.ers	First vertical derivative of the upward continued residual spherical cap Bouguer anomaly grid.

The input dataset is provided with survey number (SurvNo), station number (StatNo), longitude (LonGDA94), latitude (LatGDA94) and spherical cap Bouguer anomaly (SCBA) values as follows:

- Comma separated text file: PineCreekDIP\_BA\_PTS\_GDA94Z52\_CSV.csv.

## INDUCED POLARISATION

Induced polarisation (IP) surveys from company reports in the Pine Creek Orogen region (**Figure 1**) were collated in one of two GIS shapefiles, depending on survey geometry:

- Gradient array surveys were collated in the polygon geometry shapefile
- Dipole-dipole and pole-dipole array surveys were collated in the line geometry shapefile.

Legacy hardcopy reports with no accompanying digital data were digitised and georeferenced, including spatial data capture from maps where necessary. For modern reports with accompanying digital data, individual surveys were gridded and GeoTIFFs were generated to spatially represent the data. In cases where only grids or models were provided in the report, these were georeferenced to preserve spatial context. The nomenclature describing grids and images are described in the NTGS-DIP046-DataDictionary.xlsx file.

Gridding was conducted using Intrepid Geophysics software with the minimum curvature algorithm. Cell size varied according to survey specifications, typically between 10 m and 100 m. Most surveys report chargeability in m/sec and resistivity in Ohm m/sec, though some variation exists due to different contractors.

ERMMapper format gridded data is presented using pseudo-colour colour ramp with smoothing for visualisation. Georeferenced figures are presented as provided. Depending on the age and quality of the survey, there may only be image formats for the data, or only one grid type (chargeability or resistivity).

Data are provided in the NTGS-DIP046-IP folder within the following folder structure (note not all folders are present for each dataset):

- CRYYYX - Industry report reference for each dataset containing the folders listed below
  - Grids - Gridded data for each survey (ERMMapper format)
  - Images - Images of gridded and / or supplied figures for each survey (GeoTIFF or JPEG format)

## MAGNETICS AND RADIOMETRICS

A spatial index of industry submitted magnetic and radiometric surveys in the broader Pine Creek region was compiled (**Figure 1**). Data for each of these surveys was reprocessed to create ASEG GDFII format located data, and these data were gridded and levelled as required. A standard suite of grids and filters were created and imaged, and flightline shapefiles created. All gridding and filtering were completed using Intrepid Geophysics software. The nomenclature describing grids and images described in the NTGS-DIP046-DataDictionary.xlsx file.

Data are provided in NTGS-DIP046-MagRad folder within the following folder structure:

- CRYYYX - Industry report reference for each dataset containing the folders listed below
  - Documentation - Any logistics or processing information available on the survey (multiple formats)
  - Grids - Gridded and filtered data for each survey (ERMMapper format)
  - Images - Images of gridded and filtered data for each survey (GeoTIFF format)
  - LocatedData - Located data for each survey (ASEG GDF format)

The magnetic and radiometric surveys contained in the above folders were merged for the entire region (**Figure 1**) at a cell size of 10 m. Derivative grids were also created. These grids are available in ERMMapper format (\*.ers) in the NTGS-DIP046-MagMerge and NTGS-DIP046-RadMerge folders.

These merged grids were subset into overlapping polygons and imaged. These are available in GeoTIFF (\*.tif) format in the NTGS-DIP046-MagImages and NTGS-DIP046-RadImages folders. A shapefile of the subset areas is provided in the NTGS-DIP046-GIS-Index folder.

### Airborne electromagnetics

The airborne electromagnetics data was acquired by Geoscience Australia in 2009 under the *Onshore Energy and Security Program* and is referenced in this DIP as supplementary data. Line data is provided as GIS shapefiles. The full dataset, including cross-sections and numerical data, can be accessed via the Geoscience Australia (Costelloe and Hutchinson).

## REFERENCES

Costelloe MT and Hutchinson DK, 2010. *Pine Creek TEMPEST AEM Survey, Northern Territory, 2010 Final Inversion Data and Conductivity Models*. Geoscience Australia, Canberra. <https://pid.geoscience.gov.au/dataset/ga/70584>