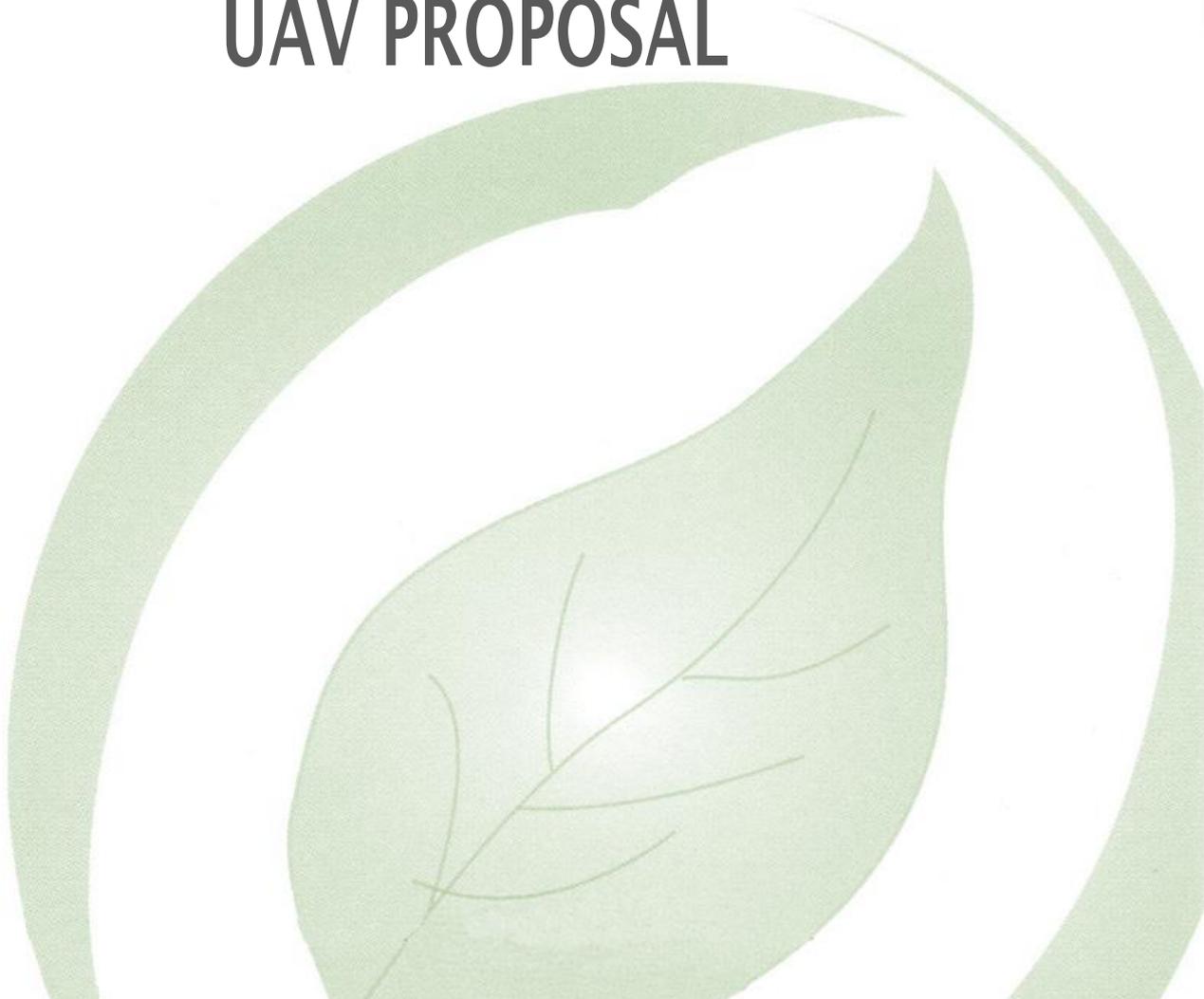# FELIX BOTANICA

UAV PROPOSAL

Objectives

Felix Botanica Pty Ltd is working to bring emerging technologies to the environmental management industry that will enable high quality visual outputs and infield data. We believe the UAV imaging industry, while still evolving will be a highly useful tool to contract and project managers. Within the natural resource management sector this will require extremely high levels of direction to achieve measurable outcomes. The combination EVC/Flora/Site knowledge and UAV skills that is held by our staff will achieve better and more cost effective outcomes than a multifaceted works group.

From the initial point of project conception our staff will work in partnership with your organisation to formulate the operations parameters such as height, resolution, data capture targets and imaging targets. This data set can then be used as a baseline to monitor works progress towards attainment of goals or provide diagnostic tools through image capture elements such as Tone/Colour & Texture and the manipulation of the spectral wavelength of the image.

Outputs

Aerial Images

4k images at a controlled distance equate to superior aerials (See Appendix 1.). Note: example is JPG file compressed to <5Mb.
Format: We recommend TIF or PNG file formats to maintain picture quality but also supply JPG at any reduced file size required.

Drone2Map: ArcGIS

This is the most lengthy, technical and expensive output (due to drone damage potential, software licensing and subscriptions) but will achieve higher quality image resolution and notably more cost effective than traditional options. Available in both 2D and 3D.
Format: ArcGIS online platform

Interactive Images

Largescale aerial images with interactive icons to view zoomed points of interest, EVC information, species lists, management notes etc. For an example of this output use this link:
Interactive Image Example
There is an icon in the top right corner that shows all interactive points.
Format: Either a direct link or a HTML5 file. Direct links are only accessible with an internet connection, while HTML5 files do not require internet connection. We can also supply code to embed interactive images to your website.

Large Scale Cover Abundance

By flying over the tree canopy we can give accurate target species densities at an efficient speed.
In situations where the target species has relatively high contrast to its surrounding environment (i.e. Kikuyu in indigenous grassland, flowering acacia etc) we can deliver an accurate assessment of species cover abundance and distribution.
Format: This output is delivered in the form of image/s (JPG) or video (MOV/MP4) depending on the size of the area. Along with our calculated % cover with skills developed from habitat for hectares assessment.

Cinematic Videos

Be a movie director or leave the reigns in our hands and we will create an output that is perfect for showing ecosystems from a new perspective, before and after shots, viewing site burns or advertisement videos.
Format: We offer both MP4 (Windows) and MOV (Mac).

Storage and Sharing

Files that exceed email capabilities are shared via invitation to our online cloud storage.
We also offer delivery on USB and save all projects on our hard drive to ensure no projects are lost.

Other Visual Output Options

Interactive Mapping
Using GPS points we can create a detailed operational map containing images and text.
These supply you with geolocation and high levels of detail.
For an example of this output use this link: Interactive Map Example.

Cannon D6 (Lens: Cannon 50mm 1.4)
Professional quality photos relating to the environmental field (i.e indigenous flowers).

These can be useful for creation of informational pamphlets, signs etc. (See appendix 2)

iPhone Macro Lens
This is a free service upon request when staff will already be on site.

It is particularly useful for capturing the small flowers, moss, fungi and insects. (See appendix 3)

Licensing

RePL licenses are not required for either of our stock DJI Mavic Pro, due to them weighing under 2kg.

Pricing Schedule

Task	Unit	Unit Rate $
Aerial Imagery	Per Image	$200
-Bundle 1	2-5 Images - single site	$250-$500
-Bundle 2	2-10 Images - 2-4 sites	$500-$1000
Drone2Map ArcGIS	Quotes on request	$N/A
Interactive Images	Per Image + <10 points	$300-$400
-Bundle 1	2-5 Images + <10 points each	$400-$1200
-Bundle 2	2-5 Images + >10 points each	$500-$1500
Large Scale Cover Abundance	Per Acre	$400-$1000
Cinematic Videos	Per Minute Footage	$350
Editing	Per Hour	$60
Interactive Map	Per Map + <20 points	$200
-Bundle 1	2-5 Maps + <20 points	$400-$1500
Cannon D6	1-10 Images - single site	$50-$200

UAV Specifications

Diagonal Size: (Propellers excluded) 335mm

Weight: 734 g (exclude gimbal cover)

743 g (include gimbal cover)

Max Ascent Speed: 5 m/s

Max Descent Speed: 3 m/s

Max Speed: 65 kph without wind

Max Service Ceiling Above Sea Level: 5000 m

Max Flight Time: 27 minutes (no wind at a consistent 25 kph)

Max Hovering Time: 24 minutes (no wind)

Overall Flight Time: 21 minutes (In normal flight, 15% remaining battery level)

Max Total Travel Distance: 13 km, no wind

Operating Temperature Range: 0° to 40° C

Satellite Positioning Systems: GPS / GLONASS

Hover Accuracy Range Vertical: +/- 0.1 m Horizontal: +/- 0.3

Camera Specifications

Sensor 1/2.3" (CMOS), Effective pixels:12.35 M (Total pixels:12.71M)

Lens FOV 78.8° 26 mm (35 mm format equivalent) f/2.2

Distortion < 1.5% Focus from 0.5 m to ∞

ISO Range video: 100-3200

photo: 100-1600

Electronic Shutter Speed 8s -1/8000 s

Image Size 4000×3000

Still Photography Modes Single shot

Burst shooting: 3/5/7 frames

Auto Exposure Bracketing (AEB): 3/5 bracketed frames at 0.7 EV

Bias

Interval

Video Recording Modes: C4K: 4096×2160 24p

4K: 3840×2160 24/25/30p

2.7K: 2720x1530 24/25/30p

FHD: 1920×1080 24/25/30/48/50/60/96p

HD: 1280×720 24/25/30/48/50/60/120p

Max Video Bitrate: 60 Mbps

Supported File Systems FAT32 (≤32 GB); exFAT (>32 GB)

Photo: JPEG, DNG

Video: MP4, MOV (MPEG-4 AVC/H.264)

Supported SD Cards: Micro SD™

Max capacity: 128 GB. Class 10 or UHS-1 rating required

Operating Temperature Range: 0° to 40° C

Appendices

Appendix 1.

Carrum Woods Nature Reserve
Heathy Woodland (48)

Appendix 2.

Appendix 3.

Hardenbergia violacea
8mm flower