APPENDIX 11
ATTACHMENT 1

APPROVED PARAMOTOR TAKE-OFF AND LANDING LOCATION

WA SKYPIRATES

PARAMOTORING CLUB INC.

SITE MANAGEMENT PLAN FOR CLUB ACTIVITIES

Location

Pinnaroo point, Local Authority of Joondalup

Prepared for

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Contents

THIS DOCUMENT FORMATTED FOR DOUBLE-SIDED PRINTING

1.0 Introduction

1.1 Scope

This document provides an introduction to the sport of Paramotoring, its legal status, organisation and the environmental management issues that relate to the use of Pinnaroo Point Paramotoring Facility located at Pinnarooo Point within local government area of Joondalup WA.

It is proposed that only those persons who have been endorsed by the WA SkyPirates Paramotoring Club, who have signed an agreement to abide by the requirements of this document, are to have the privilege of using the proposed Pinnaroo Point Paramotoring Facility. Any pilots using the site and not being able to produce such an endorsement will be subject to disciplinary actions by the Hang Gliding Federation of Australia (HGFA) which is the federal organisation for all foot launched flying operations in Australia and Western Australia

1.2 The Sport

Paramotoring is a powered form of the sport of Paragliding. Paragliders are foot-launched gliders that use a fabric wing without any rigid structures. The pilot is supported in a harness below a hollow fabric wing whose shape is formed by the suspension lines that support the harness, the pressure of air entering vents on the front of the wing and the aerodynamic forces of air flowing over the outside of the wing. The complete aircraft can be folded into a rucksack and packed into the boot of a small car.

Powered paragliding has in recent years become a popular recreational flying activity in its own right. Engines and wings are now on the market that are especially designed for Paramotoring.

Un-powered paragliders are dependent on a very narrow band of weather conditions that apply to a limited number of launch sites. The advantage of paramoting is that flights can be made at any time, from any flat ground with an open aspect and provided that wind strength is light.

Experience over the previous two to three years indicates that at any one location north of the Perth Metropolitan area, a maximum of between one and five pilots are likely to be present at launch during optimal flying conditions.

1.0 Introduction

1.3 Pinnaroo Point

The subject site at Pinnaroo Point (see Figures 1, 2, 3, and 4) is an ideal operational site for the launching and landing of paramotor aircraft; it exceeds all expectations for compliance with safety, regulatory and environmental requirements.

The site

- There is no power lines nor any electrical hazards
- Is located within a greater area that was previously cleared of vegetation that does not include trees and shrubs that would impede the safety of paramotor operations.
- Is located on reasonably flat terrain.
- Has no nearby obstructions that would either represent a risk to pilots or could cause turbulent air.
- Has clear flight paths to the coast that would result in pilots being in breach of regulations
- Has clear flight paths to the west over land that does not represent a risk to pilots in the event of an engine failure.
- Has easy vehicle access
- Has adequate space available for vehicle parking.
- The coastal area is used for other sporting activities which complement the area

Paramotor flights from the Pinnaroo Point Facility are only able to proceed when the winds are from the west to North and less than 12 knots of breeze. Returning flights would follow the same route to land at the point of take-off.

1.4 Rules & Regulations

The Hang Gliding Federation of Australia (HGFA) is a non-profit sporting body that administers Hang Gliding, Paragliding and powered versions of these activities under the regulations laid down by the Civil Air Safety Authority (CASA). As the administering body it provides standards for pilot training syllabus, pilot and instructor certifications and best practice in operational procedures throughout all of Australia

CASA, which controls all civilian flying in Australia, has delegated responsibility for pilot and instructor training and accident investigation to HGFA for all hang and paragliding and motorised versions of these sports in Australia. Under law, all active PG and HG pilots are required to carry HGFA membership and pilot certification under the requirements of the HGFA Operations Manual. The third-party insurance cover that goes with compulsory membership for all paramotoring activities provides the community with the knowledge that paramotor pilots are members of a highly regulated system and that lawful actions of pilots are backed by their governing body.

For the proposed recreational flying operations out of the Pinnaroo Point site, the relevant legal requirements for powered paragliders, as required by the CASA and provided in the HGFA Operations Manual, are provided below.

1.0 Introduction

A person shall **not** fly a powered paraglider

a) Over any built up area below 1000 ft above ground level or at such a height that the aircraft could not glide to a landing outside the built-up area – or whichever is the highest.

b) Not below 100ft or within a horizontal distance of 25metres from

   i. A public road;

   ii. Members of the public;

   iii. A dwelling except by permission of the owner;

   iv. During launching, not less than 25metres from members of the public; or

   v. At any regatta, race meeting or public gathering.

Additional restrictions are placed on proposed operations from the Pinnaroo Point Paramotoring Facility under the requirements of this document.

2 The Environment

2.1 The Pinnaroo Point Site

The Proposed Pinnaroo Point Paramotoring Facility is shown in a regional context in Figure 1. The subject site is located in an open and undeveloped area located west of dense urban areas. The site provides flight paths over open ground to the coast.

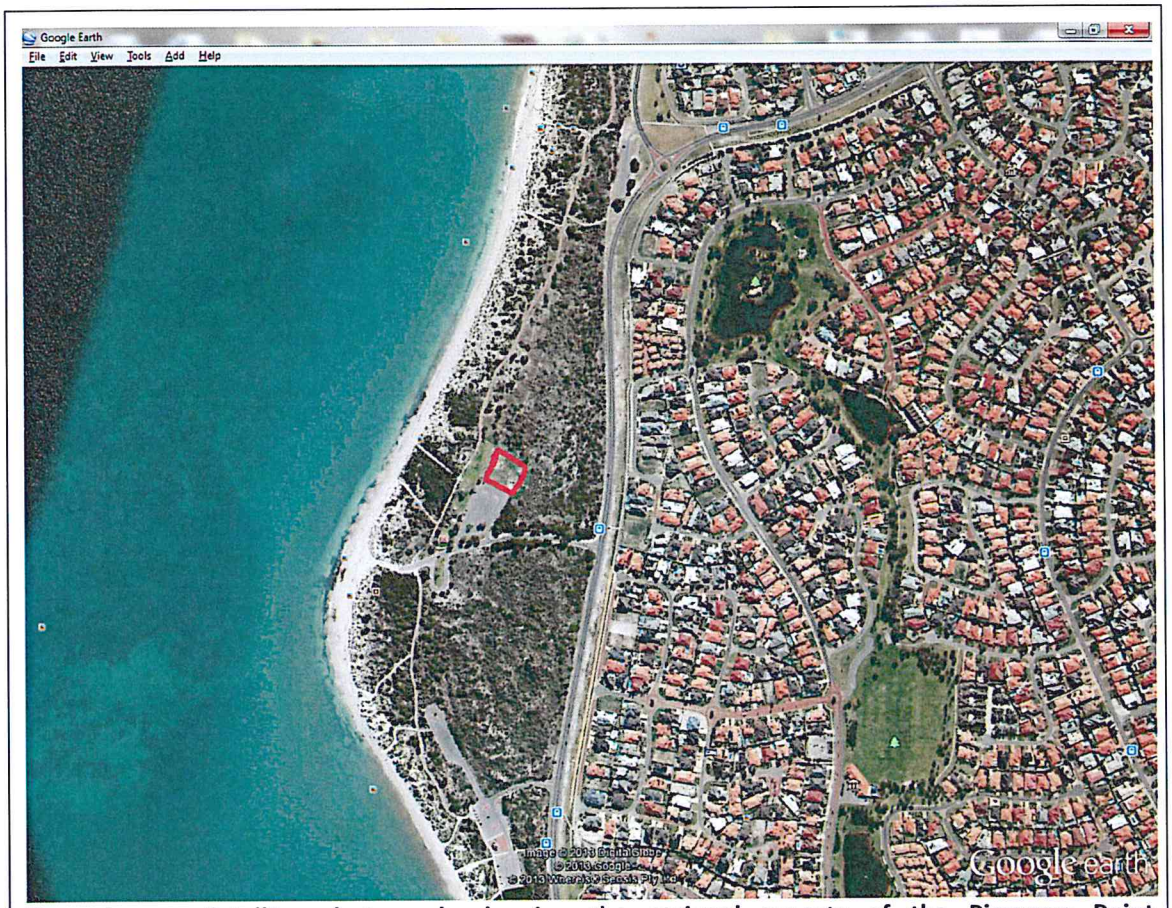


Figure 1. Satellite photograph showing the regional aspects of the Pinnaroo Point Paramotoring Facility *(from Google earth)*

The Pinnaroo Point Paramotoring Facility is shown in red; areas located to the north, south, east and west are bush forever. A more detailed annotation is provided in Figure 3 below.

2 The Environment

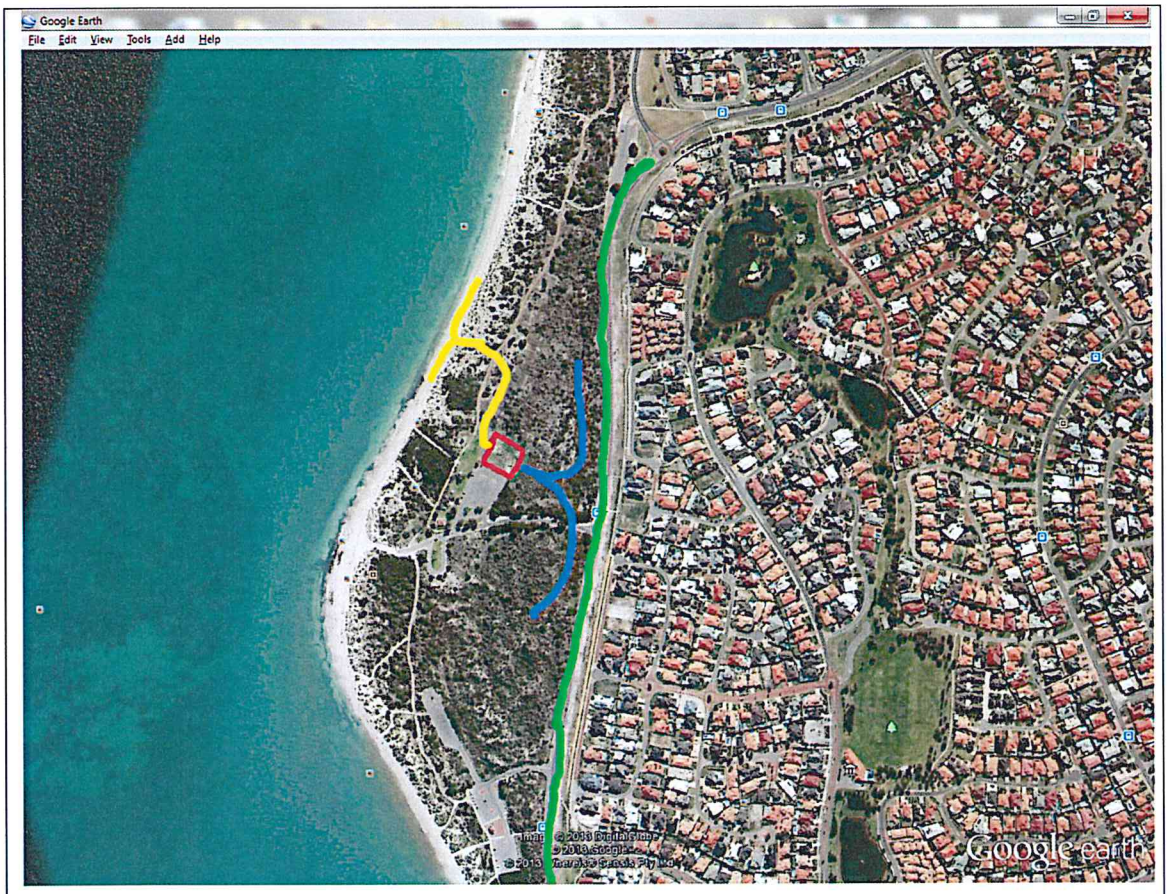


Figure 2. Aerial photograph indicated flight path restrictions *(from Landgate).*

The proposed Pinnaroo Point Paramotoring Facility is marked in red. The green lines enclose required flight path restrictions **No-Fly Zones** east of the road. Urban areas to the east and the Pinnaroo Point include extending to the road west boundary of urban areas when flying below 1000 ft. A voluntary minimum height of 300 ft is implemented for any flying up or down the coast in the Joondalup area South of Tamala Park and north of Beach Road. See Figure 4 below for more detailed annotation.

Blue line shows the landing approach from the south and north. Do not cross the road.

1.0 Yellow line shows the take off path. This will allow the pilots to climb to at least 300 foot before heading south over the dog beach.

2 The Environment

Figure 3. Satellite photograph showing local aspects of the Pinnaroo Point Paramotoring Facility *(from Google earth)*

The boundaries of the Pinnaroo Point Paramotoring Facility are shown indicating an approximate area of 60 meters by 50 metres

2 The Environment

Figure 4. Satellite photograph showing local aspects of the Pinnaroo Point Paramotoring Facility *(from Google earth)*

Public buffer zone:

The area shown in purple 20 meters by 50 meters is located west of the takeoff and landing area. If there is any non associated members of the public in this area the take off procedure cannot commence without a duty officer present at east boundary of the buffer zone between the pilot and Buffer zone users, directing the pilot taking off or landing.

Launching and landing procedures cannot enter this area, if there is a chance of entering the public buffer zone the Launch or landing must be aborted.

2 The Environment

The handling, storage and dispensing of fuel is a potential environmental issue where careless practices could result in spillage in areas frequently used for refuelling. The perception may arise that refuelling of paramotor engines would take place by tipping from portable fuel containers into funnels on paramotor fuel tanks.

Depending on engine size – paramotor fuel tanks may vary in size between 5 and 10 litres. Unleaded fuel is used for all paramotor engines. Typically, paramotor pilots may carry up to 10 litres of fuel in containers in their vehicles for subsequent refuelling, depending on the fuel tank capacity.

Safety factors demand that fuel is transferred either by hand-operated gravity pump or electric fuel pump. Spillages due to dispensing fuel via a funnel present an unacceptable fire risk to pilots where the engine and pilot are strapped together to form a single unit. Safety demands that dispensing practices minimise fuel spills. With the use of pumps for dispensing fuel, spillages during refuelling are limited at most to a few millilitres that rapidly evaporate due to the low vapour pressure of unleaded petrol.

Flights may last up to three or four hours before re-fuelling is required. Initial filling is invariably conducted prior to arrival at the launch area. In the event that a second flight is planned, the motor will be refuelled at the launch site.

Commitment. All paramotor pilots refuelling paramotor engines at the Pinnaroo Point Site will use hand-operated gravity pumps or electric fuel pumps for transfer of petrol to paramotor fuel tanks. All efforts will be employed to minimise the potential for fuel spillages by ensuring only containers approved for containing petrol are used and that portable fuel containers have properly sealed lids and are stored within vehicles when not in use.

4 Noise Management Plan

4.1 Engine Noise Emissions

Typically, paramotor aircraft generate about the same amount of noise as would be expected from a single-cylinder domestic lawn mower. Total noise generated by a paramotor aircraft is a combination of both engine and propeller noise, where the paramotor engine on its own generates a lot less noise than a lawn mower. Consequently, the starting and idling of motors at the Pinnaroo Point Site will present very low noise emissions.

Attachment A includes a noise assessment of paramotor operations under various conditions. As would be expected, maximum noise emission is generated for maximum thrust during take-off. Typically, maximum thrust lasts for a period of about 45 seconds until the aircraft reaches a height of about 150 ft when the pilot can safely reduce thrust and progressively power down until cruising height is reached. Minimum noise is generated when the motor is idling during a landing approach. In between these two power levels, is the cruising thrust required to maintain a given altitude.

4.2 Noise Receptors

Potential noise receptors from paramotor operations near Pinnaroo Point include housing developments east of Pinnaroo point.

4.2.1 Urban Development

The nearest urban development is located east of the take of area 160 m to the east. Between the take off area and the Urban development there is a high dune and bushes with a height above the takeoff height which will absorb the noise and defect noise directly up, a high traffic road Whitfords Avenue 70km/h zone and behind a road traffic noise barrier before the first house. This is sufficient distance and barriers that take-off thrust noise may be audible on the fringes of the property, but would hardly be noticed as being loud or annoying over that distance and few seconds during take off.

From data generated from the noise monitoring survey (Attachment A) the Club is confident that paramotor noise emissions received at the nearest urban locations will be well within the requirements of the Noise Regulations.

Commitment: When flying below 1000 ft, all paramotor pilots operating from the Pinnaroo Point Site are required to observe a **No-Fly Zone** over houses starting at the first road from the coast.

Commitment: When flying below a height of 1,000 ft, all pilots operating from the Pinnaroo Point Site are required to observe the **No-Fly Zone** below 300 foot on the Joondalup costal strip between Beach road and Tamala park

Commitment: All paramotor pilots operating from the Pinnaroo Point Site are required to give a commitment to observe the flight path restrictions indicated in Figure 2.

5.0 Limitations

This report has been prepared in accordance with the usual care and thoroughness of the consulting profession for use by members of the SkyPirates Paramoting Club Inc. The report is based on generally accepted practices and standards at the time that it was prepared. No other warranty, expressed or implied, is made as to the professional advice included in this report. It is prepared in accordance with the scope of work and for the purpose outlined by SkyPirates Paramoting Club Inc, and committee members of the Club.

In regard to the methodology adopted and sources of information outlined in this report, no independent verification of this information beyond the agreed scope of works has been undertaken and the author assumes no responsibility for any inaccuracies or omissions. No indications were found during the investigations that information contained in this report was false.

This report was prepared during September 2013 and is based on the conditions encountered and information reviewed at the time of preparation. The author disclaims responsibility for any changes that may have occurred after this time.

This report should be read in full. No responsibility is accepted for use of any part of this report in any other context or for any other purpose or by third parties. This report does not purport to give legal advice. Legal advice can only be given by qualified legal practitioner.

Attachment A

Noise Survey of Paramotoring Operations

Burns Beach June 2012 – by Neil Angwin

Noise Survey of Paramotoring Operations

Burns Beach June 2012

A noise survey of Paramotoring operations taking place at Burns Beach was conducted over the 15th and 17th of June 2012.

On both occassions the wind direction varied from North east to North west at an average of 7 knots.

Two brands of paramotor regularly used by the WA Skypirates Paramotoring Club (WASP) were surveyed using a Bruel & Kjaer type 2240 sound pressure meter, the parameters measured were LaEQ and Lc Peak which are recognised as standard for the measurement of noise exposure.

In addition a domestic Alroh brand lawnmower was surveyed for comparison of noise output.

Noise measurement methodology:

Each of the paramotors were surveyed when operating a full power which is typical power used for takeoff purposes.

The machines were measured at 5 different locations;

The pilots ear level.

At 25 metres, the closest separation point for persons not directly involved with flying operations.

At 50 metres.

During takeoff run, 15 metres from pilot.

During a flyover using cruise power at a height of 100 feet, the minimum altitude for separation from members of the public not directly involved in flying operations.

At the 25 metre and 50 metre points noise levels were recorded with the pilot facing the sound meter, at 90 degrees to the meter and with the pilot facing directly away from the meter.

The Alroh 4hp lawnmower was surveyed at the operators ear level, at 15 metres(the maximum separation from machine to property boundary) and at 25 metres.

The tables below record the levels in decibels (dB).

Table 1: WERNC 135 cc

Position	LaEQ	Lc Peak
Pilots ear	99	115
25 m Forward	80	100
25 m Adjacent	81	102
25 m Behind	77	100
50 m Forward	71	94
50 m Adjacent	66	90
50 m Behind	70	95
Takeoff	78	101
100 ft flyover	66	89
300 ft flyover	62 (by Calculation)	

Table 2: Nirvana Instinct 200 cc

Position	LaEQ	Lc Peak
Pilots ear	110	129
25 m Forward	84	101
25 m Adjacent	85	104
25 m Behind	90	114
50 m Forward	75	95
50 m Adjacent	78	98
50 m Behind	78	104
Takeoff	74	98
100 ft flyover	68	89
300 ft flyover	64 (by Calculation)	

Table3: Alroh lawnmower

Position	LaEQ	Lc Peak
Operators ear	94	108
15 m	91	101
25 m	88	100

Discussion of results:

Workplace legislation is in place to limit noise exposure over 8 hours to below 85dB. The term used is La8EQ, no one can be exposed to a peak level of above 140dB as noise levels above 140dB can cause instant hearing damage. An example of this noise level would be a high calibre rifle shot.

None of the peak noise levels recorded came near to exceeding the 140dB Lc Peak.

Decibels are logarithmic calculations so an increase of 3 dB represents a doubling of the sound pressure, typically a human will aware of noise levels changes when the sound pressure changes between 5 and 10 decibels.

For exposure purposes if the noise level increases by 3 dB then the exposure time should be halved, conversely if the noise level decreases by 3 dB the exposure time can be doubled.

Sound pressure levels will be halved if distance to source is doubled, this method was used to calculate 300ft flyover noise levels.

Table 4: Illustrating noise levels and exposure times to meet La8EQ.

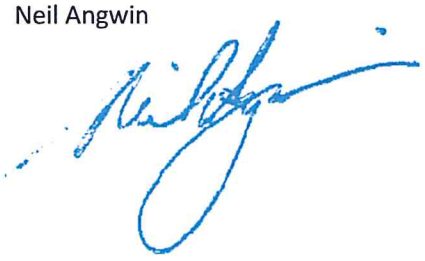
Noise level LaEQ	85	88	91	94	97	100
Exposure time	8 hrs	4 hrs	2 hrs	1 hr	30 min	15 min

The highest noise levels recorded were at the pilots ear level for both paramotors surveyed, both pilots were wearing helmets fitted with ear muff type hearing protection, using a conservative estimate of the attenuation provided by these of 25dB the sound pressure reaching the pilot's ear during a full power ground run up would be 85dB.

Exposure to bystanders during a 30 second full power ground run up at 25 metres (90 dB) represents minimal risk to hearing damage as does exposure during the take off run as the noise source moves away from the initial point.

Inflight noise level exposure to bystanders on the ground is also minimal.

Neil Angwin



Noise Officer 04026

Attachment C

Paramotor Pilot Induction

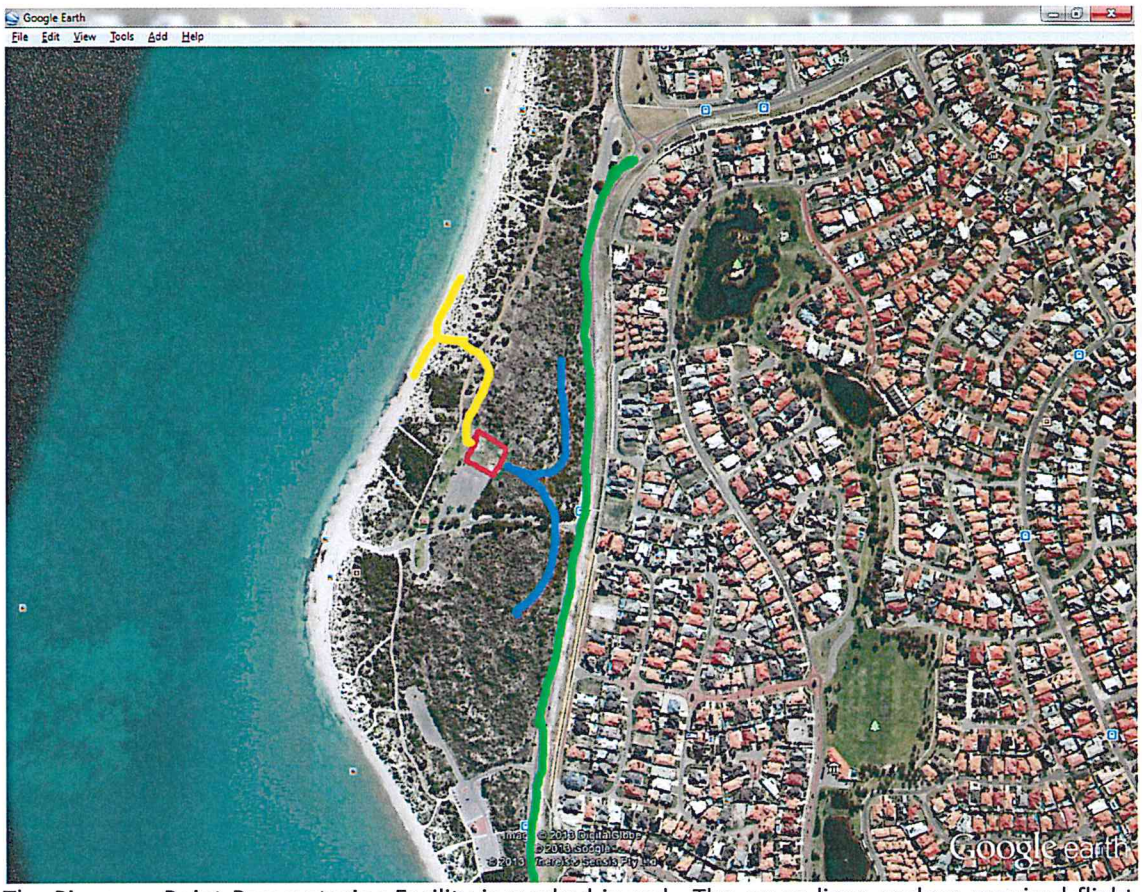
for the

Pinnaroo Point Paramotoring Site

City of Joondalup.

Pilot Induction

All persons operating Paramotor Aircraft out of the Pinnaroo Point Paramotoring Facility are required to sign an agreement that they have read the induction form and agree to its commitments.



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Commitments made by the WA SkyPirates Club to the City of Joondalup.

1. All paramotor pilots refuelling paramotor engines at the Pinnaroo Point Site will use hand-operated gravity pumps or electric fuel pumps for transfer of petrol to paramotor fuel tanks. All efforts will be employed to minimise the potential for fuel spillages by ensuring that portable fuel containers have properly sealed lids and are stored within vehicles when not in use.
2. When flying below 1,000 ft, all paramotor pilots operating from the Pinnaroo Point Site are required to observe the **No-Fly Zone** around urban areas to the north and south of the Pinnaroo Point Site. The Joondalup coastal lower than 300 foot **No-Fly Zone.**
3. Restricted and intermediate pilots require a duty officer standing near centre of the east boundary of the Public buffer zone to give the pilot instructions during take off and landing approaches with relating to issues of the public.

Pilot Name ..... Pilot Signature ..... Date .....

Pilots HGFA #..... Inductors name and HGFA number.....

WA Sky Pirate Paramotor club.