

Introductions

1. Necessity to provide environment information service for convergence in line with the era of the 4th Industrial Revolution.
2. Environmental impact assessment verification system needs to be strengthened.
3. Increase the people's awareness of the right to know.

Objective

We would like to present the advantages and examples of unmanned aerial technology used for the development of the environmental impact assessment system in Republic of Korea.

Methods

1. Research sites

- Industrial complex construction project : 24 sites
- Urban development project : 15 sites

2. Utilization technology

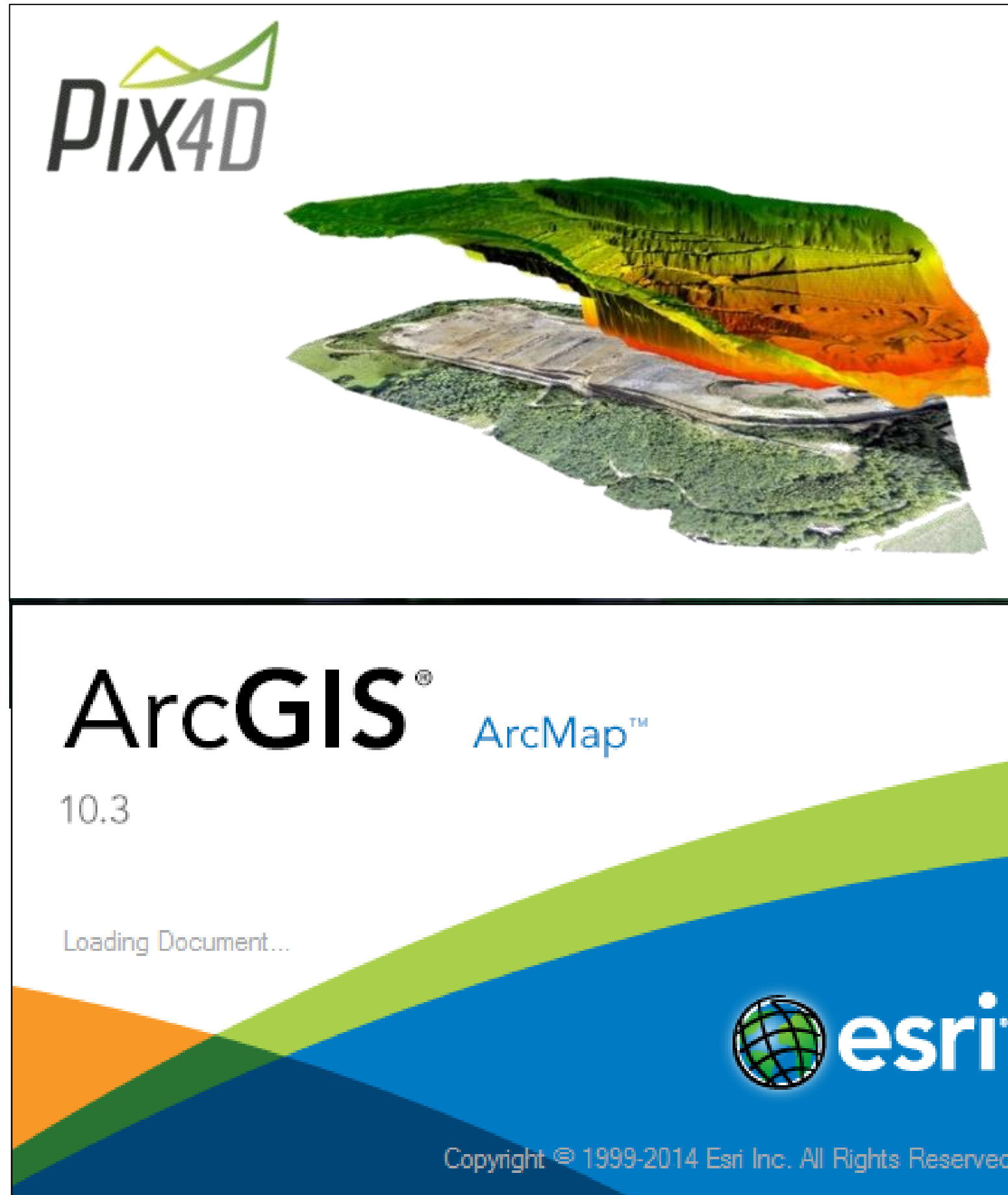
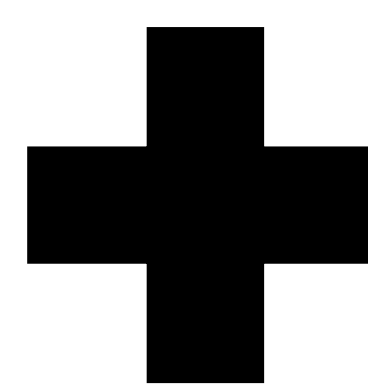
- UAVT (Unmanned Aerial Vehicle Available Technology)
 - Inspire 1 Pro & Mavic Pro
- SMT (Spatial Mapping Technology)
 - PIX4D mapper (Image Processing S/W)
 - ArcGIS Desktop 10.5.1 (Image Analysis S/W)

3. Analysis method

- Image Tracking of 2D map and 3D map
- Overlapping Analysis of Land Use Planning Plan



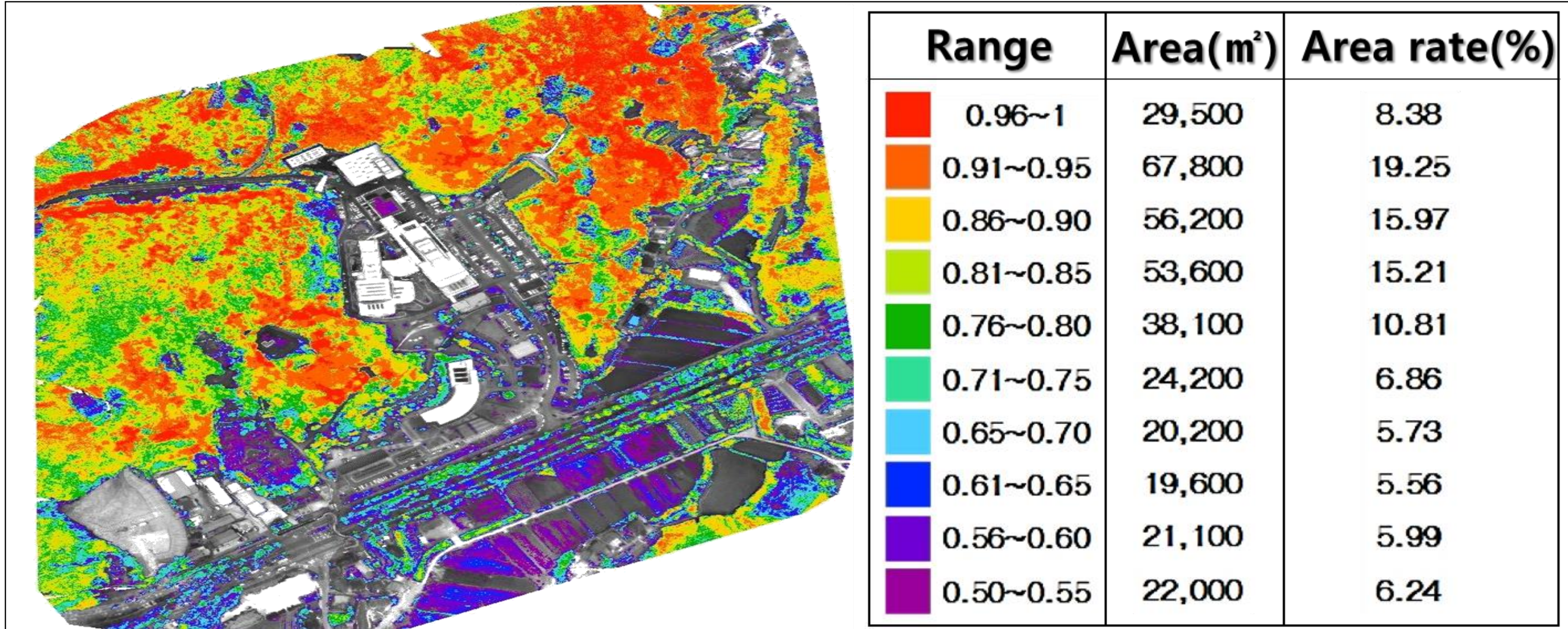
MAVIC PRO



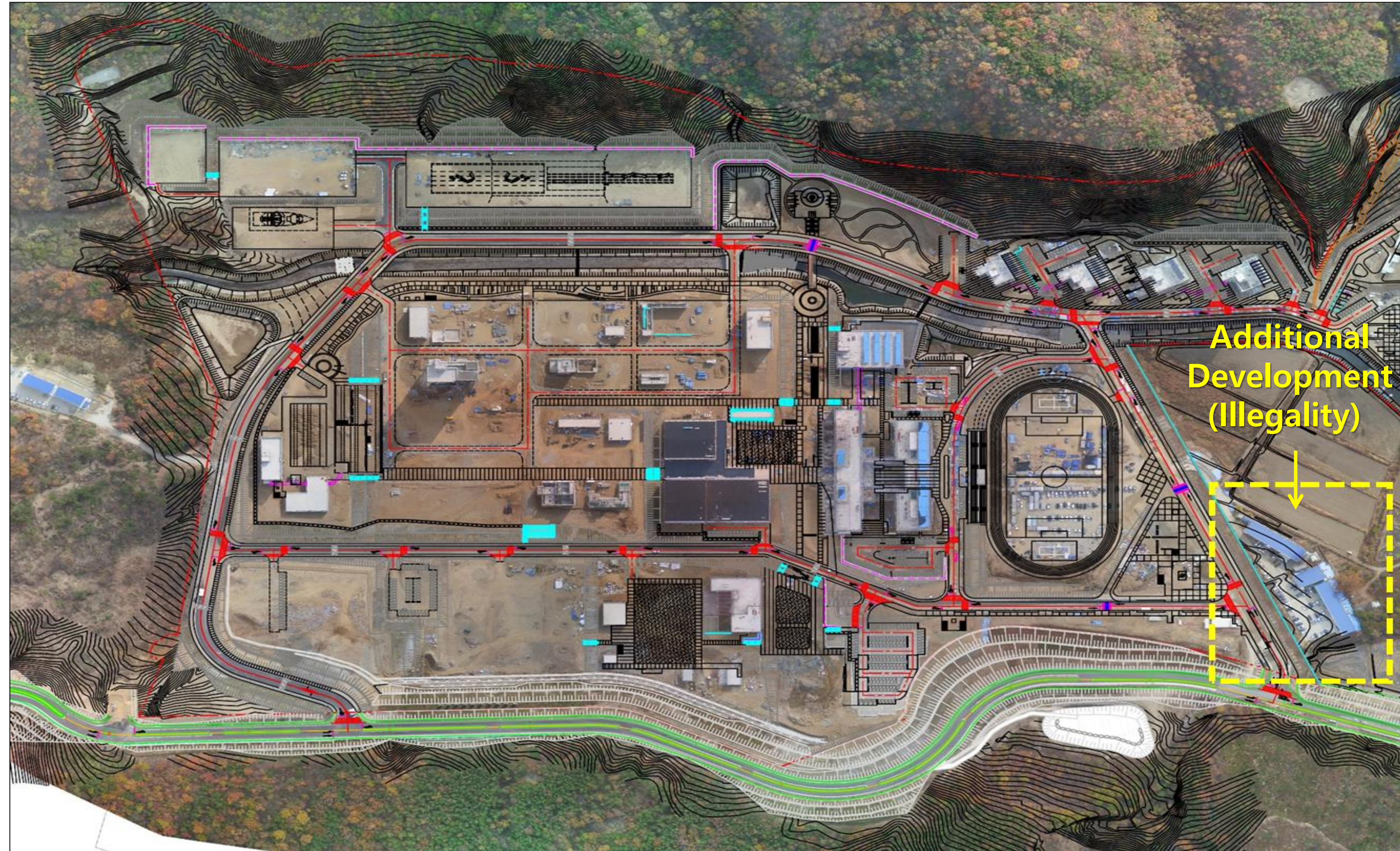
Results

1. Development of precision survey and management tools

- 2D map
 - Check floor plan information, location of reduced and emission facilities, aspect ratio, Vegetation Restoration Zone Monitoring, etc.
- 3D map
 - Free to zoom, shrink, and rotate at any point in time, precisely analyze the landscape changes, Slope gradient, capacity, and tree height.
- Overlapping Analysis of Land Use Planning Plan and 2D map
 - Analysis of damage to circular conservation area, overdevelopment area, etc.



<Case1-1> NDVI analysis of drone images with multi-spectral sensors. Monitoring of Vegetation Restoration Zone NDVI analysis.



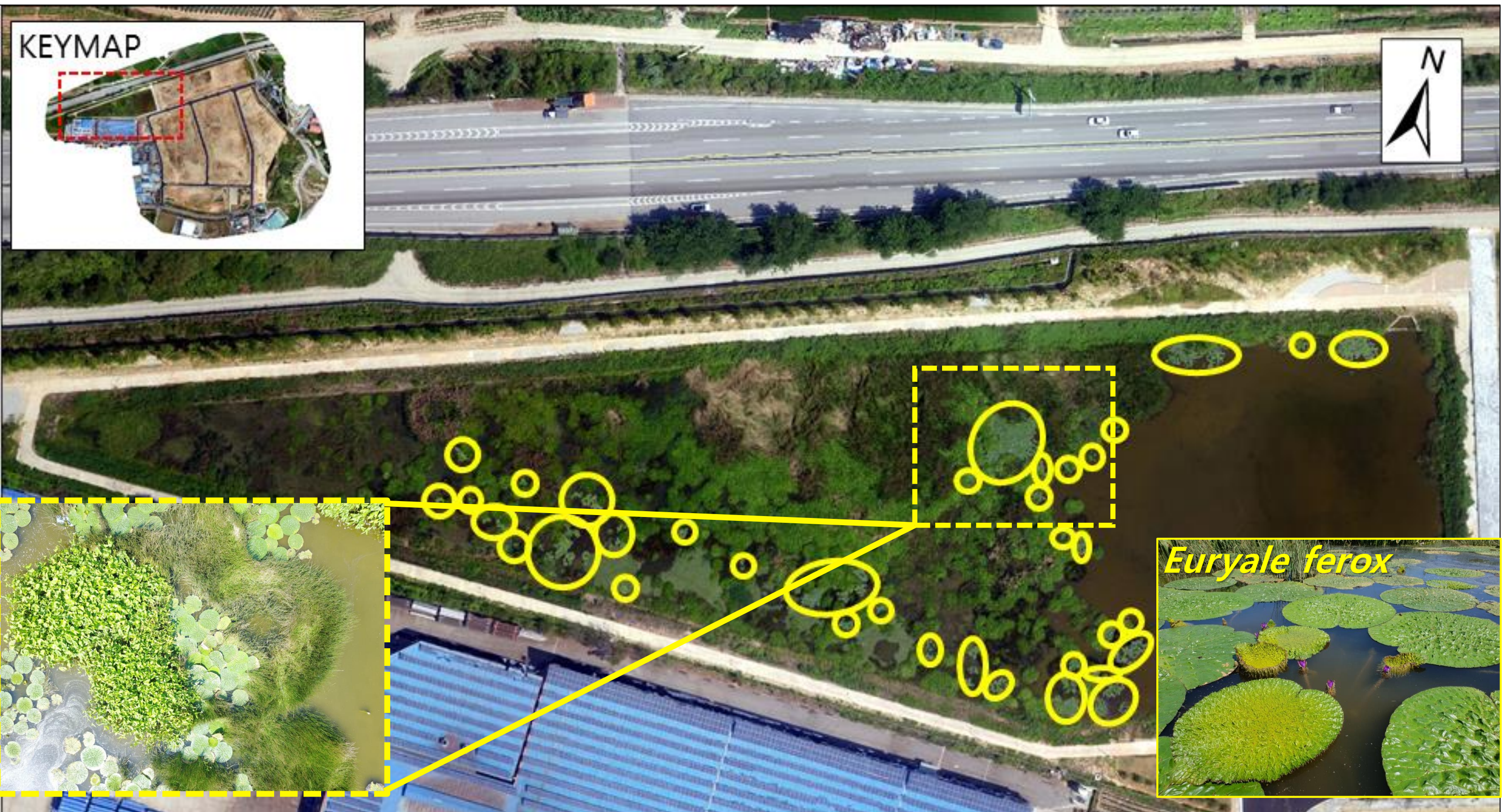
<Case1-2> Overlapping Analysis of Land Use Planning Plan and 2D map.

2. Advanced verification of false and poor reports

- Confirmation of deterioration of abatement facilities to minimize impacts from development projects.
 - Abatement facilities : Grit chamber, Waste site in workplace, Eco-corridor, etc.
- Biodiversity conservation
 - Threatened Species(*Euryale ferox*) Conservation, Invasive Alien Species Management, etc.
- Confirmation of further development in development site



<Case2-1> Confirmation of Grit chamber damage.



<Case2-2> Confirmation of *Euryale ferox* in the storm water storage basin. This area is under discussion for conservation. Yellow circle shows the distribution of *Euryale ferox*.

Conclusions

Using the drones in the environmental impact assessment system, the following effects can be derived.

1. It is possible to actively manage environmental changes caused by development.
2. It can prevent false and bad reports in environmental impact assessment system.
3. It is possible to resolve the occurrence of conflict between the public and developer.
4. It can prevent the reduction of biodiversity due to development.