

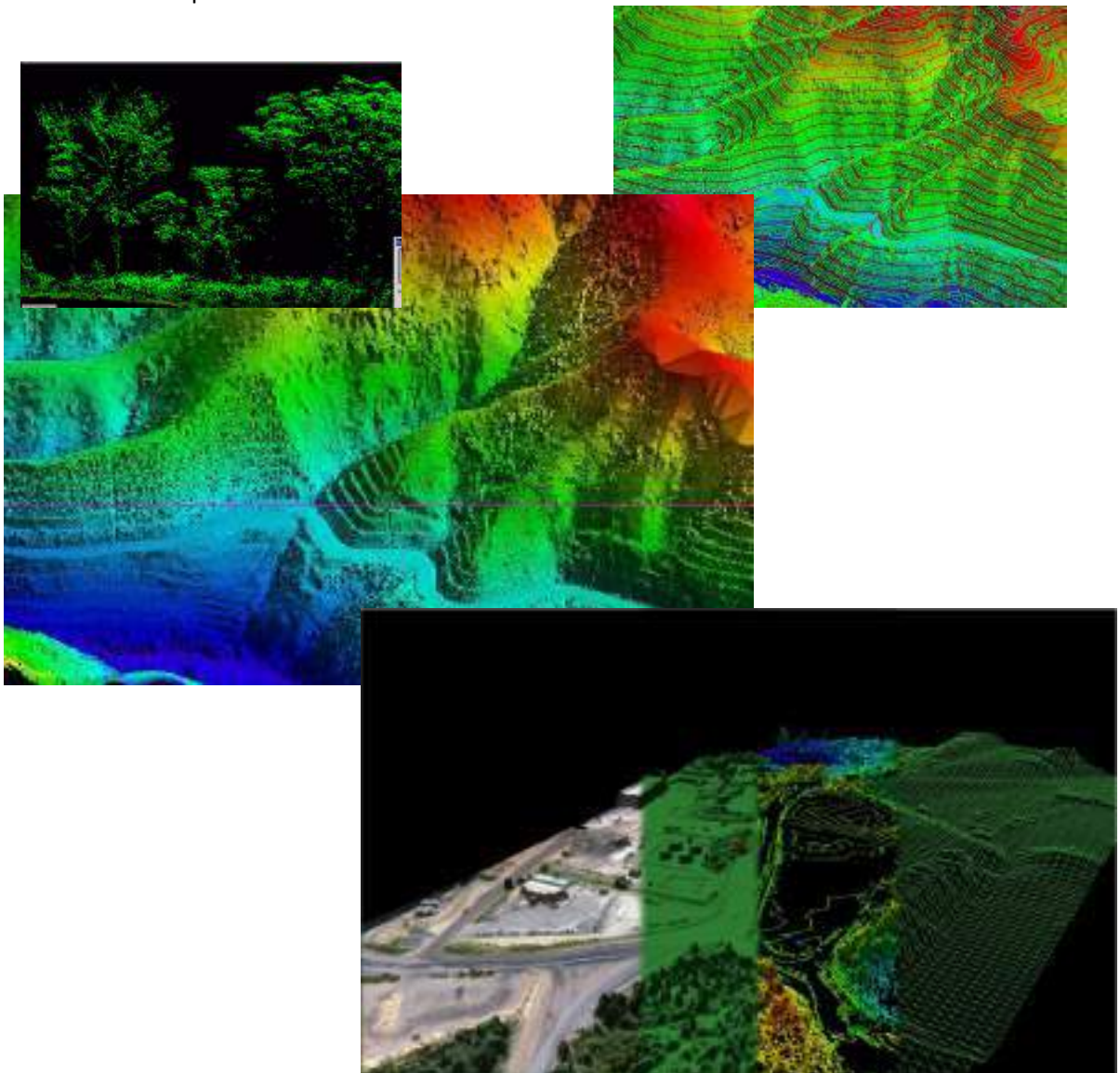


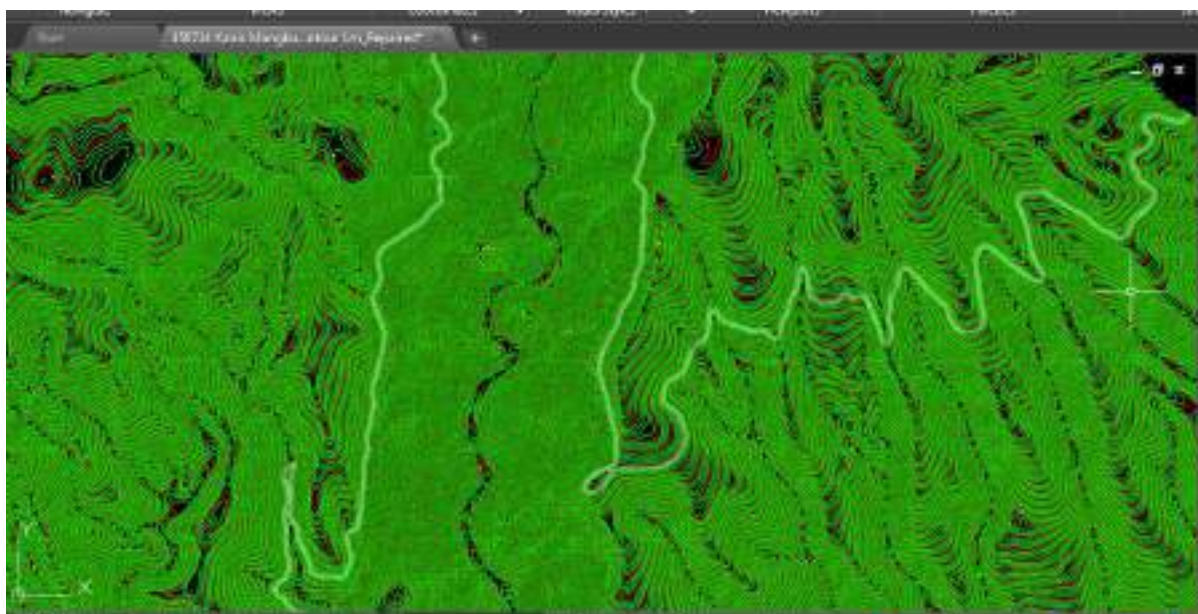
**KMK GLOBAL
ENERGY**

EARTH GEOMATIC SCIENCE - SERVICES COVERED

GROUND MAPS

1. **TOPOGRAPHICAL MAPS** : Resulting the precise ground and features mapping by means of several sensors, such as the latest LiDAR, High resolution multi camera system with Infrared camera, to create the below mapping products;
 - a. Basemap Image
 - b. BASEMAP SHADOW TERRAIN IMAGE
 - c. 3D MODEL
 - d. Basemap GIS





A very high accuracy 1m contour map over very thick forest was done successfully for Velcan of France over Kanis area in Aceh, Sumatera, Indonesia for a river - hydro electric project.

2. AIRBORNE GEOPHYSICAL MAPPING

Aircraft with STC approved geomagnetic stinger to capture the anomaly of magnetic and radiometric to provide the results of;

- > Gravity Anomaly
- > Magnetic Anomaly
- > Geographical Isotop Distribution
- > Digital Elevation Model for engineering purposes



3. **ASSETS MAPS** : The production of map that contains assets information for the managements and maintenance determination. Below are the list of maps produced for;

- a. Soil Minerals Types
- b. Vegetation (No, types, health, size)
- c. 3D Imagery system for street map
- d. 3D Plants & Building & Archaeology
- e. Soil Types & Specs
- f. Animals / plant Diseases
- g. Materials Recognition
- h. Concentrated Gases & Emissions
- i. Cadastral
- j. Buildings



A 3D image map for asset management of a pharmacy college in Sungai Petani, Kedah, Malaysia.



Asset management and planning for a plantation re-plant project at Gua Musang, Malaysia.

4. **BORDERS VERIFICATION AND DETERMINATION** : Maps are produce to provide accurate information of boundary vs features that provides detail information for Authorities and security, such as the international borders, State, Municipal and private owners including developers and township limits.

5. SECURITY :

- a. Accurate video reconnaissance with geo-reference information information that can be linked in real time via satellite link to any situation or management room. The operation can be day or night by airborne manned aircraft. Suitable for police, army and any authority involved in security issues.
- b. Disaster management such as flood, land slides and accident prone areas.



6. **ENVIRONMENTAL** : Involving scientific maps using state of the art scientific sensors to detect high accuracy information to produce the below;
 - a. Thermal
 - b. Water flow pattern
 - c. Surface Soil type and pollution
 - d. Gases and emissions

UNDERGROUND MAPS

1. GIS BASEMAP : Accurate up-to-date GIS base map will be produced in any GIS format which contains all information and features in standard symbol and naming convention.

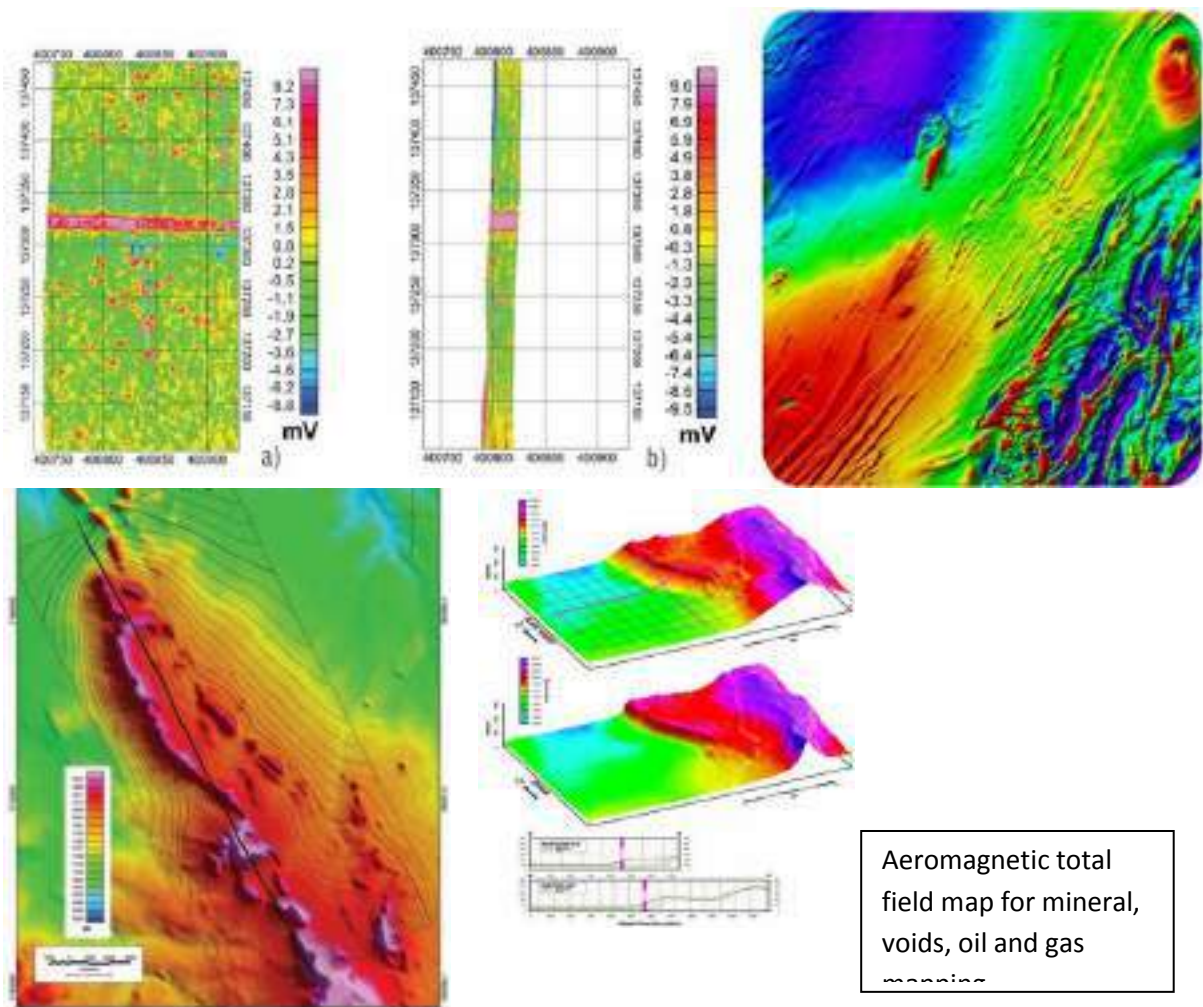
2. **ASSETS INFORMATION** : Underground features and materials can be mapped with location and depth information accurately. Modern instrumentation is used and processed to GIS. These are important for any new development on old locations, and for maintenance planning and execution. Below are several information to be produced (subject to size and pattern);

- a. Underground Minerals
- b. Underground Oil and Gas
- c. Underground water bodies
- d. Underground archeological map



Gas pipeline mapping for assets maintenance –sample is gas leakage report mapping.

3. **ENVIRONMENTAL** : Accurate scientific information for environmental study and analysis can be produced using the state of the art modern instrumentations and processing techniques. These information are collected using our airborne, and terrestrial sensors, covering the below informations (depends on pattern and depth);
- Underground Minerals : determination of mineral types, location and depth
 - Underground Oil and Gas : determination of location and depth
 - Underground voids : determination of location and depth
 - Underground water bodies : determination of location and depth
 - Underground Archeological map. : determination of location and depth



Sub-surface geology is mapped to reveal geological structure and mineral potential, paving the way for planning more detailed surveys for exploration and environmental management;

Eg. Oil, Coal, Gold, Iron, Platinum, Copper, Granite, Voids, underground tunnels, water sources, etc.

WATERBODIES MAPS

1. **TOPOGRAPHICAL BATHYMETRIC MAPS** : High accuracy data is produced with IHO and NOAA standard accuracy by airborne special spectrum laser and conventional vessel / boat borne echo sounding system. Informations covered including (depending on size, water clarity and depth);
 - a. Seabed 3D Terrain Model
 - b. Archaeological debris
 - c. Accident debris, including aeroplane, vessels, etc, debris location and imagery.
 - d. GIS basemap.
2. **ASSETS** : This includes;
 - a. Seabed mineral maps
 - b. Oil and Gas
 - c. Water boundary
 - d. Sea / sweet water boundary.
3. **SECURITY** : This inclusive of ;
 - a. Search and Rescue for accident and hostile activities within waterbody region whether day or night by airborne high resolution camera and infrared sensors with real time video and coordinate information link via satellite to any situation offices on ground.
 - b. Accident data, such as oil spills and floating debris mapping using the airborne infrared and hyperspectral sensors.
4. **ENVIRONMENTAL** : Accurate scientific mapping can be produced by airborne with ground samplings to produce map in GIS and scientific data, such as for the;
 - a. Water bodies Rivers, Coastal and Lagoons.
 - b. Sea Plankton study
 - c. Coral studies
 - d. Water bodies quality, contents and pollution extend and level
 - e. Seabed minerals map
 - f. Seabed oil and gas
 - g. Seabed voids
 - h. Seabed archaeological map
 - i. Water borders
 - j. Sea/ Sweet water boundary
 - k. Debris detection and mapping

GOVERNMENT ASSET MANAGEMENT & MAINTENANCE

I. ASSETS : To produce accurate data geographically for various industries including the below.

A. Transportation

1. Roads & Utilities
2. Bridges & Utilities
3. Tunnels & Utilities
4. Crossings & Utilities
5. Railways & Utilities
6. Airport & Utilities

B. Utilities

1. Undergrounds & Utilities
2. Power lines & Utilities
3. Telecom Lines
4. Dams Reservoirs & Flood Channels
5. Water Resources
6. Utilities (Water/Electricity/Telecom/Sewerage/Gas)
7. Signboards Properties
8. Walkways
9. Car Parks
10. Oil & Gas lines & Leaks

C. Authority

1. Reclaimed Land
2. Reserves
3. Boundary Fencing
4. Illegal Extensions
5. State Land Update
6. Developers Borders
7. Municipal Borders
8. District / County Borders
9. State Borders
10. International Borders

D. Recreational

1. Waterfronts
2. Beaches
3. Marinas Reefs & Port & utilities
4. Recreation & Tourists Areas
5. Parks

6. Squares
7. Amenities

E. Industrial

1. Plants
2. Flora Information

II. TOPOGRAPHICAL MAPS

A. Transportation

1. Roads & Utilities
2. Bridges & Utilities
3. Tunnels & Utilities
4. Crossings & Utilities
5. Railways & Utilities
6. Airport & Utilities

B. Utilities

1. Undergrounds & Utilities
2. Power lines & Utilities
3. Telecom Lines
4. Dams Reservoirs & Flood Channels
5. Water Resources
6. Utilities (Water/Electricity/Telecom/Sewerage/Gas)
7. Walkways

C. Authority

1. Boundary Fencing
2. Illegal Extensions
3. State Land Update
4. Signboards Properties
5. Car Parks
6. Reserves

D. Recreational

1. Marinas Reefs & Port & utilities
2. Recreation & Tourists Areas
3. Parks
4. Squares
5. Amenities

E. Industrial

1. Plants
2. Flora Information

III. ENVIRONMENTAL MAP

1. Oil & Gas lines & Leaks
2. Flora Information
3. Fauna Information
4. Reclaimed Land
5. Waterfronts
6. Beaches
7. Dams Reservoirs & Flood Channels
8. Water Resources
9. Plants

- Regional Structure Mapping, Mapping of non magnetic Lithologies, estimating unit thickness and continuity depth
- Basin Mapping for stratiform copper and placer Gold
- Detailed basin mapping for oil and gas
- Mapping of layered complexes
- Greenstone Belt mapping

