Trendspek

Capture Guide

Warehouse Capture Guide

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Trendspek's Capture Guide combines 15+ years of enterprise drone pilot experience and professional tips to assist you in achieving an optimal capture, every time.

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FLIGHT SETTINGS

Roof Capture

To achieve a 1.5mm resolution 3D photogrammetry model set up your flight parameters using the the settings below.

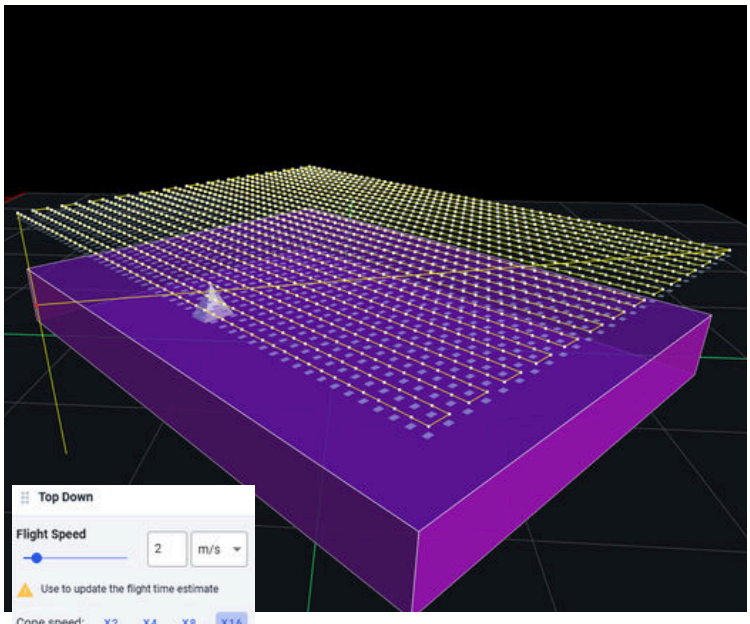
When planning the flight area, include additional margin to ensure the façades are fully captured in frame.

Please note these flight parameters are based on a DJI Matrice 300/350 RTK with a P1 35mm lens and you will need to change your parameters to the particular drone you are using to achieve 1.5mm GSD

PRO TIP: Use RTK if available

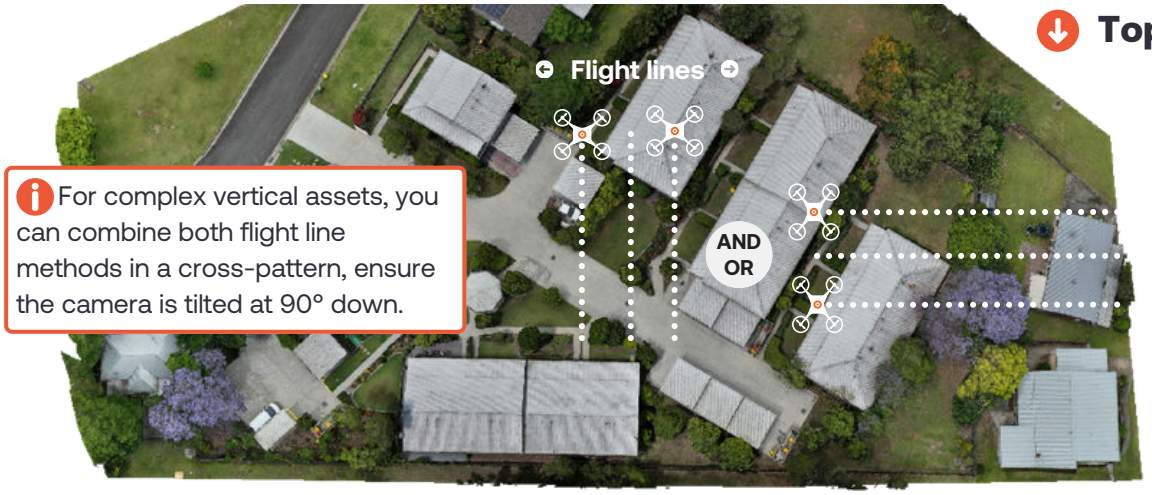
Flight 1: Roof Capture

Flight Parameters	Values
Mission Type	Top Down (Nadir)
Target offset	Roof height plus 12m
Speed (M/S)	Maximum 2m/s
Overlap	75/75
Gimbal Pitch	-90* (Degrees)



Graphic courtesy of the Drone Harmony App

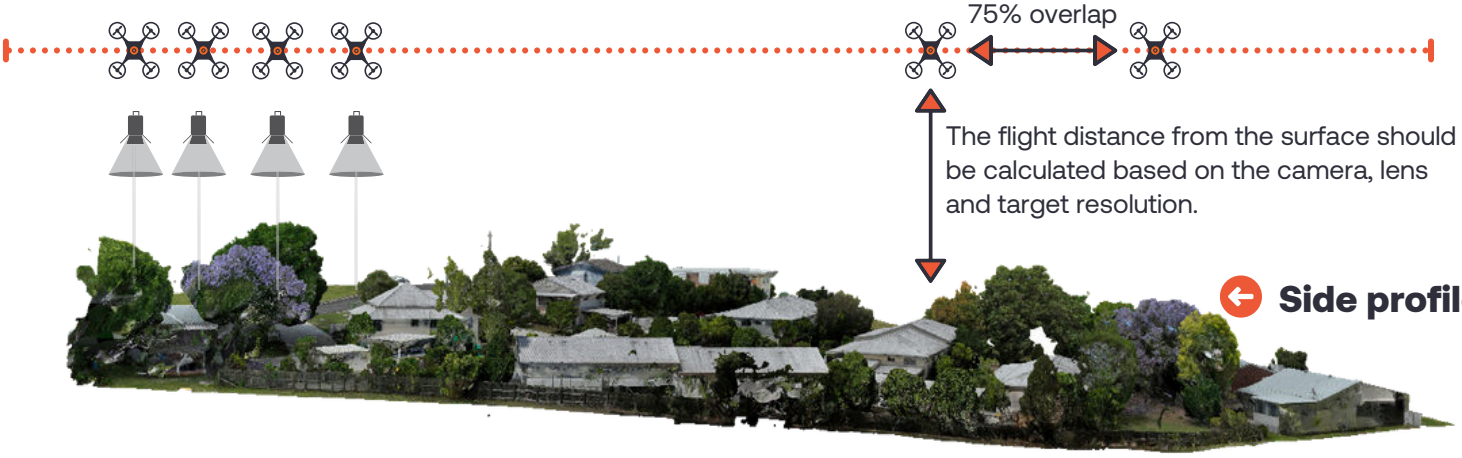
Tips for Capturing Roofs and Linear Assets



Top down Profile

For complex vertical assets, you can combine both flight line methods in a cross-pattern, ensure the camera is tilted at 90° down.

Flight lines should equate to a 75% overlap



The flight distance from the surface should be calculated based on the camera, lens and target resolution.

Side profile

FLIGHT SETTINGS

High-Level Façade (Transitional Roof and Façade Imagery)

To ensure you have transitional imagery between the roof and façades/elevations for a complete model.

To capture successful Transitional imagery you will need to ensure you are able to see the roof, façade and hardstand in each image, please see an example of the image on the right

Please note these flight parameters are based on a DJI Matrice 300/350 RTK P1 35mm lens and you will need to change your parameters to the particular drone you are using to achieve GSD

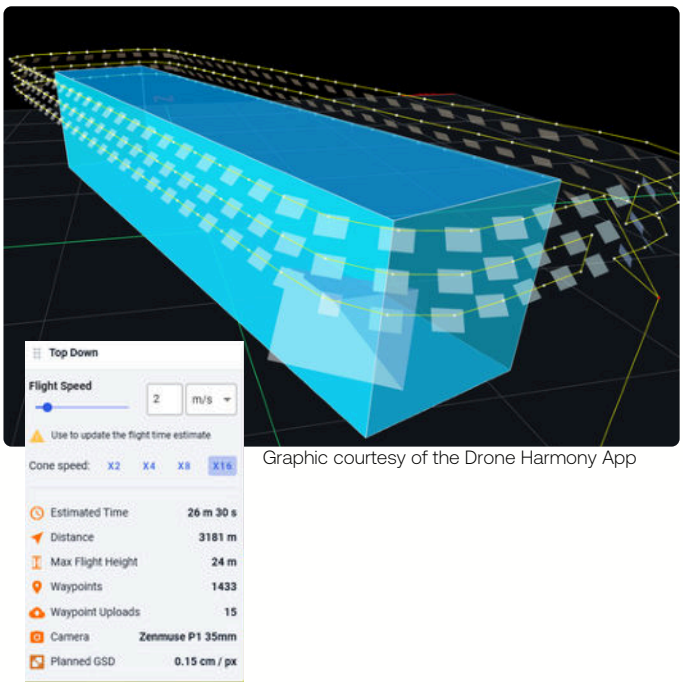
PRO TIP:

- **Use RTK if available**

Example of successful transitional imagery

Flight 2: High-level Façade Capture (Transitional Roof & Façade Imagery)

Flight Parameters	Values
Mission Type	Manual Orbit
Target offset	Reduce the height by 5-6 meters from the roof offset.
Speed (M/S)	Maximum 2 M/S
Overlap	75/75
Gimbal Pitch Lap 1	60-70* (Degrees)
Gimbal Pitch Lap 2	40-50* (Degrees)



Graphic courtesy of the Drone Harmony App

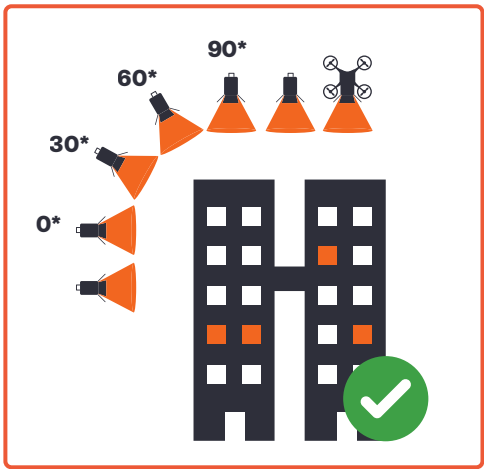
Transition Tips

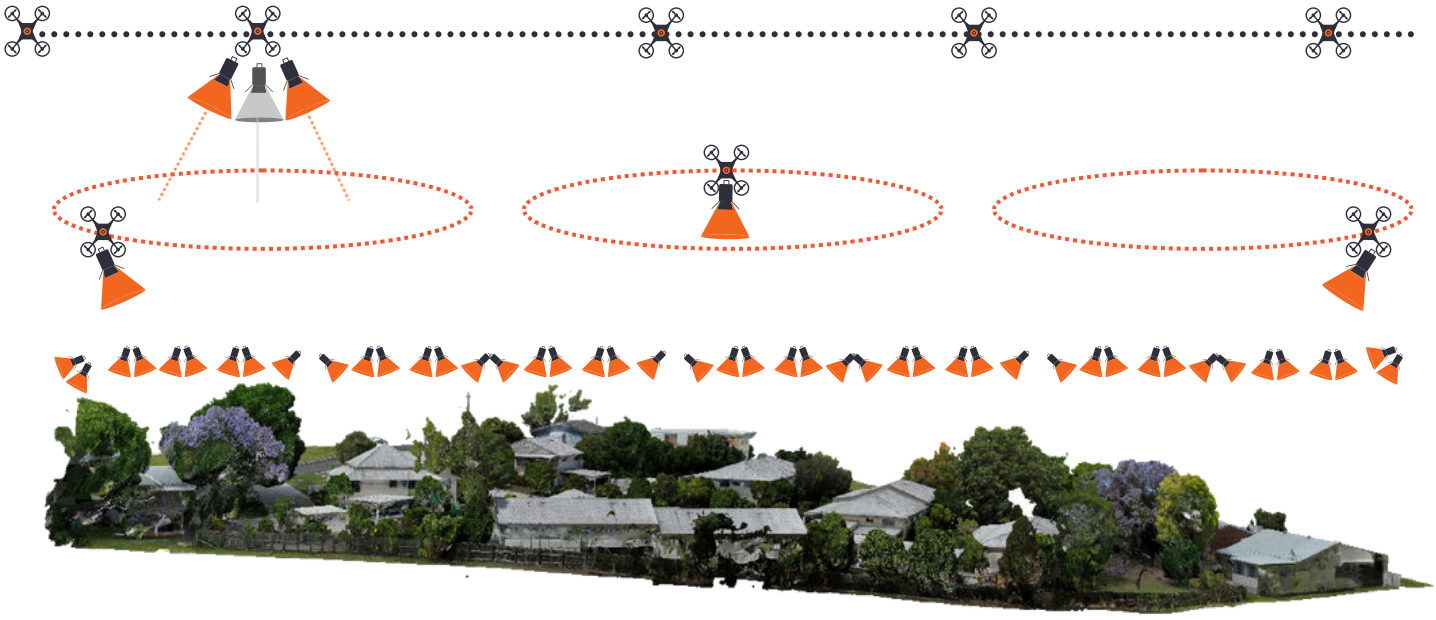
Transition photos

One of the most significant issues in drone capture is a lack of transitional imagery, which can lead to incomplete or fragmented corners of vertical structures.

- Aim for a minimum of one image per 30 degrees when transitioning around corners or;
- If mixing distances, try to include a "transition" distance and avoid going from far to really close. see image below

PRO TIP: For intricate or detail-heavy assets, increase the amount of transition shots.





FLIGHT SETTINGS

Façade

Capturing general warehouse Façades at 1.5mm resolution is not recommended due to the lack of detailed features, as processing featureless façades can be quite challenging and can result with artefacts in the model.

We recommend capturing between 2mm and 3mm resolution to achieve a complete model.

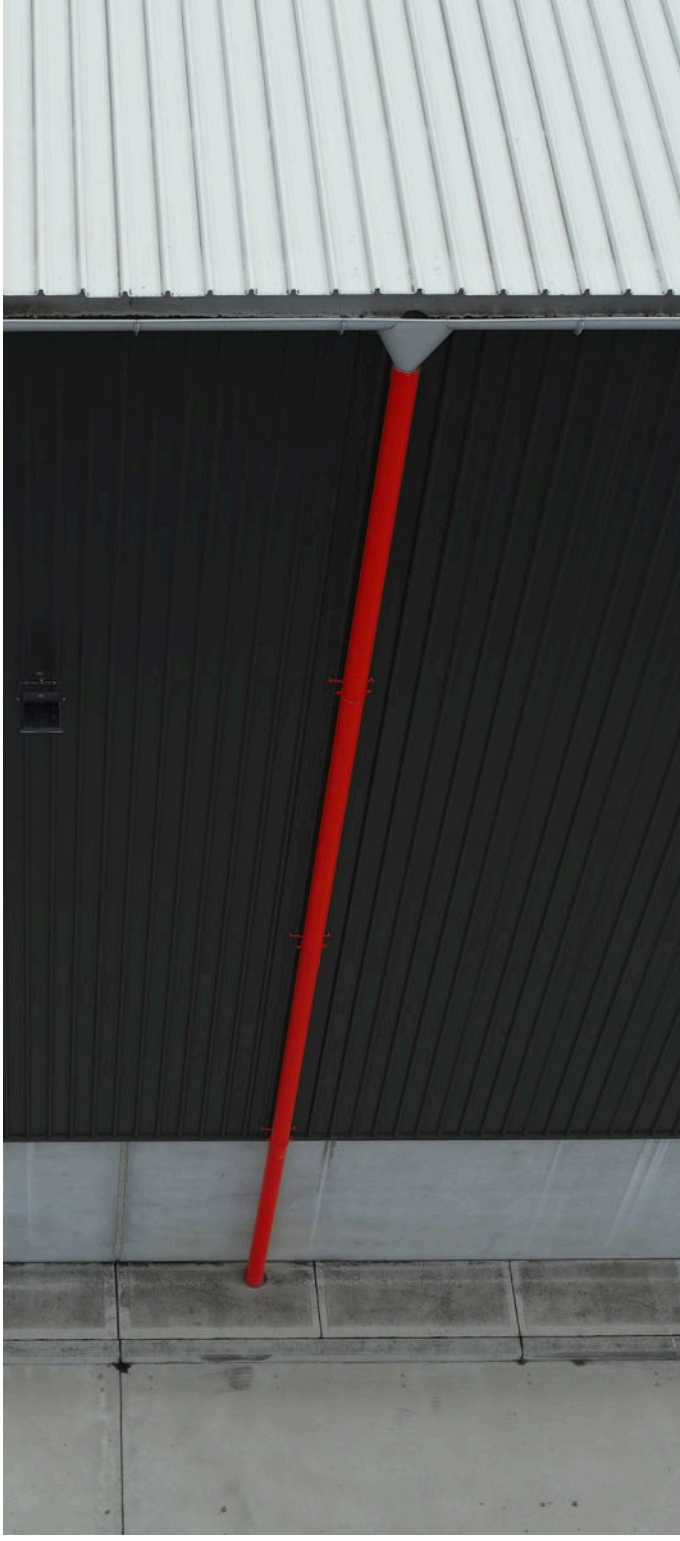
Please note these flight parameters are based on a DJI Matrice 300/350 RTK with a P1 35mm lens and you will need to change your parameters to the particular drone you are using to achieve 1.5mm GSD

PRO TIP:

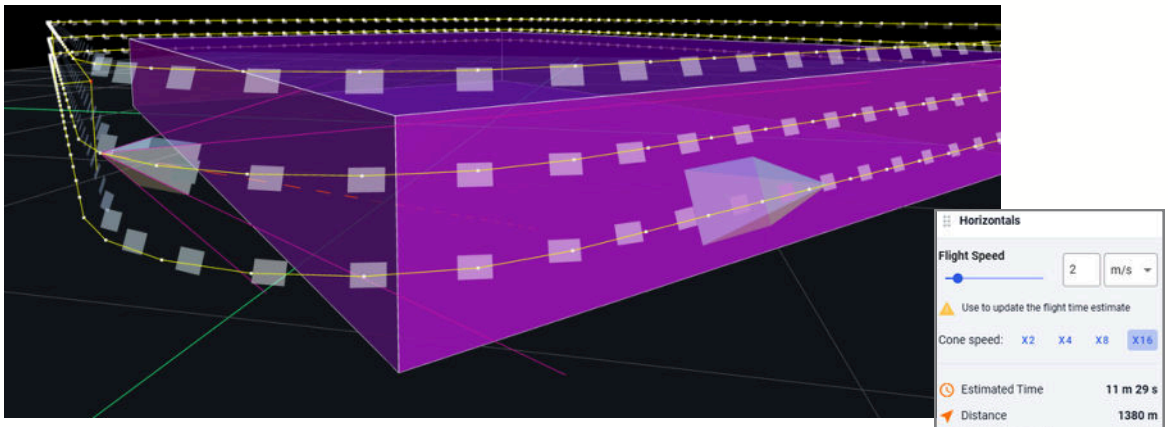
- Use RTK if available

Flight 3: Façade Capture

Flight Parameters	Values
Mission Type	**Façades**
Target offset	**Adjust the height to what is available at the warehouse, ensuring the flight path is clear of any obstructions. If possible, set it between 15-20 meters.**
Speed (M/S)	**Maximum 2 M/S**
Overlap	**75/75**
Gimbal Pitch Lap 1	**30-45* (Degrees)**

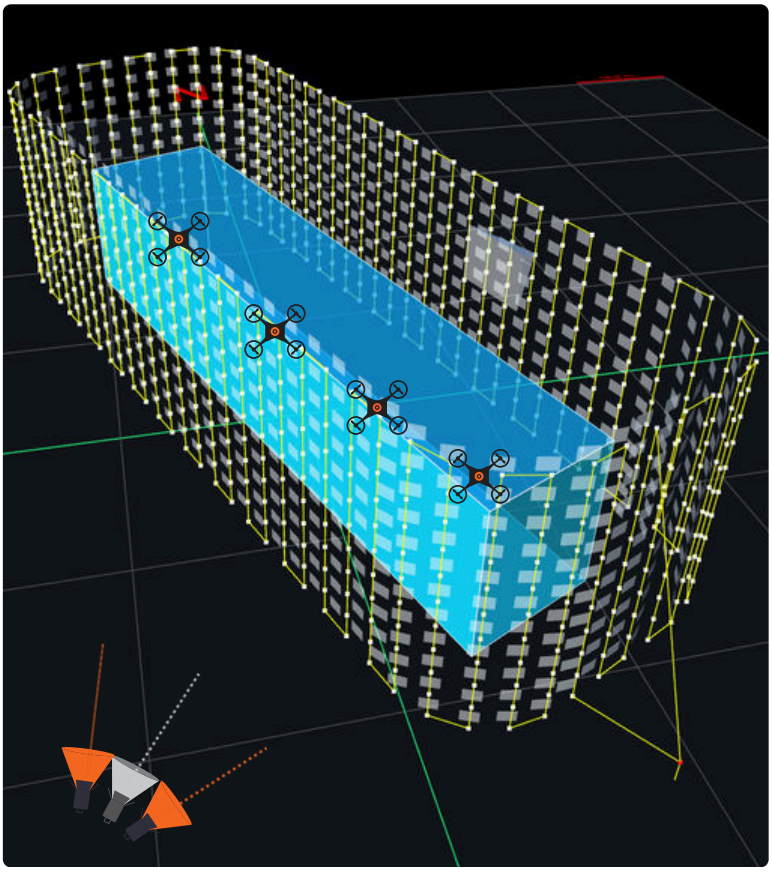


Example of successful transitional imagery



Graphic courtesy of the Drone Harmony App

Tips for Capturing Façades



- Consider flying flight lines with the camera slightly tilted up, with the alternate flight line having the camera tilted down, thus enabling a better render of your 3D model.
- Height change between each photo should equate to 75% overlap
- If there are gutters or awnings, perform a lap around the whole perimeter of the warehouse ensuring to tilt the camera to -10 degrees to ensure the underside is captured effectively.
- Loading docks are best captured when the site is not in operation. If this cannot be avoided, ask for the quietest time to conduct the capture. Maintain a safe distance as advised by Civil Aviation Authorities. Be aware that the resolution in this area may be lower due to potential movement of objects when capturing and the maintained distance

To calculate the correct offset distance for your specific drone/camera please consult the Trendspek offset calculator.

If including top-down components such as roofs or hardstands, don't forget to include transition imagery as discussed on page 7.

FLIGHT SETTINGS

Hardstands

Hardstands should be captured at the resolution requested on your brief.

These flight settings are based on 3mm resolution

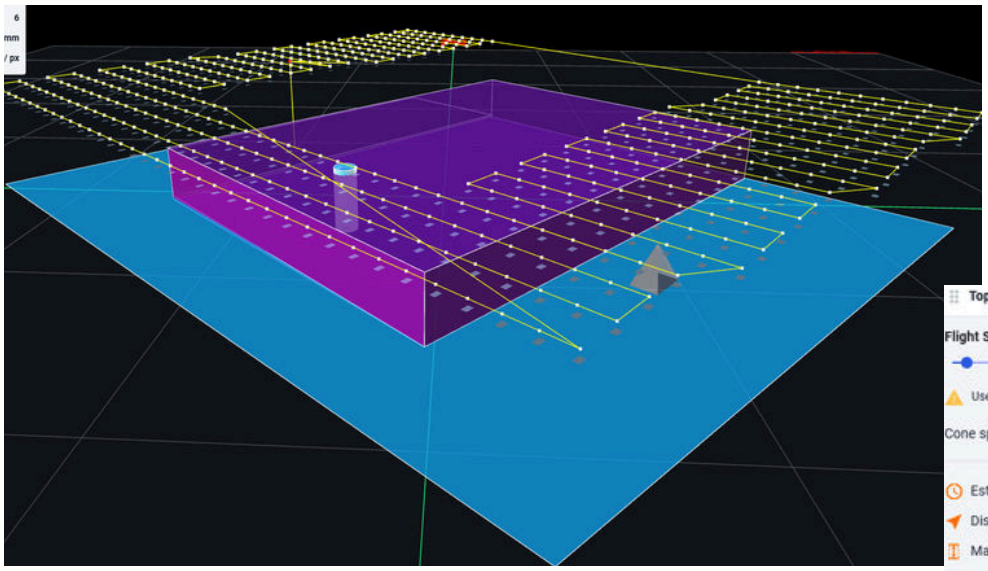
Please note these flight parameters are based on a DJI Matrice 300/350 RTK with a P1 35mm lens and you will need to change your parameters to the particular drone you are using to achieve 3mm GSD

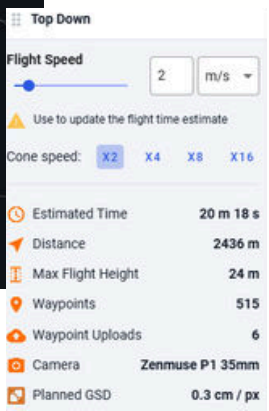
PRO TIP:

- Use RTK if available

Flight 4: Hardstands Capture

Flight Parameters	Values
Mission Type	**Hardstands**
Target offset	**24m**
Speed (M/S)	**Maximum 2 M/S**
Overlap	**75/75**
Gimbal Pitch Lap 1	**90* (Degrees)**



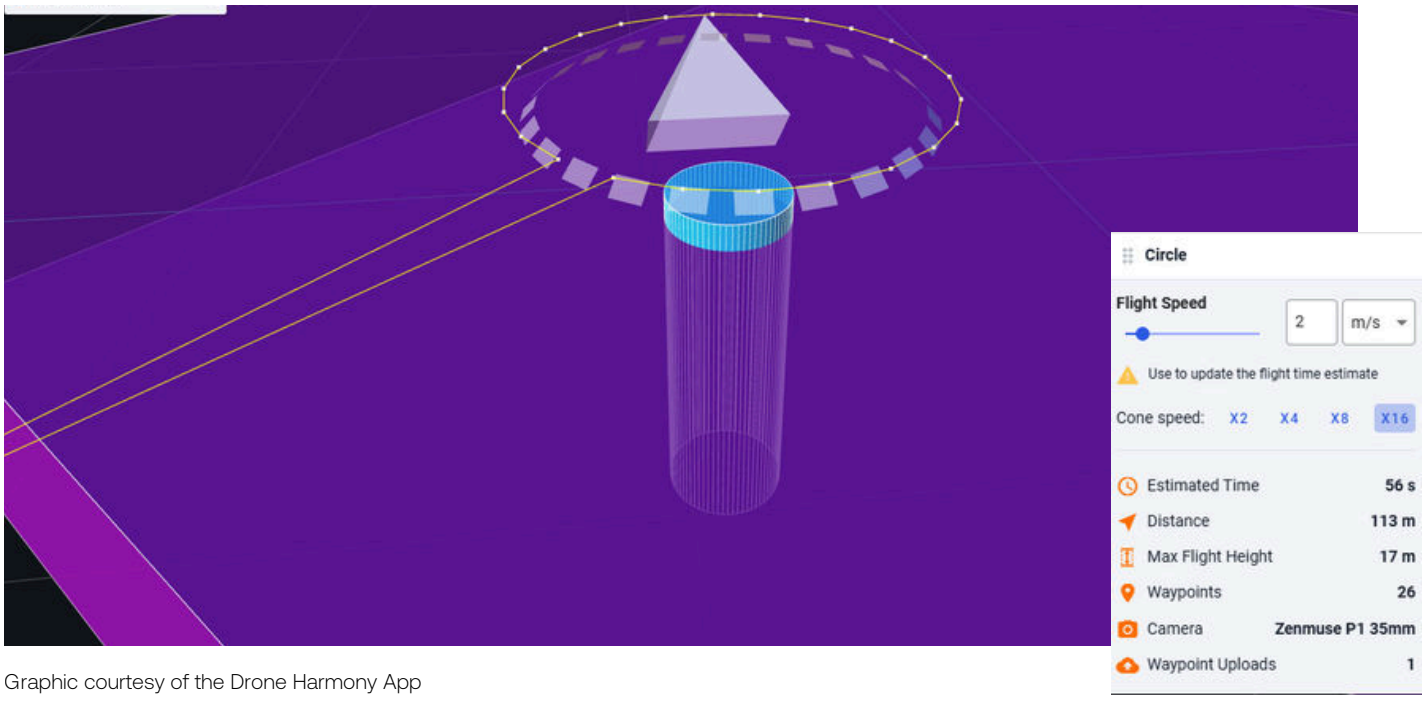


Graphic courtesy of the Drone Harmony App

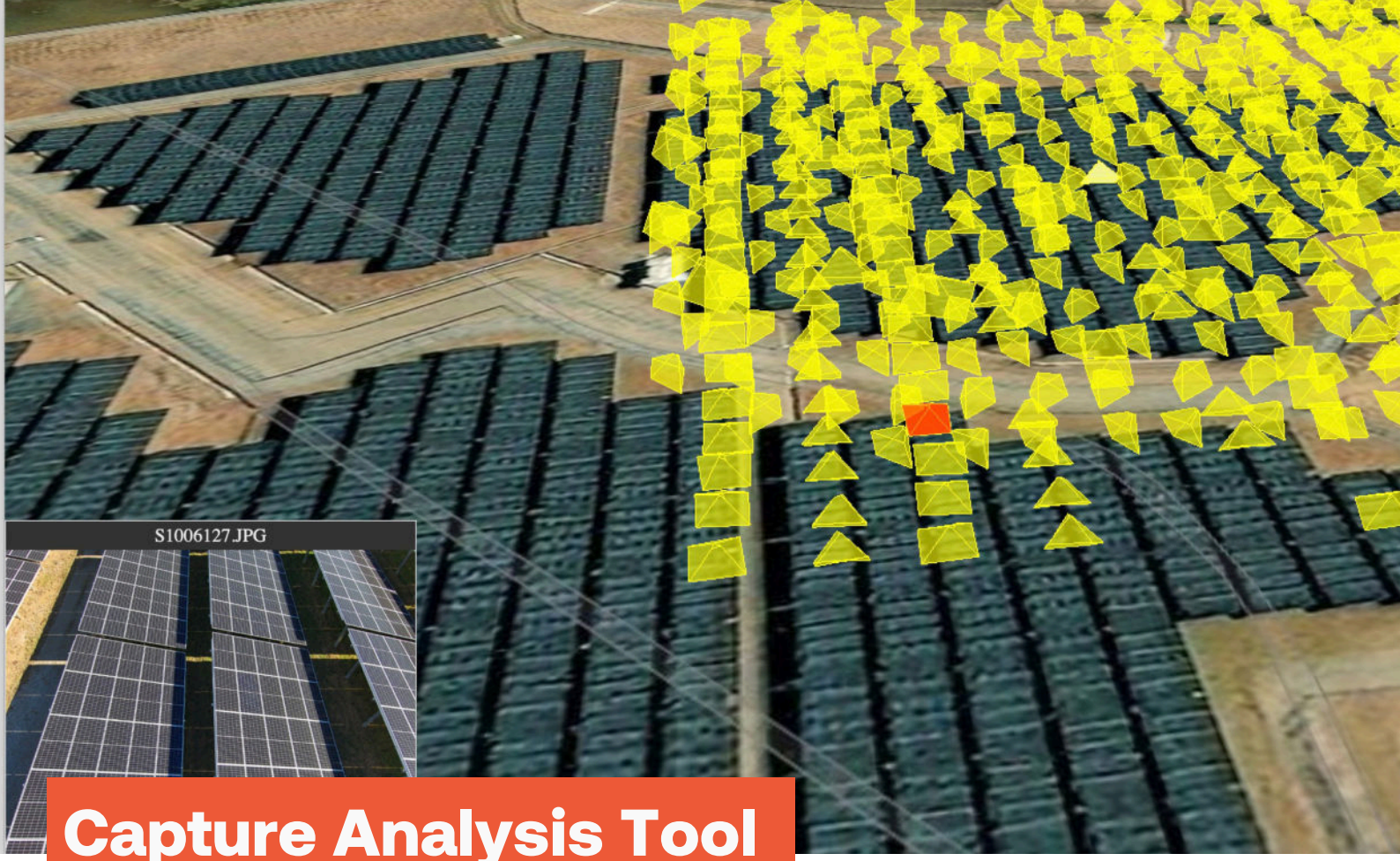
Plant Equipment or noticeable damage

After completing your top-down mission, please perform manual orbits maintaining the correct GSD as specified in your brief and capture the following if requested in your brief:

- Plant equipment
- Visible areas of damage



Graphic courtesy of the Drone Harmony App



Capture Analysis Tool

Check capture coverage while on-site for more complete 3D models

Trendspek's Capture Analysis tool allows you to verify that you've captured your whole asset while still on-site to ensure optimal coverage.

Accessible via the platform, this tool improves accuracy, resulting in better 3D models without the need for repeat site visits.

You will need a Trendspek account to use the tool.

Click here to use Capture Analysis Tool:
https://trendspek.cloud/capture-analysis

Drone Selection

The minimum recommended drone camera is a true 20 megapixels.

For anything less than this, please consult our capture team: delivery@trendspek.com

PRO TIP: Cameras with larger sensor sizes will produce superior image quality, with added benefits including:

- Capture more of the asset in one frame, meaning fewer overall photos
- Fewer flight lines needed, making it significantly quicker to capture
- Fewer obstacles avoided by flying higher

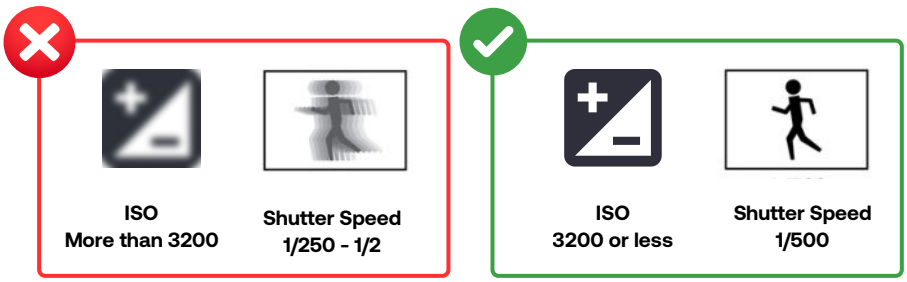
Camera Tips

When setting up your camera for capture, keep in mind the following:

PRO TIP: Where possible, select Manual White Balance (e.g. sunny or cloudy). Don't change these settings during capture, even if weather conditions change.

If using multiple drones, ensure the white balance matches for each drone.

PRO TIP: In darker conditions, avoid exceeding ISO 3200 or Shutter Speed less than 1/500, as this will result in grainy/blurry images



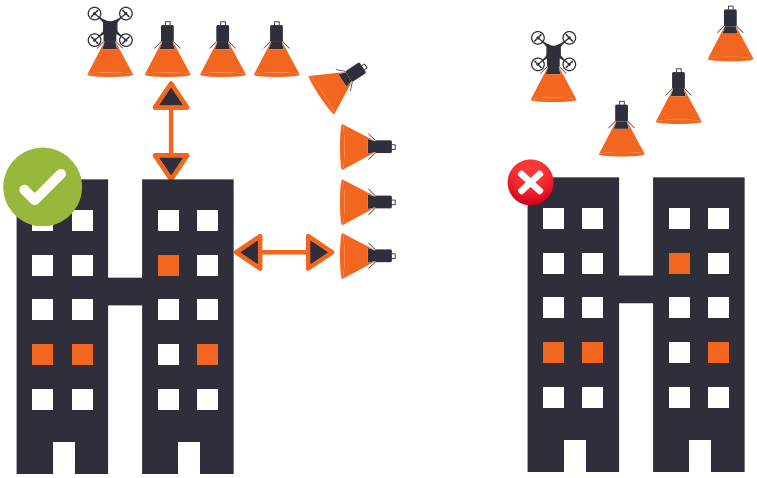
Target Resolution (GSD)

When targeting a specific resolution or Ground Sample Distance (GSD), ensure accuracy when calculating the offset distance and adhere to it closely.

To calculate the correct offset distance for your specific drone/camera please consult the Trendspek offset calculator:

https://trendspek.com/news/resolution-calculator

PRO TIP: Maintain the correct offset throughout the entire capture. For example, if your target offset is 10m, measure the height of the roof and then add the 10m offset above the roof's height.



Maintain calculated offset

Apps

- DJI Pilot
- Drone Harmony
- Drone Link

Capture Checklist

Asset .....

Camera/Lens .....

Target Resolution .....

Offset distance .....

Pre-flight checklist

- [ ] The capture plan includes the correct overlap of 75/75 and transition imagery
- [ ] Image ratio set (4:3 or 3:2)
- [ ] Image type set to JPEG
- [ ] Offset distance / Height above asset set
- [ ] Auto Focus set
- [ ] White balance set

Post-flight checklist (onsite)

- [ ] Images are in focus without motion blur
- [ ] Exposure is balanced correctly (No "blown-out" whites on the asset)
- [ ] Images have a consistent white balance
- [ ] Sufficient transitional imagery was captured (topdown - to verticals)
- [ ] Sufficient overlap was captured
- [ ] Validated with Trendspek's capture analysis tool

Data and Upload Checklist

- [ ] Upload data straight away to minimise risk of data loss, if not able create a second copy of the data
- [ ] Where feasible check images and remove any that are out of focus or blurry
- [ ] Ensure you name your upload with the address of the property in the following format:

  42 Wallaby Way Sydney

Prepared by

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