

HUVI^高iR

Aerial Survey of Coffee Estates

Why get an Aerial Survey of your Coffee Estate done?

Aerial surveying produces high resolution and highly accurate image data about your coffee estate. This data can be used for various purposes:

- Getting the **exact acreage** and **boundaries** of the entire estate
- Getting an insight into how the entire **area is being utilized** for the produce and hence yield estimation.
- **Count of number of shading trees** gives an idea of the timber value on the estate.
- Interconnection of roads, locations of water tanks along with **elevation profiles** helps with **planning future development work in the estate**.
- Elevation profiles are useful for **planning irrigation systems** as well.
- A framed high resolution poster size image of the estate can be placed in the office for showcasing and planning.
- Aerial videos and images can be used for **advertising home stay/sales of estate**.

How do we do it?

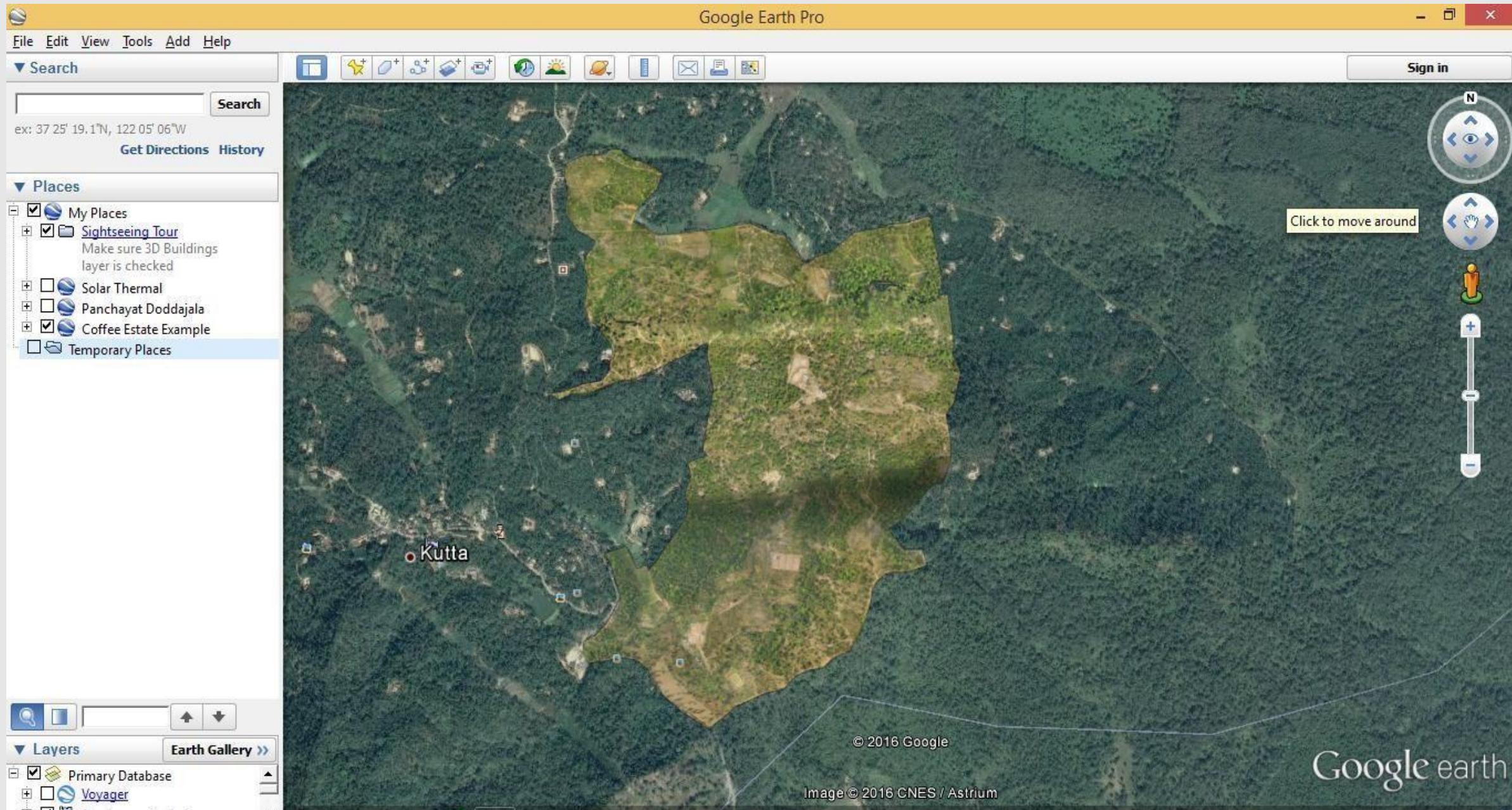
- We use a **state-of-the-art unmanned aerial vehicle** to capture hundreds of high quality images of the estate.
- We **mark the boundary points with a GIS device** and set the flight path of the drone accordingly.
- Fly the drone at site and capture all the data, video and photos.
- We stitch the images together using our software to generate a single high quality image of the estate.
- **Each pixel of the image is geotagged in all 3 dimensions** and hence all kinds of measurements can be done on it. It can be overlayed accurately on google earth as well.
- Other outputs like **digital elevation map**, **point elevations** and **cross section elevations** are also generated with our software.
- Create analysis report.
- Create video and photo album of the site.

Outputs

Top View Aerial Image of Estate



As seen on Google Earth



Zooming in (Level 1)



Zooming in (Level 2)



Zooming in (Level 3)



Measurements – Distance, Area and Elevations



Uses of Elevation data

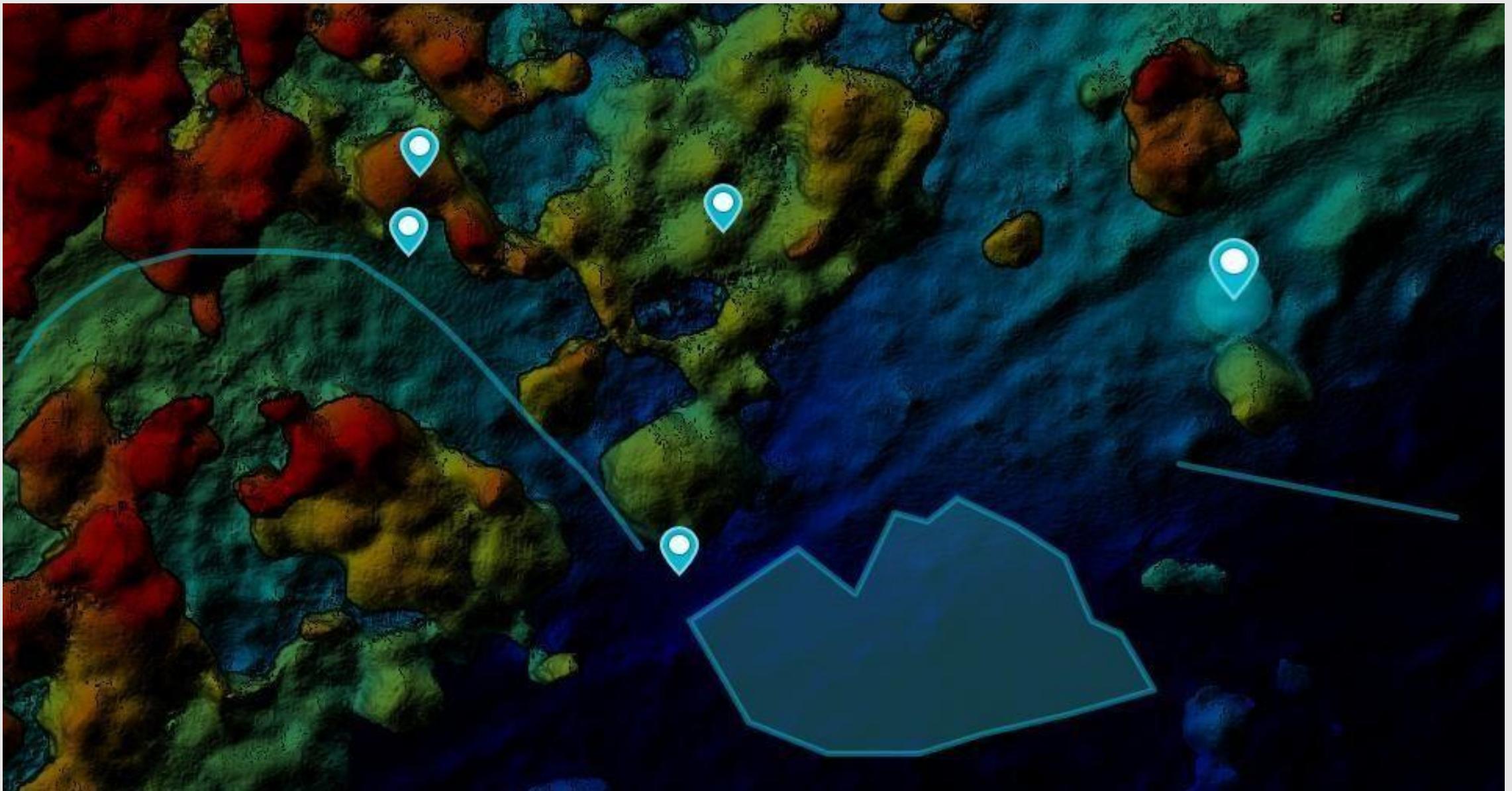
The elevation data can be used to identify suitable sites for **rain water harvesting structures such as Check dams, Percolation tanks, Contour trenches etc.**

Using the data collected with Drones and subsequently using GIS Technology, **HUVIAiR will develop inputs** for building rainwater harvesting structures.

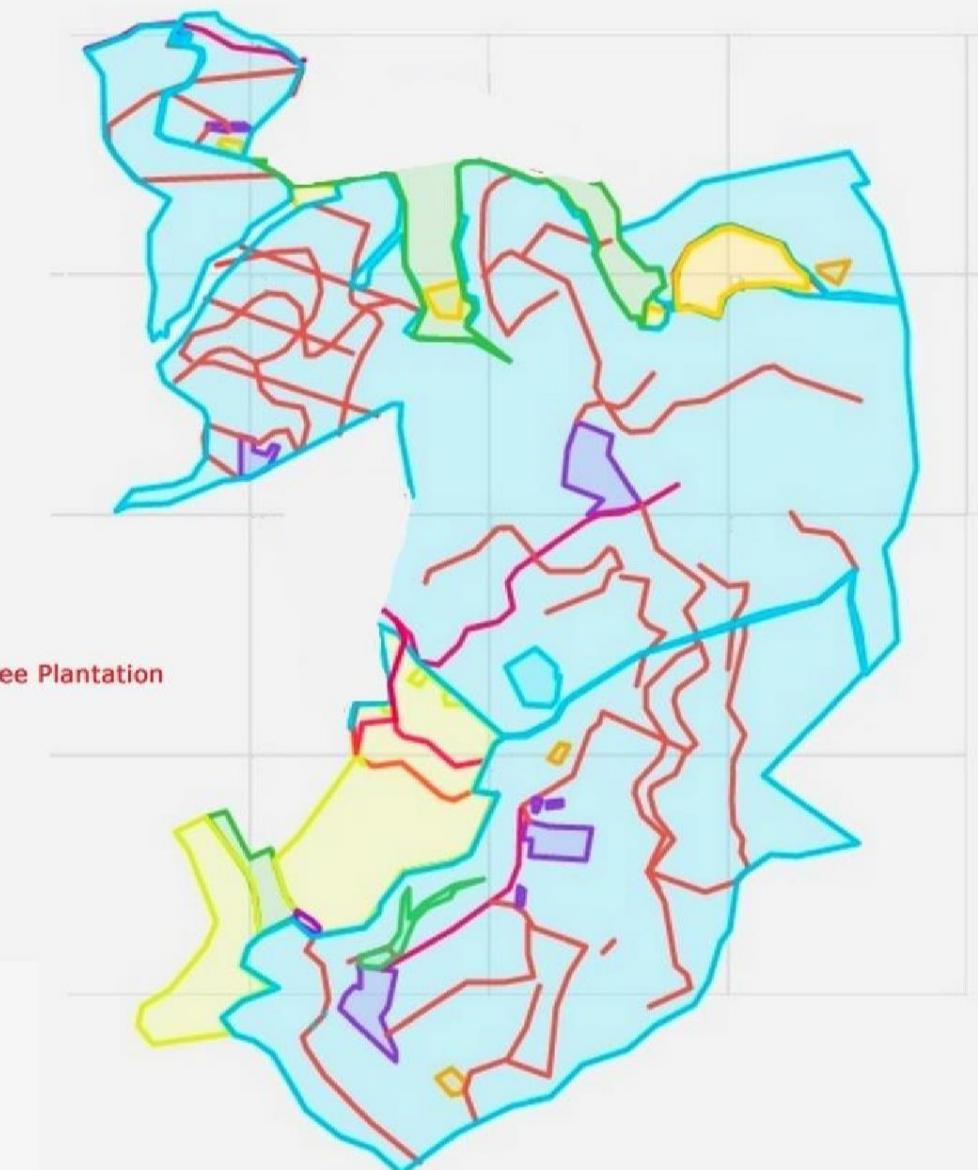
Drone data collected is orthorectified and orthomosaic is developed. Further 3d point cloud, contour lines and Digital elevation Model are generated.

From the above outputs a **Slope Map** is prepared, which classifies the entire study area in different categories of slope ranges. The ranges so classified will help in calculating the amount of the water flow in that particular region. This information is useful in the categorization of the type of structure to be built in that particular zone.

Digital Elevation Model



Outputs - Area Analysis



Total road and path lengths in the estate



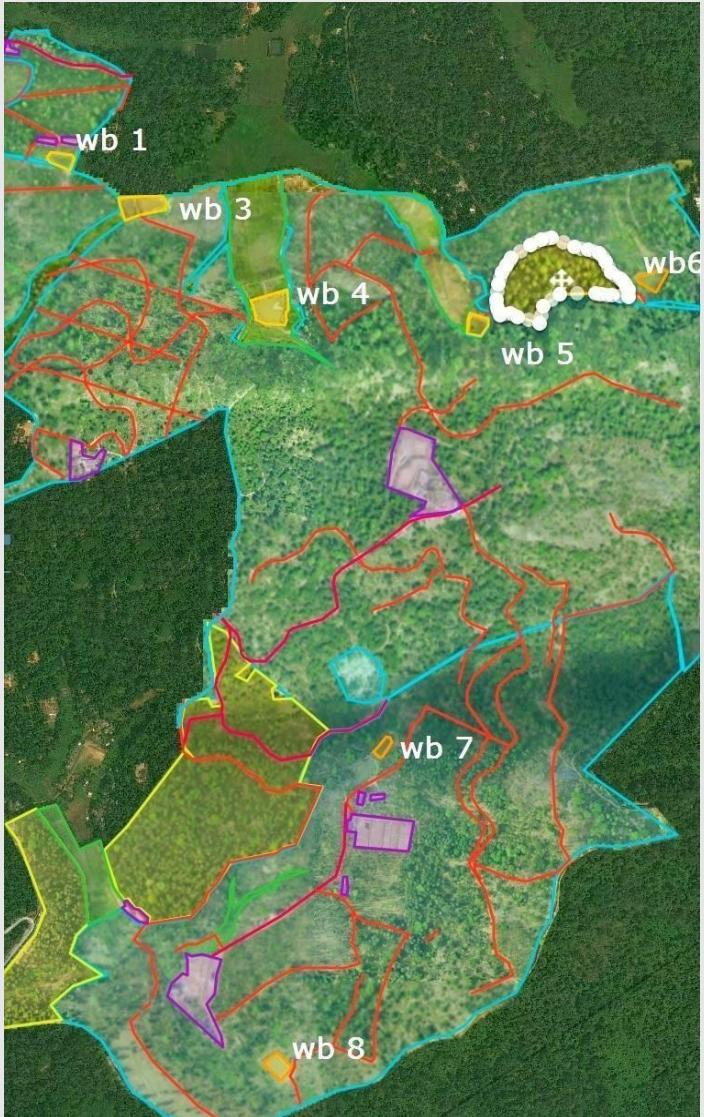
Asphalted roads

Area covered by roads = cumulative of
(Width X respective road length)

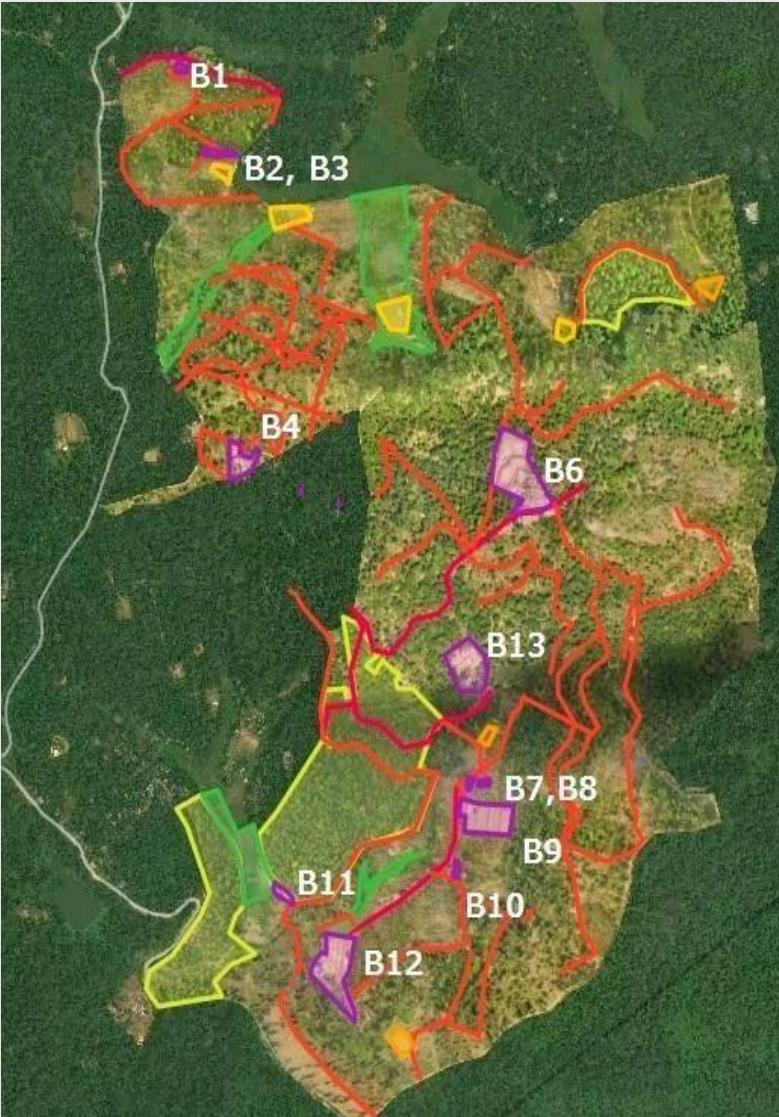
Road	Width (m)	Length (m)	Area (Sq m)
Road 1	4.5	522	2349
Road 2	4.5	996	4482
Road 3	4.4	693	3050
Total Area		2211	9871

Total area covered by tarred roads =
2.43 Acres (9871 square meters)

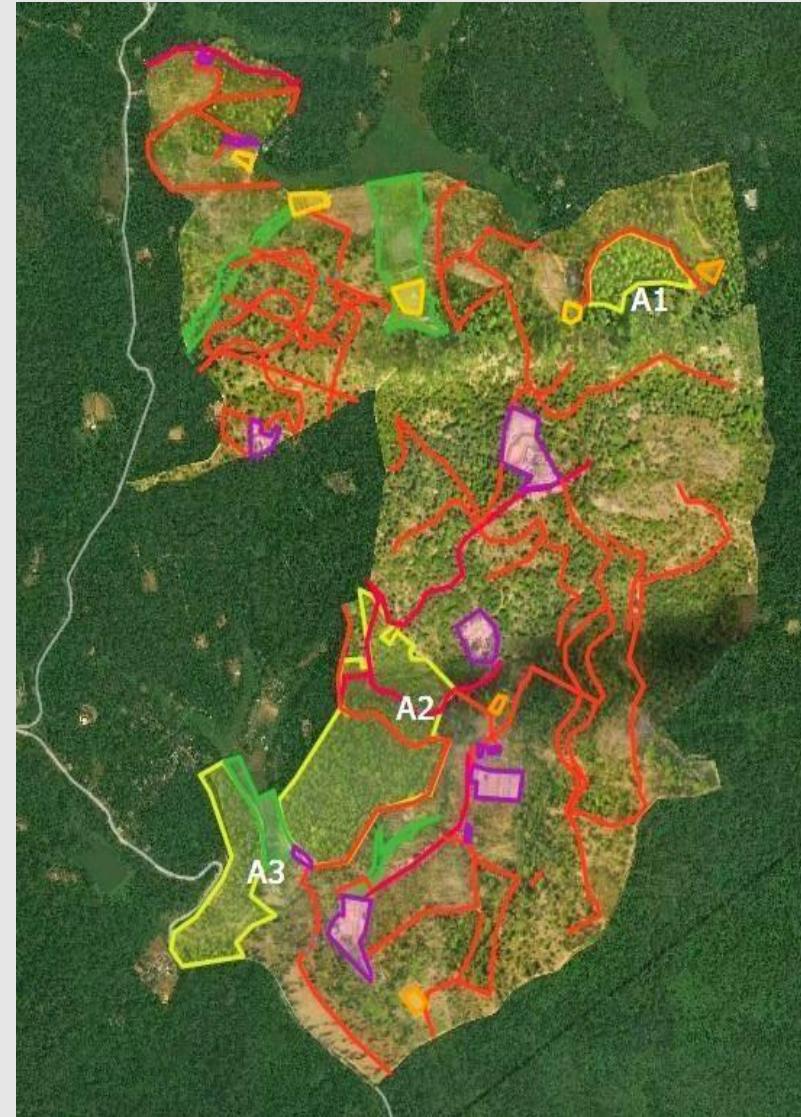
Outputs - Area Analysis



water bodies



buildings and drying area



Dense trees



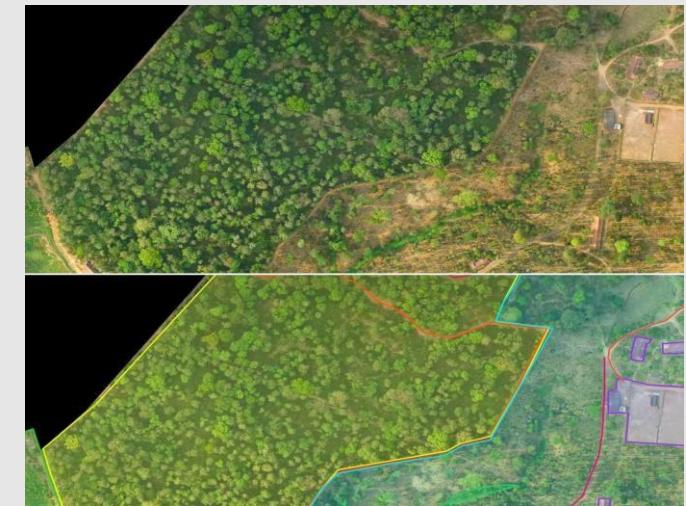
Water bodies	Area
Water body 1	0.5
Water body 3	0.5
Water body 4	1.49
Water body 5	0.5
Water body 6	0.75
Water body 7	0.25
Water body 8	0.75
Total Area	4.74

**Total area of water bodies
= 4.74 acres**



Buildings	Area
Building 1	0.17
Building 2	0.19
Building 3	0.2
Building 4	1.23
Building 6	5.94
Building 7	0.12
Building 8	0.13
Building 9	2.97
Building 10	0.143
Building 11	0.49
Building 12	3.95
Building 13	3.2
Total Area	18.73

**Total area covered by buildings
and drying area = 18.73 acres**



Dense Tree Region	Area
A1	10.35
A2	51.9
A3	19.5
Total Area	81.75

**Total area under Dense trees
= 81.75 acres**

Outputs - Shading Tree Count

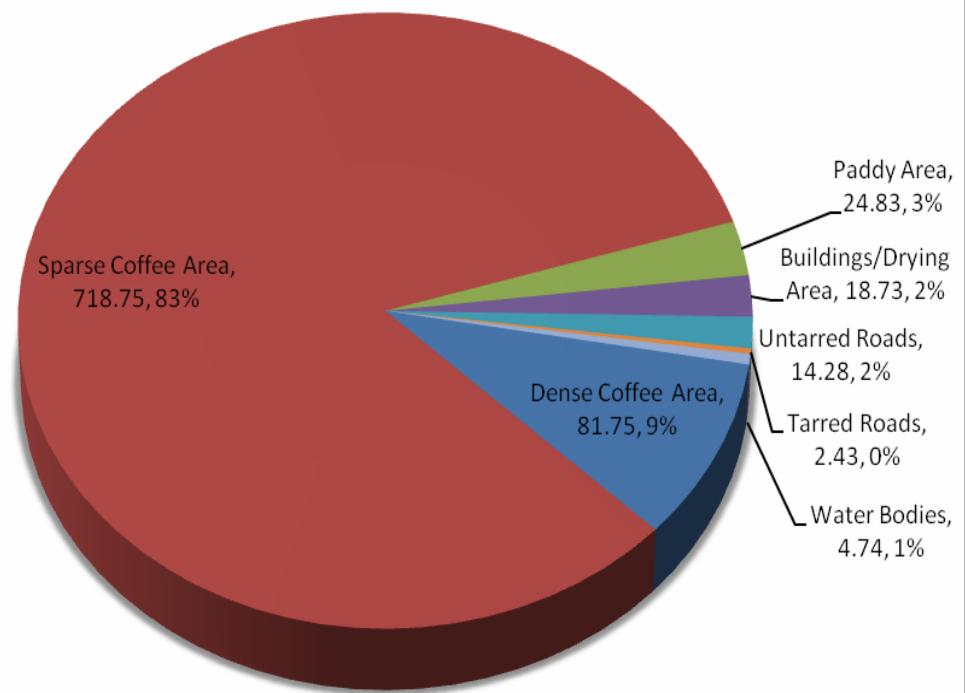


Total number of shading trees in the estate = 16,817

Summary

Total area of the estate	848.38 acres
Total tarred road length inside estate	2.475 km
Total area covered by tarred road	2.43 acres
Total un-tarred road and path length inside estate	19.54 km
Total area covered by un-tarred roads and paths	14.28 acres
Total area covered by water bodies	4.74 acres
Total area covered by building and drying area	18.73 acres
Total area covered by dense trees and plantation	81.75 acres
Total area covered by sparse coffee plants	718.75 acres
Green area with paddy fields etc.	24.83 acres

Estate Area Sub Section Analysis



Useful Insights.

Following insights can be derived from the data collected--

Coffee Yield = No. of tonnes/effective planting area

Paddy Yield = No. of tonnes/effective cropping area

Average number of shading trees per acre =

Total no. of shading trees/coffee growing area

Aerial Photography.

HUVIAiR will provide a framed ultra high resolution poster size image of the estate that can be placed in the office for showcasing and planning.

HUVIAiR will also provide Aerial videos and images can be used for advertising home stay/sales of estate

Outputs

- High Resolution Aerial Top View Image of Estate (soft copy and framed)
- High Resolution Digital Elevation Model (soft copy)
- Google Earth file with all measurements marked and geo-tagged assets and boundaries.
- Aerial Video and Images
- Area Analysis Report (with all previously mentioned analysis and insights included)

About HUVIAiR

- HUVIAiR Technologies is a drone data based solutions company.
- We expertise in providing solutions for the survey, construction, infrastructure, renewable energy and natural resource management sectors. We have a deep understanding of UAVs, sensors, photogrammetry, GIS mapping, surveying techniques, image processing, data analytics and software programming.
- Our services include consulting, training, and drone data visualization and management services to individuals, corporates, governments and not-for-profits working on projects in these sectors.

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