



Process and Guidance for Bunyan Airfield “Fly Neighbourly” Towplane Operations

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Process Summary

Objective

The objective of this process is to provide guidance to Canberra Gliding Club members, visiting pilots and all towplane pilots for application of Civil Aviation Safety Authority (CASA) “fly neighbourly” principles to Bunyan Airfield towplane operations. This document also provides information that may be used to brief members of the public, visitors, neighbours and regulatory authorities about factors affecting safe gliding operations, runway choices and measures taken to minimise the impacts of towplane operations on nearby residents.

Goals

The primary goal of this process guidance is to guide duty crews and towplane pilots on planning, managing and conducting towplane operations from Bunyan Airfield, with reference to aviation regulations and CASA “fly neighbourly” principles, in order to reduce the impacts of towplane operations on nearby residents.

Regulatory Caveats

Precedence: All regulatory requirements applied by CASA and GFA are to take precedence over the guidance in this document. Nothing in this process is to be construed as having any higher priority or authority than regulatory documents including the Air Navigation Regulations, Civil Aviation Regulations, GFA Operational Regulations and GFA Manual of Standard Procedures and supporting documentation.

Safety Caveats

The safety of life, and the safety of flying and gliding operations and of persons on Canberra Gliding Club’s Bunyan Airfield, takes precedence at all times over considerations of impacts of towplane operations on nearby residents and the guidance in this document.

References

Civil Aviation Safety Regulations (CASR) 1988

Civil Aviation Regulations (CAR) 1988

CAR Part 11 Conditions of Flight, Division 2 Flight Rules

CAR 157 Low Flying

CAR Part 12 Rules of the Air

Civil Aviation Orders

CAO Part 95 Exemptions from Provisions of the Civil Aviation Regulations

CAO 95.4 Exemption from the provisions of the Civil Aviation Regulations 1988 - Gliders, powered sailplanes
power-assisted sailplanes

Civil Aviation Advisory Procedures

CAAP 92-1(1) Guidelines for Aeroplane Landing Areas

GFA Operational Regulations

GFA Manual of Standard Procedures, Part 2 - Operations

GFA Aerotow Manual

CASA Fly Neighbourly Guidelines



Introduction

Context

Canberra Gliding Club Inc is a non-profit sporting club based at Bunyan Airfield, that provides members and visiting pilots the means to enjoy soaring and gliding flight. Its mission is to enjoy, develop and promote the art and science of soaring in the Cooma-Monaro and Canberra region. Bunyan Airfield's location provides unique access to wave, ridge and thermal soaring conditions due to the combination of high country meteorology and geography. The pioneers of wave soaring in Australia first operated in the Jindabyne and Cooma region, and the current Australian maximum altitude gliding record was set by a Canberra Gliding Club member operating from Bunyan Airfield.

The club owns Bunyan Airfield and has operated from there since 1982. The club has made substantial investments in capital equipment, owning and maintaining runways and extensive facilities on this property. The club owns and operates several gliders or sailplanes and a towplane, and provides gliding training, pilot development and recreational soaring. Many members also own and operate private gliders and sailplanes; some of these are powered sailplanes.

The club also runs gliding events including an annual wave soaring camp, which attracts gliding visitors from across Australia. The Civil Aviation Safety Authority and Air Services Australia have established arrangements for pilots operating from Bunyan Airfield to access high altitude airspace in the Snowy Mountains Wave Soaring Area.

Members of the public and visitors can enjoy scenic joyflights, air experience flights and trial instructional flights, flying with authorised instructors and charter pilots. The club has an Air Operators Certificate for its joyflight charter operations. Many local residents, tourists and passing travellers visit Bunyan Airfield, with a large proportion enjoying glider flights.

Canberra Gliding Club enjoys close ties with the nearby Cooma and Bredbo communities, and nearby sporting aviation operators. Our members come from across the Canberra and Cooma-Monaro region, and beyond. Each year, many gliding visitors from across Australia and some from overseas fly with us. The club and visitors add considerably to regional sporting aviation, tourism and economic activity. The club seeks to maintain good relationships with neighbours and local communities.

The club's gliding operations are regulated by the Gliding Federation of Australia (GFA) and Air Operators Certificate charter operations and powered aircraft operations by the Civil Aviation Safety Authority (CASA).

Information and Contacts

Further information on the Canberra Gliding Club's activities is available online, at <http://www.canberragliding.org>

The club can be contacted by phone on (02) 64 523 994, mobile (0428) 523 994, by email canberragliding@gmail.com or by post to The Secretary, Canberra Gliding Club Inc, PO Box 1130, Canberra, ACT, 2601.



Process Description

Key Guidance and Process Elements

Key processes used by Canberra Gliding Club are:

- Training and qualification of glider towplane pilots for Bunyan Airfield operations;
- Operational oversight of towplane pilots by the Canberra Gliding Club Tugmaster and Operations Panel;
- Developing awareness of and compliance with applicable aviation regulations;
- Educating pilots on application of CASA “Fly Neighbourly” principles;
- Developing familiarity with runway layout, movement areas, climb and approach paths and emergency landing options;
- Developing knowledge of Bunyan Airfield meteorological conditions and the effects of terrain on wind flow and turbulence;
- Planning and consultation between Instructor in Charge and duty towplane pilots on preferred runways, circuits, launch and approach paths;
- Use of alternate runways and flight profiles to limit noise exposure to immediate neighbours, when safe to do so, cognisant of other aircraft or glider movements and the meteorological conditions of the day;
- Exercise of Pilot in Command authority and obligations for safe flight; and
- Safety and Operations audits and inspections by aviation regulators (CASA and GFA as applicable).

With respect to the flight paths and profiles flown and the potential noise impacts on nearby residents, specific measures that may include:

- Takeoffs and launches at maximum power to increase rate of climb and altitude clearance and reduce climb time;
- Use of cowl flaps, engine management procedures and reduced power settings to increase rate of descent, reduce flight time and reduce engine noise on descent;
- Use of lowest possible power settings in the circuit and approach to landing;
- Wherever possible, avoiding direct overflight of residential buildings on climb or at low circuit altitudes or on approach;
- Wherever possible, use of flaps to achieve steeper approach paths, to maximise altitude of clearance of nearby properties;
- Whenever possible, undertake operations on preferred alternate runways in light wind conditions;
- Wherever possible, vary climb and descent paths to spread noise footprint;
- Wherever possible, fly towards uninhabited areas over ridges and river areas;
- Wherever possible, fly circuit directions and approach paths to maximise lateral clearance from nearby residences.



Bunyan Airfield Runway Layout and Operational Considerations

Bunyan Airfield (YBUY) is located at 36°08'S Latitude, 149°08'E Longitude. There is a complex of buildings comprising a clubhouse, several hangars, crew room, fuel shed and generator shed on the W side of the property. E of the buildings, and W of the Monaro Highway is the main operations area, which has four runway strips. These are known colloquially as the "hangar strip", "main N-S strip", "main E-W strip" and the "SE-NW strip" or "diagonal strip".

The formal runway designations are based upon their magnetic heading, in tens of degrees.

The main N-S strip, beside the Monaro Highway, is designated 15 / 33. These are preferred operational runways for both takeoffs and landings, used when the wind is at or near S or N.

The main E-W strip, between the buildings complex and Monaro Highway, is designated 09 / 27. These are preferred operational runways for both takeoffs and landings, used when the wind is at or near E or W.

The hangar strip, nearest the buildings complex, is designated 16 / 34. Runway 16 may be used for landings in S winds, but never for takeoffs due to slope and short length. Runway 34 may be used for glider landings in strong N winds, with care, but normally not towplane landings, due to slope and short length.

The SE-NW strip, between the main strips, is designated 12 / 30. Runways 12 and 30 may be used for both glider and towplane landings when the wind is at or near SE or NW. Runways 12 and 30 are not used for takeoffs, although in strong to very strong and steady W or NW winds runway 30 could be used with care if runway 27 was blocked or unavailable.



BUNYAN AIRFIELD RUNWAY LAYOUT AND DESIGNATIONS



Key factors affecting runway choice are:

- Safety assessments by pilot in command;
- Wind speed and direction, including gusts;
- Runway heading relative to the prevailing wind;
- Cross-wind limits of the aircraft and glider during takeoff and landing;
- Runway physical length, distance from threshold to far end;
- Runway grass length and surface condition;
- Runway slope, downhill and uphill;
- Air temperature and atmospheric pressure, which determines density altitude;
- Takeoff performance, as affected by grass length, surface condition, water or damp, density altitude, glider load, aircraft load and engine performance;
- Presence of turbulence and sink, wind shear and wind gradient, exacerbated by slope, terrain and obstacles;
- Presence of obstacles on or near runways, climb paths and approach paths, which have to be cleared by a safe altitude;
- Other aircraft or glider movements;
- Emergencies and unusual circumstances;
- Pilot training requirements;
- Pilot skill and judgement.

Runway choice must be primarily an issue of safety and safe margins, over convenience and impact on neighbours.

Runway 33 is mainly downhill. One of the nearest residences to Bunyan Airfield is located about 520m N of the far end of runway 33, just W of the extended runway centreline, near the top of an upslope extending from the airfield boundary fence. The downhill slope of the runway allows for faster acceleration during takeoff and higher ground clearance on climb.

Runway 15 is mainly uphill. The uphill slope reduces acceleration during takeoff and reduces ground clearance on climb, particularly when the grass is long, ground wet or winds lighter. Sometimes it is safer to operate with a crosswind on runway 27 (downhill) with a light to moderate southerly crosswind component. The residence located about 520m N of the threshold of runway 15, just W of the extended runway centreline, near the top of a slope down to the airfield boundary fence, is very close to the approach path to runway 15. Other properties are on the E side of the Monaro Highway, one 330m from the threshold of Runway 15, on the opposite side of the highway, another 540m NE.

Runway 09 is mainly uphill. The uphill slope reduces acceleration during takeoff and reduces ground clearance on climb, particularly when the grass is long, ground wet or winds lighter. The Monaro Highway and high voltage power lines are to the E of the airfield, beyond the far end of the runway. High ground, hangar hill, lies W of runway 09 and may constrain circuit direction. Several rural properties are W and NW of the threshold of runway 09, the closest 545m from the threshold.



Runway 27 is mainly downhill. The downhill slope of the runway allows for faster acceleration during takeoff and higher ground clearance on climb. The proximity of hangar hill and high ground W of the far end of the runway introduces turbulence and downdraughts (sink), often requiring a right turn towards rural properties to maintain safe ground clearance during climb. One of the closest residences to Bunyan Airfield lies 545m beyond the far end of Runway 27 near the foot of hangar hill. The Monaro Highway and nearby high voltage power lines must be cleared by a safe altitude on approach to the threshold of runway 27.

Key factors affecting climb paths

In stronger wind conditions, turbulence and downdraughts (sink) are far more likely, and the towplane may have to turn back toward the airfield and circle to maintain a safe position during climb for both the glider and towplane.

When flying towards the W side of the airfield, the high ground of hangar hill and associated air movements, gusts, rotor, turbulence, updraughts (lift) and downdraughts (sink) may require the towplane to turn clear, towards nearby properties, in order to maintain safe ground clearance.

Towplanes may also have to fly alternate flightpaths to remain clear of other aircraft and gliders.

In the event of sink and turbulence, the towplane may deliberately turn at low level to increase ground clearance, regardless of proximity to residences and properties.

Key factors affecting descent paths and circuit direction

At Bunyan Airfield, there are no mandated circuit directions. Both Left Hand (LH) and Right Hand (RH) circuits may be flown, depending upon prevailing meteorological conditions, other aircraft movements, runway availability, altitude and airspeed, and the direction of approach to the airfield circuit area. Good lookout, use of radio and standard radio procedures are used to improve safety and reduce risk, particularly when multiple aircraft and gliders are in the circuit area.

In stronger wind conditions, turbulence and downdraughts (sink) are far more likely. Sometimes modified circuits and contra-circuits are flown, or landing on alternate runways. When multiple gliders are landing, then the towplane may loiter and circle at low level to allow runways to be cleared and improve separation. Go-arounds by the towplane are possible at any time.

Since there are no mandated circuit directions, it is possible to fly more varying circuit patterns and spread the towplane noise footprint. There are preferred circuit directions for gliders in stronger winds and turbulence, intended to reduce exposure to turbulence and sink, or to provide greater separation from hangar hill. It is therefore rare for gliders and towplanes to fly RH circuits onto runway 09, although gliders ridge soaring off hangar hill will occasionally join a right base onto runway 09. The towplane will almost always fly a LH circuit onto 09.

Exposure to turbulence and sink in the lee of ridges in W and SW winds will normally make RH circuits onto runway 27 preferred over LH circuits onto 27, avoiding the rougher terrain S of the airfield.

Given the proximity of the nearest residence to the approach path to runway 15, just W of the centreline, towplane pilots may elect to fly LH circuits onto runway 15 to increase lateral separation, avoiding flying a base leg and final turn N of this residence. This may not be possible if other gliders are in the circuit area.

Towplanes on descent may occasionally fly 360° turns at higher altitudes, and will normally fly a series of S turns as they approach circuit joining altitude, onto downwind or base leg. This is done to improve safety and reduce collision risk, and also results in variations in the noise footprint. Power settings are usually low, with high rate of descent.



Extract from CASA Fly Neighbourly Guidelines

CASA has published the following advice for pilots and aircraft operators, with Fly Neighbourly principles:

Fly Neighbourly Advice (FNA) Piloting Techniques and Principles

FNA piloting techniques and principles include:

1. avoiding noise-sensitive areas:
 - 1 follow high ambient noise routes (highways, etc); and
 - 2 follow unpopulated routes (waterways, etc).
2. when operating near noise-sensitive areas:
 - 3 maintain an appropriate fly-over altitude...
 - 4 maintain an appropriate hover/circling altitude;
 - 5 speed reduction;
 - 6 low noise speed/descent settings;
 - 7 route variation;
 - 8 use high take-off/descent profiles.

Fly Neighbourly Process Guidance for Bunyan Airfield

With specific reference to FNA piloting techniques and principles:

(1) Avoiding noise-sensitive areas:

- Operations on runway 15 are minimised.
- Alternate runways are used when safe to do so, depending on wind strength and direction, noting wind gusts and turbulence and the effects of terrain on weather.
- Since one of the nearest residences lies just W of the extended centreline of 15/33, most towplane circuits onto 15 will be LH circuits, flown E of the airfield.
- When taking off on runway 33, direct overflight of the adjacent residence is avoided where safely possible, with a left turn away from this property as soon as safely possible, depending on wind, turbulence, altitude and climb rate.
- When operating from runway 09, towplane pilots may elect to land on runway 16, depending on wind strength and direction and pilot experience, to avoid overflight of the property near hangar hill under the base leg for runway 09.

(2) Follow high ambient noise routes (highways, etc) and follow unpopulated routes (waterways etc):

- Runway 15/33 is parallel to the adjoining Monaro Highway, which is a high traffic area and ground vehicle noise corridor.
- Glider towing operations are often towards the nearby unpopulated ridges and Murrumbidgee River to the SW, W and NW of the airfield.
- There are numerous farm properties, smaller hobby farms and rural properties around the airfield, many close to the N, S and W; tow pilots are encouraged to fly varying patterns to avoid noise concentrations.

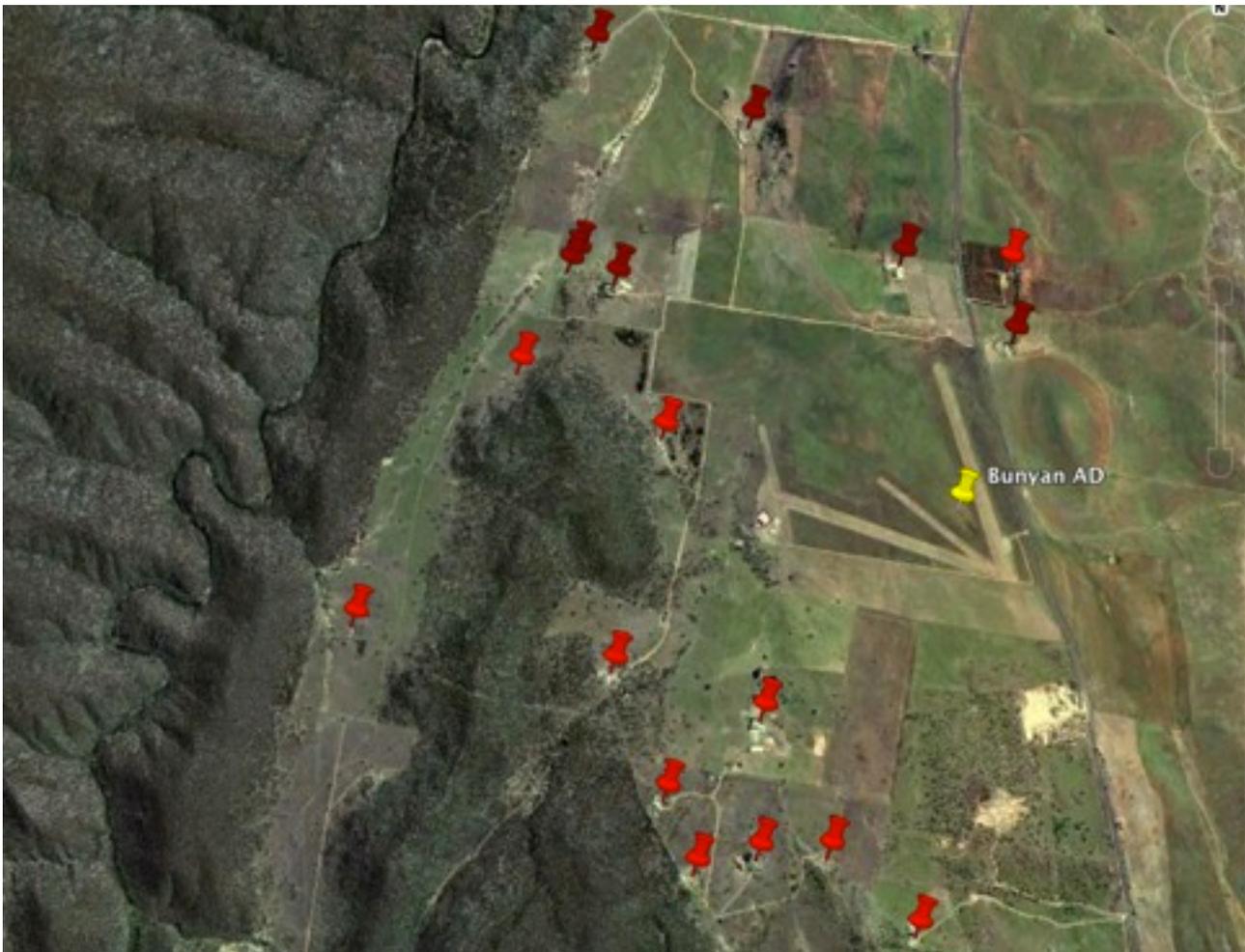
(3) When operating near noise-sensitive areas, maintain appropriate fly-over altitude and appropriate circling altitude, and route variation;

- Glider towing operations involve continuous ascents and descents, with minimum constant altitude operations.
- Glider towing operations are often towards nearby unpopulated ridges and Murrumbidgee River to the W of the airfield.
- There are numerous farm properties, smaller hobby farms and rural properties around the airfield; tow pilots are encouraged to fly varying patterns to avoid noise concentrations.
- Overflight of the nearest residence to runway 15 / 33 is avoided, and turn-away from this property preferred when safe.
- Overflight of the property directly under the base leg on runway 09 LH circuit may be avoided by landing on runway 16, dependent upon wind strength and direction and pilot experience.



(4) When operating near noise-sensitive areas, speed reduction and low noise speed/descent settings and high takeoff/descent profiles:

- The PA-25 towplane VH-MLS has been fitted with cowl flaps to enable higher descent rates and low noise profiles to be flown on descent.
- Normal descent profiles maximise the use of lower power settings and therefore reduce noise impact.
- Normal approaches maximise the use of flaps on approach, allowing steeper descent paths and reduce noise impact.
- Takeoffs are made at full power to enable maximum climb rates and minimise low level noise exposure.



Between Bunyan Airfield and the Murrumbidgee River and adjacent hills and ridges lie many properties and residences, buildings and locations where towplane operations may have noise impacts.

Close to Bunyan Airfield, near takeoff, climb, circuit and approach paths, it becomes more difficult to avoid noise concentrations. Pilots should attempt to vary climb and descent routes, manage power settings and descent rates to minimise impacts on residents.



Extract from Civil Aviation Regulations 1988 CAR 157 Low Flying

157 Low flying

- (1) The pilot in command of an aircraft must not fly the aircraft over:
 - (a) any city, town or populous area at a height lower than 1,000 feet; or
 - (b) *any other area at a height lower than 500 feet.*
- (4) Subregulation (1) *does not apply if:*
 - (a) *through stress of weather or any other unavoidable cause it is essential that a lower height be maintained; or*
 - ...
 - (e) *the aircraft is flying in the course of actually taking-off or landing at an aerodrome; ...*

Note: This regulation provides for the legitimate circumstances when the pilot of an aircraft may fly lower than 500 feet.

Extract from Civil Aviation Regulations 1988 Part 12 Rules of the Air

CAR 166A General requirements for aircraft on the manoeuvring area or in the vicinity of a non-controlled aerodrome

166A General requirements for aircraft on the manoeuvring area or in the vicinity of a non-controlled aerodrome

- (1) The pilot in command of an aircraft commits an offence if:
 - (a) the aircraft is being operated on the manoeuvring area of, or in the vicinity of, a non-controlled aerodrome; and
 - (b) the pilot engages in conduct; and
 - (c) the conduct results in the contravention of a rule set out in subregulation (2).
- (2) The rules are the following:
 - (a) *the pilot must maintain a lookout for other aircraft that are being operated on the manoeuvring area of, or in the vicinity of, the aerodrome to avoid collision;*
 - (b) *the pilot must ensure that the aircraft does not cause a danger to other aircraft that are being operated on the manoeuvring area of, or in the vicinity of, the aerodrome;*
 - (c) if the pilot is flying in the vicinity of the aerodrome, the pilot must:
 - (i) join the circuit pattern for the aerodrome; or
 - (ii) avoid the circuit pattern for the aerodrome;...
- (3) *subject to subregulation (4), if the pilot takes off from the aerodrome, the pilot must maintain the same track from the take-off until the aircraft is 500 feet above the terrain;...*

Note: This regulation limits the manoeuvres that can be conducted after takeoff, and provides rules for safe aircraft manoeuvring in the vicinity of an aerodrome.

Further Guidance: CAAP 166-1(1) Operations in the vicinity of non-towered aerodromes

CAAP 166-1(1) 4.5 Final approach

4.5.1 The turn onto final approach should be completed by a distance and height that is common to operations at that particular aerodrome and commensurate with the speed flown in the circuit for the aircraft type. *In any case, the turn onto final should be completed at not less than 500 FT above aerodrome elevation.* This should allow pilots sufficient time for pilots to ensure the runway is all clear for landing. It will also allow for the majority of aircraft to be stabilised for the approach and landing.

Note: This guidance limits the scope to vary the final approach path and any manoeuvres below 500 feet, whilst reinforcing the primacy of a safe, stabilised approach.



Caveat

Regulatory compliance with the above regulations, plus airmanship and sound threat and error management, limits the measures that can be safely and legally undertaken to avoid property overflight at low levels.

Training and Qualification of Towplane Pilots

Canberra Gliding Club towplane pilots must be licensed power pilots, with a Tailwheel aircraft endorsement, a Glider Towing Permit, briefed in operation of the PA-25 Pawnee aircraft, and approved by the Tugmaster, Panel and Committee. All Canberra Gliding Club towplane pilots must be briefed on all safety aspects, emergency procedures, and operational issues affecting runway choice, circuit planning and flight profiles including takeoff, climb, descent, circuit, approach and landing. They are also to be briefed on the application of Fly Neighbourly principles and techniques described in this document. Visiting towplane pilots are also to be briefed as described above, and their operations approved by the Tugmaster and Panel.

Reference of Issues to Tugmaster and Operations Panel

Every flight is unique and different. Every glider launch requires two Pilots in Command; one in the towplane, and one in the glider. Every circuit, approach and landing requires critical judgements and actions by the Pilot in Command. There are numerous variables that affect the profile of each flight. Safety of life is always the over-riding, first priority, and no amount of prescription can foresee every contingency that the Pilot in Command may have to deal with. Regulatory compliance is also a most important priority.

The guidance and process descriptions provided above for reducing the impacts of towplane operations at Bunyan Airfield on nearby residents are advisory, and lower precedence than safety and regulatory compliance.

Whenever issues arise that cause conflict between “fly neighbourly” techniques and operational safety or compliance, then they should be reported by towplane pilots to the Tugmaster in the first instance, and to the Operations Panel for review and further action. Suggestions for improvements to this guidance will be welcomed.

A handwritten signature in black ink, appearing to read 'A.R. McKinnie'. The signature is fluid and cursive, with a large initial 'A' and 'M'.

Approved

A.R. McKINNIE
Panel Chairman and CFI, Canberra Gliding Club
12 September 2012