



propeller

Managing Outdoor Worksites

How up-to-date drone data increases efficiency
and improves safety.

The fact is that, for businesses, the bottom line is to increase efficiency in order to maximise ROI.

Increasing the frequency of your drone aerial surveys and mapping—weekly over monthly, or daily over weekly—increases the collected data, making it more accurate and more beneficial.

When your surveys closely match the frequency with which your site changes, the result is real-time, up-to-date data. This kind of data has the power to improve management of worksite activities, increasing efficiency and production, and reducing costs.

Why not increase your coverage?

It's a paradigm shift to consider such frequent surveys because we've become so accustomed to the costs and time associated with an onsite surveyor's work: driving to the site, setting up, surveying, driving back, and then processing the raw data into the image formats required.

On average, a surveyor costs \$1000 per day—and the days add up when surveying large mines, voluminous landfills, or miles of haul roads. Even once the surveying is complete, a full day or more is necessary to process and deliver the data.

A drone, on the other hand, can fly a site in about 15–20 minutes (depending on the site size) and the processed data is typically available within 24 hours. In just one day, your site can be mapped, and the information processed and delivered, at a cost of \$300 per survey.

The economics are appealing for sure, but that isn't the only factor to consider. Drone surveying comes with the added benefit of reducing risks to personnel. Although a drone operator works near the site, he or she can stay well away from hazardous locations or situations.

The FAA and other national aviation authorities have made it easier to fly a drone commercially and have published clearly defined rules. This, combined with commercial-grade drone technology becoming increasingly affordable, means much lower barriers to flying a drone as often as you want.



Time is money:
On average, a drone survey takes **just 40%** of the time required to carry out the same job using traditional methods.

Operations management from on high

Whether you manage mines, quarries, landfills, haul roads, or construction, surveying your site more frequently, collecting images that can be converted into maps and models, will improve a number of common workflows.

Managing quarries and mines

MEASURING STOCKPILES FOR INVENTORY ANALYSIS

Manually measuring and estimating stockpiles involves a person walking the outside perimeter and then climbing to the top to walk the full flat area.

Using imagery with geospatial data to calculate latitude, longitude and elevation, stockpiles can be measured accurately without having to stop production to allow surveyors onsite.

Regular drone aerial imagery can also help determine where to place various piles, keep track of how much material is moved, and which materials go into each pile.

DRILLING AND BLASTING

Before a blast and the subsequent drilling, the height of the ground must be captured to accurately calculate the depth of the drill holes.

Measuring the ground level pre-blast with a drone allows personnel to stay clear of the danger area.

IN-PIT CRUSHING AND CONVEYING (IPCC)

Drones benefit IPCC systems by helping with planning for the reach (or arc) of the conveyers. A drone can fly the worksite and

surrounding area to obtain an up-to-date 3D model, which allows you to plan where to mine based on the radius of the reach.

Monitoring haul road design and maintenance

A key concern for anyone managing an open-pit mine or quarry operation is the condition of the roads.

Efficient haul roads require careful design, and drone imagery delivers a clear view of obstacles or hazards that could impede optimal placement and construction.

Drone maps help plan road access, grading, slope, and optimal placement of signs.

High-quality maintenance is required to keep haul roads in good working condition. Heavy vehicles and load imbalances, frequency of use, material spillage, heavy rainfall, grading and drainage imperfections all contribute to degradation of a road.

Weekly or daily monitoring will detect degradation signs quickly, and help you identify and remedy the problems.

When you fly more frequently, the up-to-date data will help reduce truck cycles and cycle times.

If a ramp becomes too steep, or the top material is degraded, trucks will burn more fuel as it takes them longer to haul.

Catching these situations with frequent imagery will allow you to make smart, data-driven decisions, leading to a reduction in maintenance costs, fill cost, fuel cost, and cycle time. When trucks can fit in more cycles with reduced cycle time, productivity is increased.

Monitoring slips

Slips are common in open-pit mines and quarries, and without frequent monitoring they have the potential to close the whole operation—causing significant production delays and costs.

Frequent drone monitoring gives you a clear view of the entire worksite, including inaccessible parts of the pit, allowing you to spot slips that may not be visible at ground-level.

Flying the pit before each daily shift and after each blast ensures that slippage from high walls or water pools is discovered as soon as possible, ensuring the safety of the workers and preventing delays in production. Frequent image captures also pinpoint more readily when it's time to remediate the ground.

Measuring landfill volumes to calculate remaining airspace

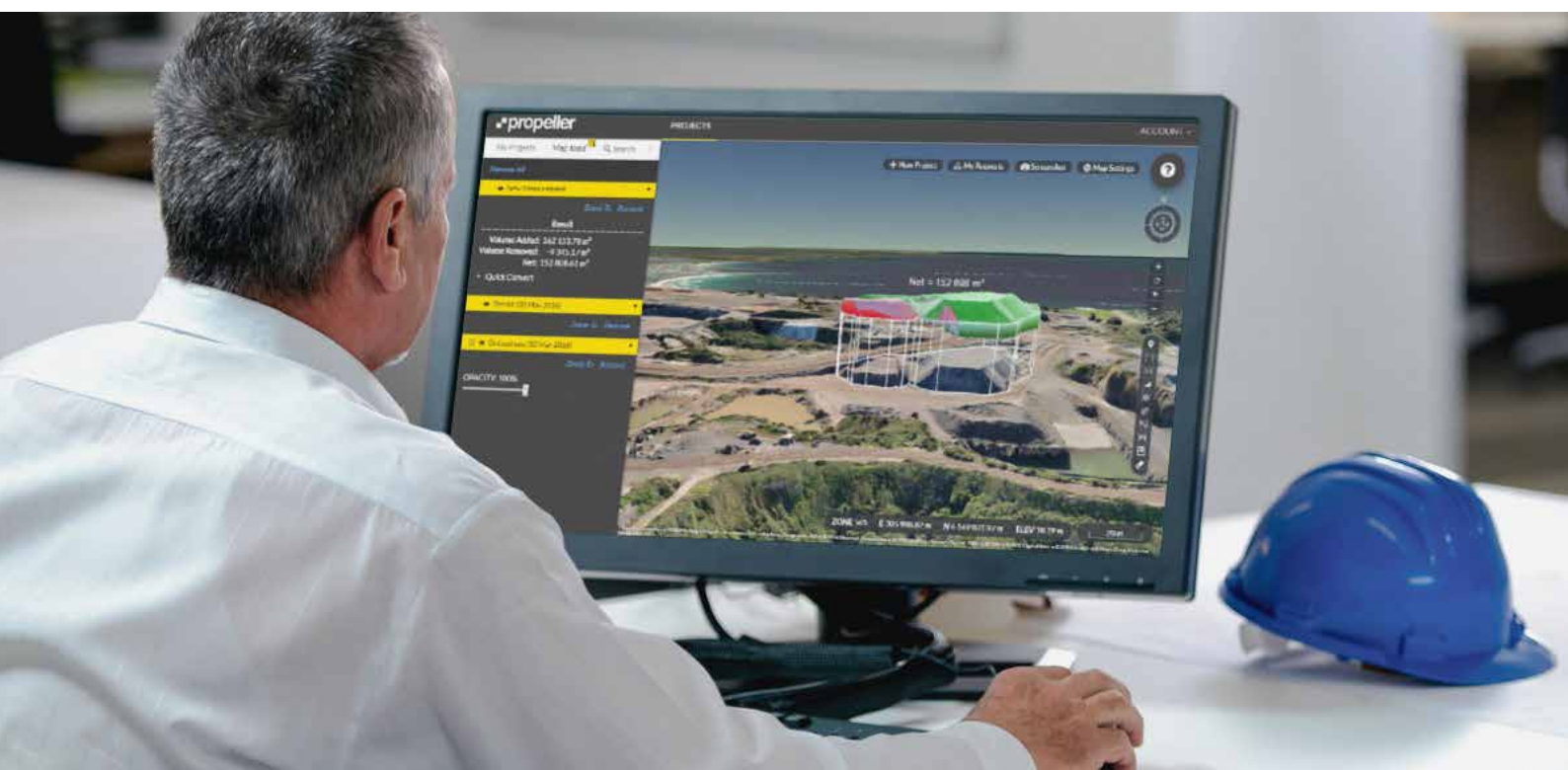
Higher compaction density means more airspace, more trash, and a fatter profit margin.

Having the ability to survey the landfill more frequently allows you to closely monitor density figures and quickly make operational changes to achieve the optimal density you're seeking.

Weekly or daily surveys allow you to more accurately predict the lifespan of a landfill, as your density estimates will be based on the most up-to-date data for precise calculations on the remaining airspace.

There is also the safety aspect of people moving around landfills; trash, machinery, and potential toxic waste pose health and safety issues.

The data obtained using drone flights is more accurate, and the collection method is a lot safer, reducing the risk of illness and injury for site teams.



Managing subcontract work and resolving disputes

Frequent drone flights help maintain an accurate record of sub-contracting work.

If you fly daily, in a metalliferous mine for example, you can monitor that the correct grade of each stockpile is going through the mill—ensuring the actual grade of the finished product is accurate.

In addition, daily drone flights save on site visits, improving efficiency by eliminating travel time and personnel costs.

Whether it's keeping sub-contractors on track, resolving boundary and property disputes, or authenticating proof of work completed, up-to-date drone imagery gives all stakeholders clear insights as work on the ground progresses.

Enjoy the confidence of knowing that, if a dispute does arise, you have a complete and accurate visual data set on hand.

Drone data: A boost for ROI

Outdoor work sites change weekly, or even daily, but the time and cost of monitoring changes using traditional surveying techniques prevents businesses from surveying as frequently as they should.

Drone surveying is changing the way we think about site management and improving traditional workflows.

Surveying your site more frequently (by using a drone) allows you to see changes as they happen, and helps you spot details that aren't visible at ground-level.

The accurate and up-to-date data you'll collect can't be matched for making decisions to improve productivity, ensure safety and quality, and reduce costs.



LEARN MORE ABOUT PROPELLER:

Want the power to manage and measure your worksite yourself with easy online tools that anyone can use?

Make an enquiry:

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Propeller turns your drone-captured images into accurate 3D site models. Powerful point-and-click tools let you take measurements, track progress, and share sites with others, right from your browser.

For accurate drone data, use Propeller alongside AeroPoints—the world's first smart Ground Control Points, purpose-built for drone surveying.