

BLUESKY AMIDA

**DRONE  
TECHNOLOGY**

SURVEY

**SECURITY &  
SURVEILLANCE**

**INSPECTION  
SURVEYING**

GIS

**MAPPING**

**DRONE**

TRANSFORMING INDIA!

# About Us

We BlueSky Amida Pvt. Ltd. From Nagpur is registered Start-up Company providing turnkey solution for IT/Networking, Safety & Security solutions, UAV solutions, GIS & Mapping services.

We bring best quality products, provide right consultation to our client before buy or give project and End to end solution to get setup of the system.

We using drone technology helping industry to reduces the man-hours required to complete the inspections on site and give a holistic view right at a click of a button.

Our GIS & Mapping solutions using UAVs solution to offer high resolution maps in engineering project includes small construction work to big mining and infrastructure project at the most affordable cost.



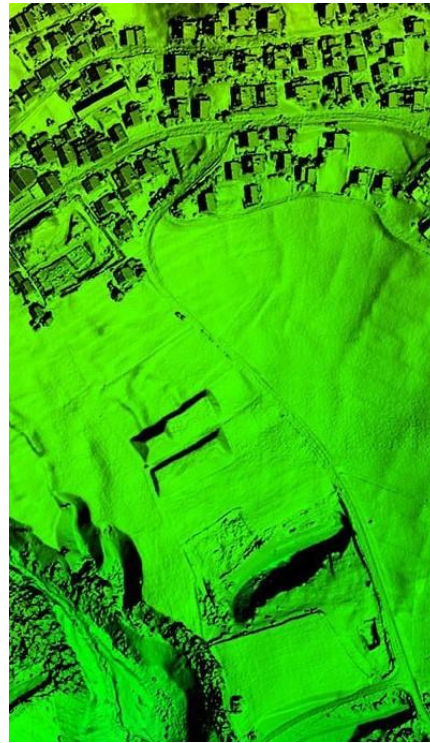


# Surveying & Mapping

Drone technology is widely use in Industries like Mining, Power, Highway, Railway, Critical Infrastructure, Urban & Regional Planning etc.

Surveying & Mapping with a drone offers enormous potential to GIS professionals.

Using drone technology, it is possible to carry out topographic surveys with high quality & highly accurate measurements collected in a fraction of the time. This substantially reduces the cost and time of a site survey.



Orthomosaic and digital surface model created from aerial images taken by surveying and mapping Drone.

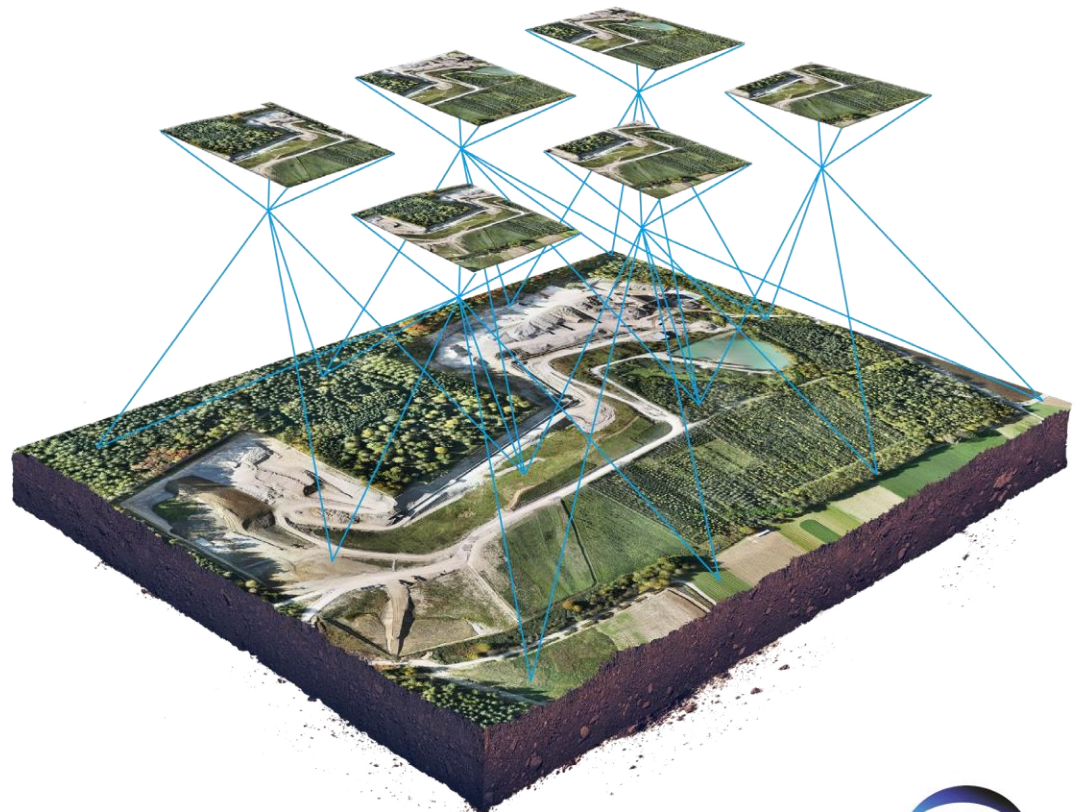
# What is Drone Survey?

A drone survey refers to the use of a drone, or unmanned aerial vehicle (UAV), to capture aerial data with downward-facing RGB camera. During a drone survey the ground is photographed several times from different angles, with number of overlapped images and each image is geo-tagged.

From this data, a photogrammetry software can create geo-referenced orthomosaics, elevation models or 3D models of the project area. These maps can also be used to extract information such as highly-accurate distances or volumetric measurements.

Unlike manned aircraft or satellite imagery, drones can fly at a much lower altitude, making the generation of high-resolution, high-accuracy data, much faster, less expensive and independent of atmospheric conditions such as cloud cover.

Drone Photogrammetry combines images that contain the same point on the ground from multiple vantage points to yield detailed 2D and 3D maps.





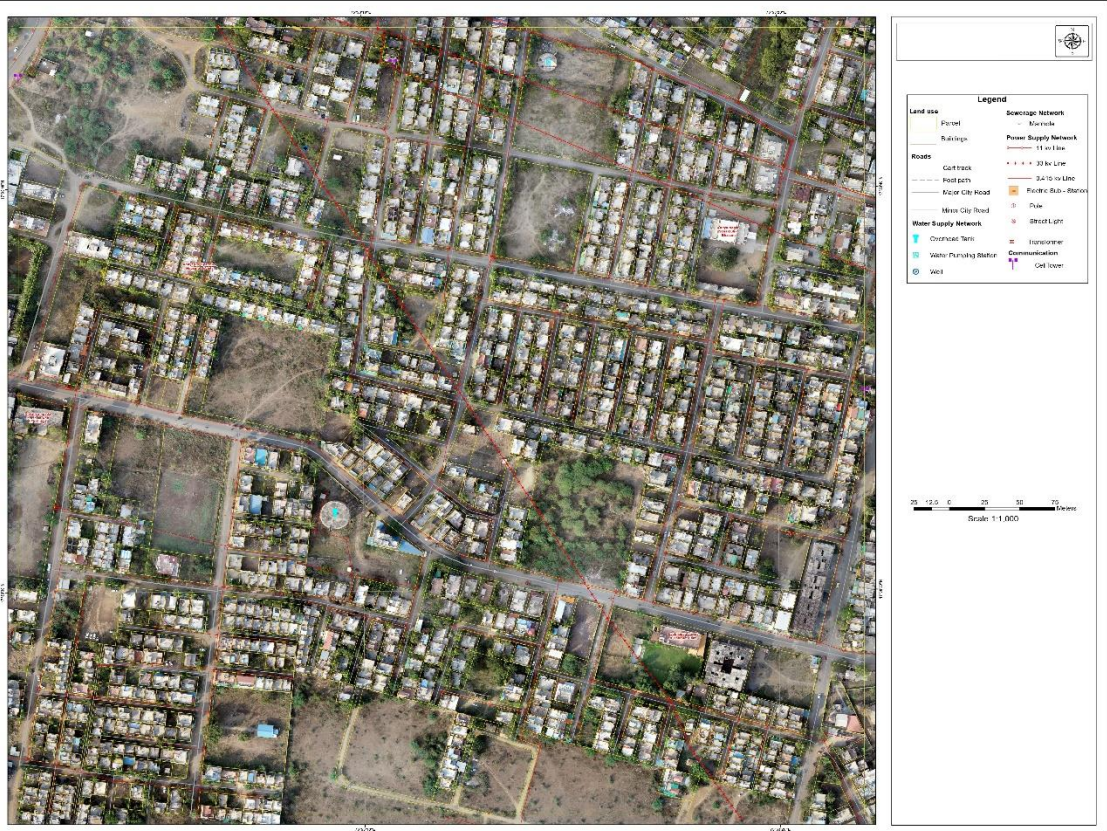
# Uses of Drone in Surveying

## Land Surveying

Survey drones generate high-resolution orthomosaics and detailed 3D models of areas where low-quality, outdated or even no data, are available. They thus enable high-accuracy cadastral maps to be produced quickly and easily, even in complex or difficult to access environments.

Surveyors can also extract features from the images, such as signs, curbs, electric arrangements, road markers, fire hydrants, communication towers, Buildings, Open lands and drains.

After post-processing with a photogrammetry software, these same images can produce very detailed elevation models, contour lines and break lines, as well as 3D reconstructions of land sites or buildings.



Orthomosaics image with feature extracts.

## Land Management and Development

Aerial images taken by drones greatly accelerate and simplify topographic surveys for land management and planning. This helps for Pre-construction planning and construction monitoring.

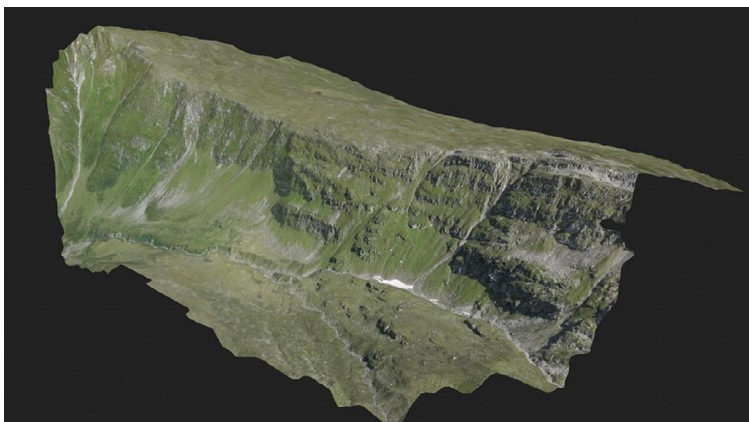
This holds true for site scouting, allotment planning and design, as well as final construction of roads, buildings and utilities.

These images also provide the foundation for detailed models of site topography for pre-construction engineering studies. The generated data can also be transferred to any CAD or BIM software so that engineers can immediately start working from a 3D model.

As data collection by drones is easily repeatable at low cost, images can be taken at regular intervals and overlaid on the original blueprints to assess whether the construction work is moving according to plan specifications.



Greenfield  
survey before road  
construction.



Surveying of a remote  
mountain area for pre-  
construction design of a wind  
farm



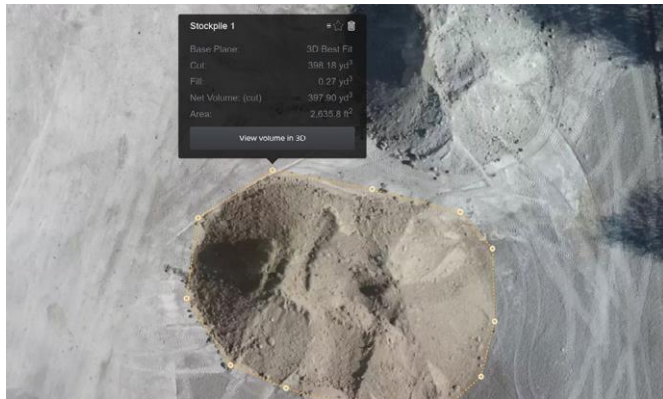
## Stockpile Volumetric Measurements

High resolution orthophotos enable surveyor to perform highly accurate distance and surface measurement.

With photogrammetry software, it is also possible to obtain volumetric measurements from the very same images. This fast and inexpensive method of volume measurement is particularly useful to calculate stocks in mines and quarries for inventory or monitoring purposes.

Surveying can capture and depict all these variations as shape's actual volume, and not just its estimate. We strategically and efficiently deliver photogrammetric information through Contouring, Digital Surface Models, stockpiles such as waste, mines, inventory, agriculture, etc., and volume measurements with a nearly 99% accuracy rate.

With a drone, surveyors can capture many more topographic data points, hence more accurate volume measurements.



Stockpile  
volumetric  
measurement.



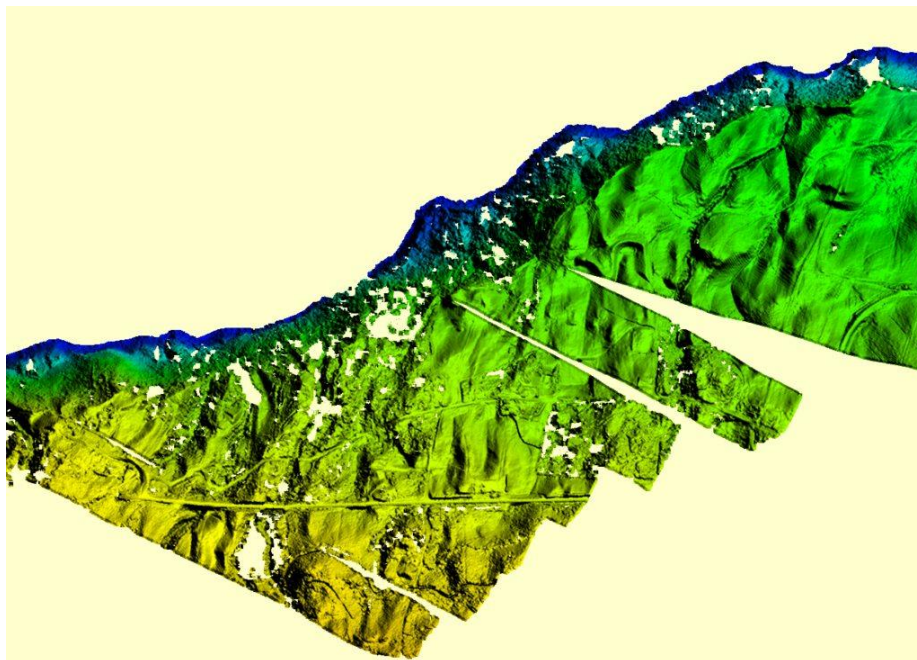
Volume measurement of landfill.

## Slope Monitoring

With automated GIS analysis, it is possible to extract slope measurements from DTMs and DSMs generated by drone imagery. Knowing the steepness of the ground's surface, the areas can be classified and used for slope monitoring purposes, including landslide mitigation and prevention.

With orthomosaics taken at different times, it is possible to detect changes in earth movement and to measure its velocity. This data can help predict landslides and prevent potential damage to roads, railways and bridges.

Compared to traditional monitoring techniques, where sensors are placed on single points, drones enable more comprehensive data collection. Drones with PPK capability, which do not require laying out of multiple GCPs, are optimal for this application, since these areas are often hard to reach or even dangerous.



Slope  
Monitoring.



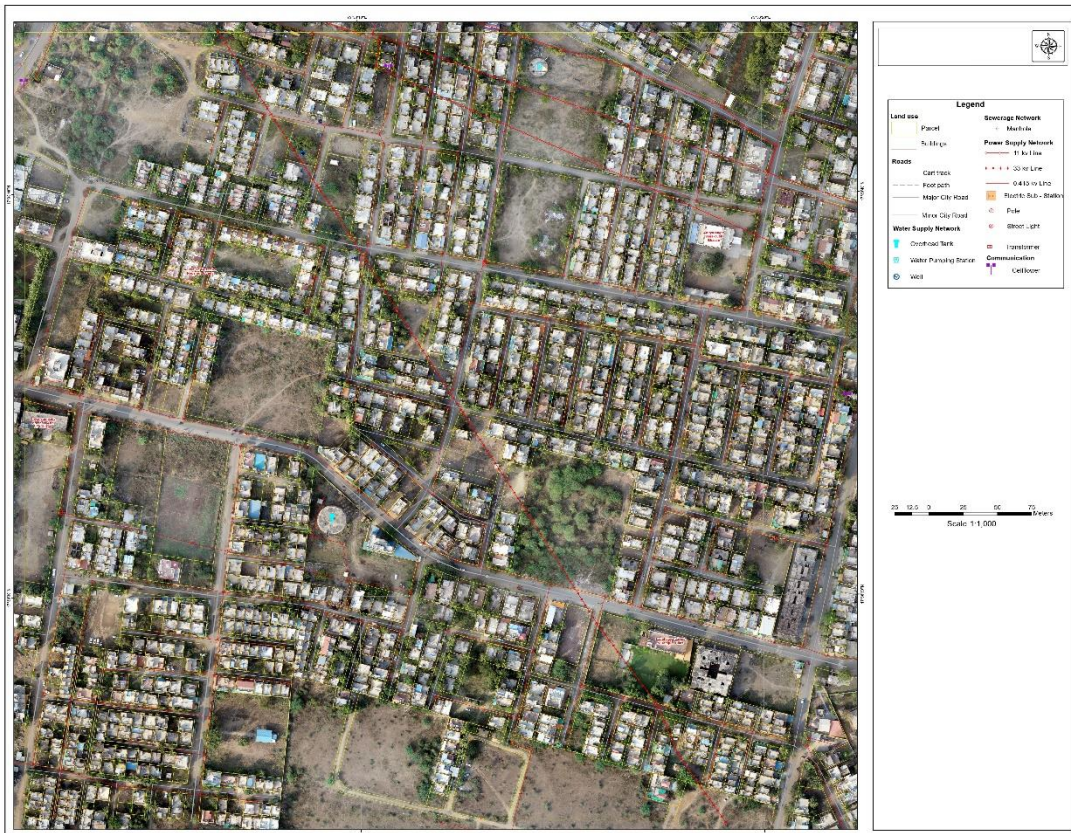
# Urban Planning

The development of dense and complex areas requires intensive planning and therefore time-consuming and expensive data collection.

Thanks to drones, urban planners can collect large amounts of up-to-date data in a short period of time and with far less staff. The images produced in this way allow planners to examine the existing social and environmental conditions of the sites and consider the impact of different scenarios.



Aerial map with existing and projected buildings.



Aerial map with existing urban plan buildings.





# Deliverables we provide

## Orthomosaic Maps



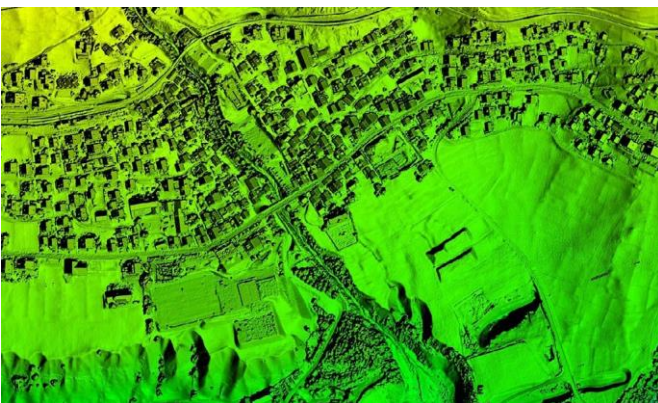
Drone images are corrected for image distortion and stitched together during post-processing to create a highly-accurate orthomosaic map. Each pixel contains 2D geoinformation (X, Y) and can directly procure accurate measurements, such as horizontal distances and surfaces.

## 3D Point Cloud



A densified point cloud can be generated from drone images. Each point contains geospatial (X, Y, Z) and color information. It provides a very accurate model for distance (slant and horizontal), area and volume measurements.

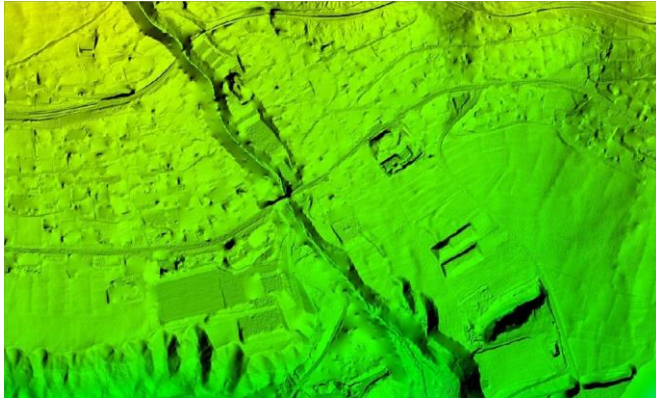
## Digital Surface Model (DSM)



Drone images can also be used to create DSM models of the area. Each pixel contains 2D information (X, Y) and the altitude (Z value) of the highest point for this position.



## Digital Terrain Model (DTM)



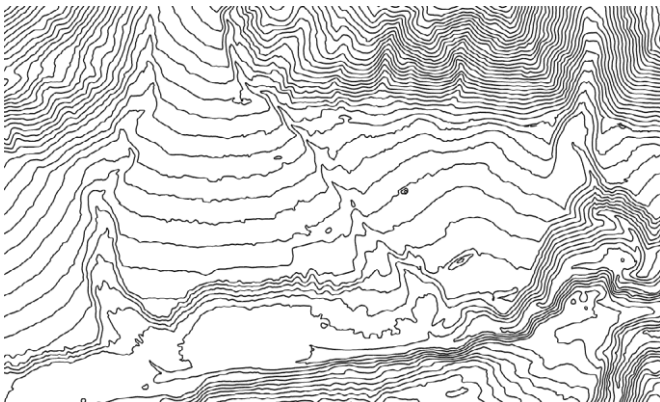
After filtering objects such as buildings, the drone images can be used to create DTMs with each pixel containing 2.5D information (X, Y, and Z value of the highest altitude).

## 3D Textured Mesh



The 3D textured mesh is a reproduction of the edges, faces, vertices and texture of the area shot by the drone. This model is most useful for visual inspection or for when external stakeholders or public involvement is essential for a project.

## Contour Lines



Depending on the project requirements, either the DTM or DSM model, with custom contour intervals, can be used to create a contour lines map, giving you a better understanding of the surface of the area shot by the drone.

# Benefits of Drone

## Surveying



Map otherwise inaccessible areas

An aerial mapping drone can take off and fly almost anywhere. You are no longer limited by unreachable areas, unsafe steep slopes or harsh terrain unsuitable for traditional measuring tools. You do not need to close down highways or train tracks. In fact, you can capture data during operation without an organizational overhead.



Provide accurate and exhaustive data

Total stations only measure individual points. One drone flight produces thousands of measurements, which can be represented in different formats (ortho-mosaic, point cloud, DTM, DSM, contour lines, etc). Each pixel of the produced map or point of the 3D model contains 3D geo-data.



Reduce field time and survey costs

Capturing topographic data with a drone is up to five times faster than with land-based methods and requires less manpower. With PPK geo-tagging, you also save time, as placing numerous GCPs is no longer necessary. You ultimately deliver your survey results faster and at a lower cost.



# Aerial Drone Inspection & Surveillance

These days, drone inspections are being performed in almost every industry that requires visual inspections as part of its maintenance procedures. By using a drone to collect visual data on the condition of an asset, drone inspections help inspectors avoid having to place themselves in dangerous situations.

Surveillance is the close observation of a person, group of people, behaviors, activities, infrastructure, building, etc. for the purpose of managing, influencing, directing, or protecting. There are also several different methods of surveillance. Methods include GPS tracking, camera observation.

Unmanned aircraft systems provide the ideal solution to the problems and limitations faced by other surveillance methods. Drone surveillance presents an easier, faster, and cheaper method of data collection. Consequently, there are also a number of other key advantages. Drone planes can enter narrow and confined spaces, produce minimal noise, and are equipped with night-vision cameras and thermal sensors. For this reason, they provide imagery that the human eye is unable to detect.



## Bridge Inspection



With Aerial Inspection it is very convenient to conduct an inspection of a busy highway/railway bridge in less time and at lower cost. Drones collect high quality aerial data for an accurate inspection.

## Railway Track Inspection



Drone is the best way to do railway line inspection. In railways, safeguarding the continuous operation of rail traffic entails maintenance of the rails, sleepers and gravel beds, design and construction of extension works and monitoring of the condition of railway bridges, rail tracks among many other activities.

## Power Plant Inspection



Periodic maintenance and inspection of critical structures such as cooling towers, chimneys, solar structure, wind mills, etc. are very important to improve lifespan of the structure and to avoid any disaster. Aerial inspection collects fast and accurate data while manual inspection is very time consuming and unsafe for inspection crew.

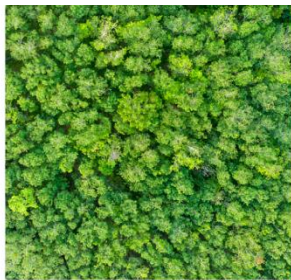


## Monument Inspection



Drone uses preserving historical monuments & buildings. Aerial Drone Inspection provides high quality data with that in depth and accurate inspection of the structure is possible. Periodic Aerial Inspection helps to keep track of structural integrity of the buildings and monuments. Drone uses to make survey plan of the protected monuments & corridor mapping.

## Industries Surveillance



Drone can be used for surveillance purpose in various industries such as Power, Mining, Railway, Police, Forest, etc. Track live threats along the border, corridor, crowd monitoring, spot faults on railway lines, scope out mining potential quickly. Secure your surroundings with live surveillance.

Live heat mapping! Spot all activities no matter how they are hidden White-hot, black-hot, or gradient heat mapping. Expertly switch between screens to gain strategic high ground to all your threats. Drones equipped with thermal payload uses for night patrolling.

# DRONE SURVEILLANCE



Lock-on to moving targets for total surveillance Target on the run? Lock-on drone to it with one-click and ensure the target never leaves your sight. Boost your on-ground missions with live activity tracking.





## Smart City Survey

Drones can be used to map commuting routes, crowd management. With the need to advance smart city programs quickly, drones offer flexibility allowing the surveyors to map long corridors efficiently. Smart planning of facility construction and investments and a smarter tracking of assets can be made easy through drones.

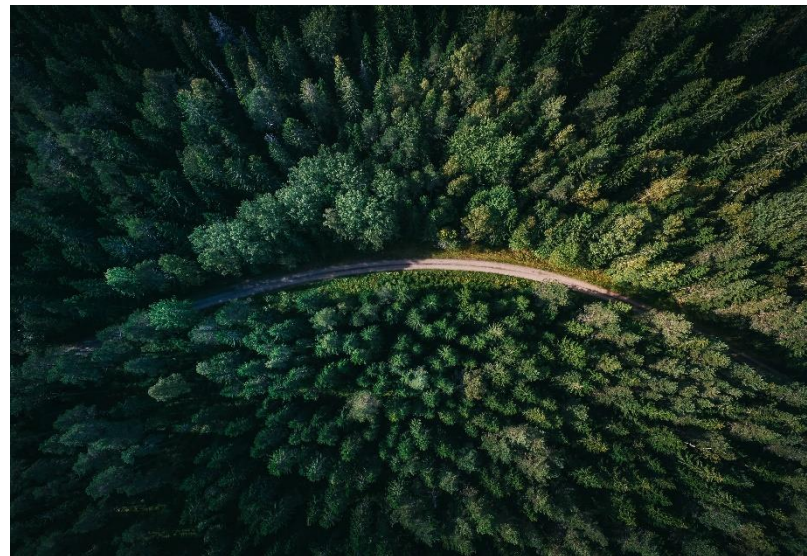
Our smart city survey drones provide in-depth data, to aid decision making earlier at the start of any project allowing the surveyors to plan them accordingly. Constant surveillance and security to analyse the situation across the city can be done using drones.



## Forest & Wildlife Survey

Drone cameras that operate in visible spectrum can be used for a detailed assessment of forest structures or tree properties. Such cameras embedded in drones provide a detailed image of the stand and crown structures as well as ground surface structures of forests. Forest professionals are increasingly turning to drone technology to gain better insights into their operations.

Drone helps in surveying forest health, forest production, wildlife ecology, and forest protection. A 3D visualization of forests is possible using drones. Mapping harvest units, measuring volumes quickly with accurate tree count, and any mishaps like forest fires can be easily detected using the drones.

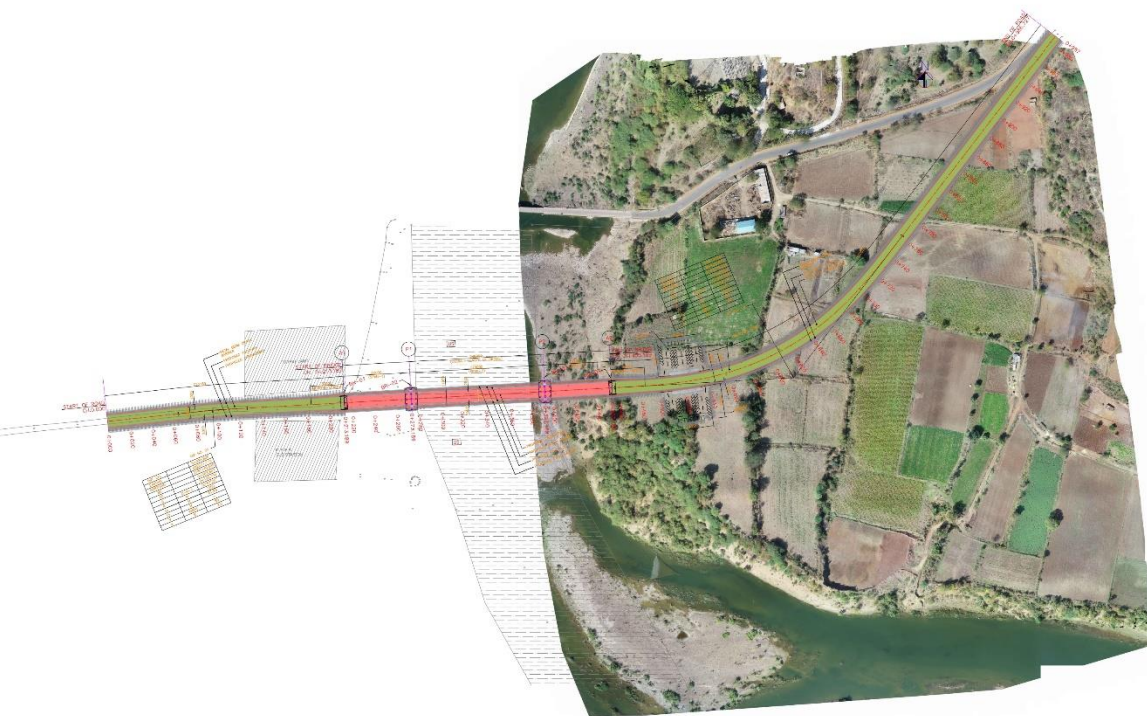




## Road Infrastructure Survey

Aerial videography of roads to manage road traffic, to clear any crowd congestion and monitoring road construction can be easily done using drones. Engineers at administration have begun using drones for road surveying which transformed the way they work in the field, quality of data they can gather, and also budget benefits.

As the drone survey is integrated with geographical co-ordinates, it provides an accurate location of important structures. An advance tool for monitoring roads and bridges are provided by drone & photogrammetry software are Highway Corridor Mapping, Pre construction planning, Topographic survey, Project progress monitoring, Road defect detection such as potholes and cracks, Alignment of Divider, Over line structures, Boundaries, Electric lines for Street Lights, Expansion of roads, Power lines crossings.



Topographic survey  
with proposed  
alignment marking  
and superimposing.

## Mine Survey

Capturing data using drones is faster than traditional land-based methods. Data can be easily collected at a frequency best suited for a mining site. Changes between any two surveys can be tracked and highlighted automatically using drone technology. In the long term, this way can reduce surveying and monitoring costs.



Drone aerial images can be used to generate point clouds, digital surface models, digital terrain models and a 3D reconstruction of a mining site, including its stockpiles. This enables high- accuracy calculation of stockpile value, slope monitoring, various measurements etc.

## Disaster Management

Drones can be deployed quickly, generate high-resolution and 3D mapping, identify hotspot areas that have sustained the most damage and upload the data in real time to coordinate relief efforts. Uses of drones during the disasters to Provide rapid situational awareness with mapping technology and imagery, help firefighters identify hot spots and assess property damage, Search for survivors, assess utility and infrastructure damage, Create before/after maps of the impacted area.





## Railway Infrastructure Survey

Safeguarding the continuous operation of rail traffic, maintenance of rails, sleepers and gravel beds, design and construction of extension works, monitoring the condition of railway bridges, etc. is a laborious process that can be easily done using drones. An aerial survey of alignment and 2D map of entire section can be created using drones. Drones in railways includes preparing contour maps for new rail lines, 3D models of terrain to draw accurate plans, GIS mapped data to calculate the length of rail track laid, and create 3D models to help map potential risks at construction.



Aerial view of Railway yard.

# Why Choose Drone Technology Services?

- On Demand image acquisition.
- Accurate & Comprehensive Data.
- Cost & Time saving.
- Maintenance & Asset inspection.
- Bridge Inspection.
- Corridor Mapping.
- Pre-Construction Survey.
- Project Progress Monitoring.
- Volumetric Analysis.
- Videography Inspection.





[www.blueskyamida.co.in](http://www.blueskyamida.co.in)



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