

# BRISBANE VALLEY FLYER

JUNE- 2019



Watts Bridge Memorial Airfield, Cressbrook-Caboonbah Road, Toogoolawah, Q'ld 4313.

Rob Knight (Editor) Tel: 0400 89 3632



Watts for Breakfast?

## Keep in Trim

By Rob Knight

These days the above headline is repeated ad nauseam in the media but its meaning is a far cry from that relevant to flight. Whilst a pilot (or everyone in fact) needs to be physically in trim for health reasons, having an aeroplane out of trim can also be very unhealthy.

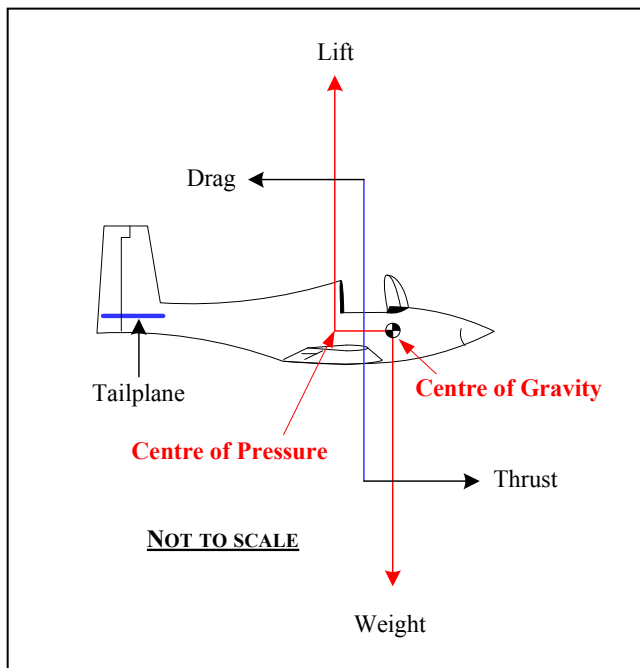
Aerodynamic trim was developed for WW1 fighter aircraft from around 1917. Pilots found it was difficult to fly with precision when constant attention had to be paid to the stick force because the aeroplane was nose heavy or tail heavy. It was decided to develop an adjustable system to hold the controls in that *special position* to relieve the control load for the pilot. Note that we are discussing in-flight adjustable elevator trim, not ground adjustable or fixed trim tabs.

The need for in-flight adjustable trim is all to do with the arrangement of the four forces that act on the aeroplane in flight. These are lift (the aerodynamic force provided by the wings), which opposes

weight (the gravitational force from the earth), and thrust from the engine via the propeller opposing drag, the aerodynamic force generated as the airframe flies through the viscous fluid we call air.

These four forces are arranged as two pairs called *couples* where lift is set to oppose weight and thrust to oppose drag.

In a perfect aeroplane, these couples would be arranged to perpetually balance each other as shown in the sketch on the left. This situation, called *equilibrium*, has the lift/weight couple exactly balancing the thrust/drag couple. The tailplane just trails; not needed for anything. However, this is not physically possible on every occasion in real life so a tail plane/elevator is provided to counter any residual imbalances.



Why should it not be possible to maintain this equilibrium, I hear you ask. To explain, let's have a look at what powers a couple.

The power of a couple is provided by two factors, the actual forces pulling about the couple and the distance the forces are apart i.e. the length of the arm between them. Thus, if either the length of an arms changes, OR the force being applied to that couple changes, the power of the couple will change.

So what changes the forces acting on an aeroplane in flight? As fuel is consumed the weight of fuel in the tanks will change. This will modify both the weight (force of the couple) and the length of the arm of the couple (unless the fuel tank is located on the centre of gravity). Thus the power of the couple will be modified and if equilibrium existed before, it is not likely to exist now and the elevator will be required to balance the residual imbalance in the couples. Other changes to the Lift couple occur with every change in angle of attack. The lift force will increase or decrease and, as the angle of attack changes, so will the centre of pressure, that point through which all the lift forces may be

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considered to act which will, in turn, also change the arm length of that couple. For the Thrust/Drag couple, any power alterations with the throttle will change the thrust, and changing airspeed will increase or decrease the drag. Remember that drag, like lift, increases and decreases as the square of any airspeed change so the effects in terms of trim change can be quite pronounced. Drag changes also have a notable effect on this couple. Talking a low winged aeroplane and lowering flaps will lower the drag line and increase the power of the Thrust/Drag couple. Lowering the undercarriage will have an even greater effect in this way, both these factors tending to pull the



Cessna elevator trim tab

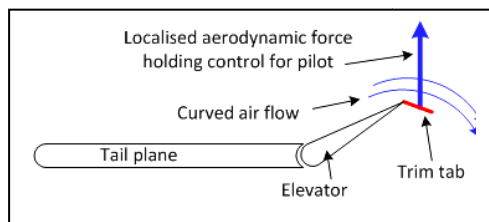
nose down. For a high-winged aeroplane, lowering flaps will raise the drag line and tend to pitch the nose up.

As each of these factors influence the power of these two couples, the pilot must counter the ill-effects on pitch and attitude that they may provoke and this extra stick force must be used and if the condition that caused the change is continuous, the force must be continuous.

The fix is easy. The designer simply inserts a *trim* system to carry the extra stick loads and relive the pilot

of the need. Often, in light and ultralight aeroplanes, this is a mechanical arrangement such as a spring, or an adjustable rubber bungee system, to remove the load. However, maybe more frequently, a small tab surface is attached within the trailing edge of the elevator, as illustrated in the Cessna example above, or attached to the trailing edge of the elevator as in the Genesis ultralight. These tabs provide an aerodynamic solution. So how does this aerodynamic solution work? How does this tiny tab constrain all the forces that the air can impose on the controls? You could say it's all a system of mechanical advantage done with levers.

Let's assume a pilot has to exert a constant back pressure on the stick to hold the aeroplane in a particular attitude, say in the climb. The pilot knows this attitude is important because the airspeed is exactly right for the performance sought from the aeroplane.



In the sketch to the left, the tailplane is shown with the elevator angled up as it would be to hold the nose up in the desired attitude. If the movable trim tab is adjusted so that, relative to the tailplane trailing edge it points down, it will create a small pocket of accelerated air flowing over the tab. This will provide a low air pressure

area which will force the trailing edge of the elevator upwards quite sufficiently to absorb the load the pilot was carrying. Conversely, should a forward force on the control be necessary, moving the tab the other way so it points up will hold the elevator for the pilot in that position.

A correctly trimmed aeroplane will tend to hold its attitude if the stick pressure is released. If the nose attitude rises at the release of stick pressure the aircraft is trimmed a little tail heavy. To resolve it, a little more forward trim is required, and vice versa.



Elevator trim tab fixed to the trailing edge of the elevator of a Genesis.

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Exactly how much trim adjustment is needed at any time depends on even more factors such as the device itself, the airspeed, the Centre of Gravity position and the power applied. In some aeroplanes, a half turn on the trim wheel will have the same effect as two turns of the wheel on another aircraft type. The same principle will apply if a lever is used as the trim control.

So when do we trim? That's both the best question of the day as well as a simple one to answer. The aeroplane should be trimmed to fly hands-off at any time it is engaged in steady flight. Climbing, especially a sustained climb, level flight, or the approach, whether glide or powered. For any one aeroplane weight, as the airspeed is the product of the power applied (at the time) and the nose attitude held (at that time) there will only be one attitude for the required airspeed at any stage of flight so, if we trim for no stick pressure and the nose stays at that attitude, the aeroplane will tend to hold the airspeed for itself. We could say that we are trimming for that airspeed but this would be inaccurate because, as I have explained, we have, in fact, trimmed for the attitude that will provide this airspeed. Trim neither sets the airspeed nor exercises control over it – that is the function of the attitude and power applied.

Level flight also has a specific attitude assuming there is no vertical movement in the atmosphere. The process of leaving a climb and entering a state of level flight is to set the approximate attitude that past experience indicates is close to that necessary for level flight with the elevator, and then allow the airspeed to rise closer to the anticipated cruise speed. With the airspeed nearing the cruise value, draw the power back to the desired RPM (with a fixed pitch propeller) and let the speed reach its peak. Now the trim control may be moved to set a no stick pressure situation with the nose remaining in the selected attitude. This is checked as correct by a combination of the altimeter and VSI indications. Note, again, the trim is holding the elevator, to hold that attitude we have set, without control input by the pilot.

For the approach, power must be reduced, Airspeed is also reduced in most cases, and usually flaps lowered, any one of which would require a change in the trim wheel position. Again, the aeroplane elevator should not require input control pressure from the pilot to hold the specific attitude to hold the airspeed required. If power is adjusted, and/or flap adjustments are made, or the airspeed changed to suit the approach profile, then the aeroplane should be re-trimmed immediately so the pilot can concentrate solely on the approach and its successful outcome. In the event of a go-around, some aeroplanes become very tail heavy and considerable forward stick pressure is necessary to hold the nose down low enough to maintain the minimum required airspeed. When I taught conversions onto Cessna 206, 207 and 208 aircraft, it became in-built that immediately after applying full power, three full strokes of nose down trim on the wheel tamed the aeroplane and removed most, if not all, the control pressure, even with heavy loads and using full flap. No-one can fly with much precision if a constant demand is necessary to hold an attitude.

As a flight examiner, the only time in any flight test I could accept a state of being *out-of-trim*, was in a turn. Here the out-of-trim condition is transient, only present for the duration of the turn, so no trim adjustment should be made. As soon as the turn is exited and the aircraft is returned to its previous state of attitude and/or airspeed, it will revert to being in a trimmed state without further pilot input.

So how's your trimming now? Up to scratch do you think? It should be done without thought – a complete habit not requiring conscious thought or decision. Your aeroplane should always be in trim.

Happy Flying



## - Brisbane Valley Flyer -

### Watts For Breakfast Sunday 26 May.

By Rob Knight

My plate was filled to overflowing with eggs, toast, beans, tomatoes, and sausages. I was offered bacon but there simply wasn't the room on my plate so I regretfully sighed and declined. The tables were full, but I saw someone depart in the distance and made a bee-line for the lonely-looking chair. The day was gorgeous. I had flown up from Forest Hill, and the 28 minute flight was completely devoid of bumps – I was suspended in the blue void with just a tad of left drift from the north easterly at 2500 feet.

The attendance was fantastic, about 60 aircraft appeared. Nanchings, Yaks, Cessnas, Pipers, Austers, two replica Spitfires, Savannahs, Foxbats, De Havillands, an Airtourer, Jodels, a WW1 replica Nieuport Bebe, a Slepsev Storch and a Genesis and a whole assortment of Jabirus: the turnout was exceptional.



Alan McVinish's 1950 Cessna 170A



Jim Gollagher's beautiful Nieuport replica



More arrivals for breakfast



Ron Dunn's CT4



Slepsev Storch



Replica Spitfire, flown in by Kev Walters

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One of the two Jodels



Steve Chapman's Mk III WW2 Auster. Yes, this is a genuine warbird in its own right



William Haynes immaculate Airtourer 115



Bill Finlen's beautiful DH85 Leopard Moth, up from Boonah



Yak and DH60, A world apart in time and current location



Nigel Brown in his Quicksilver

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### FLY-INS Looming

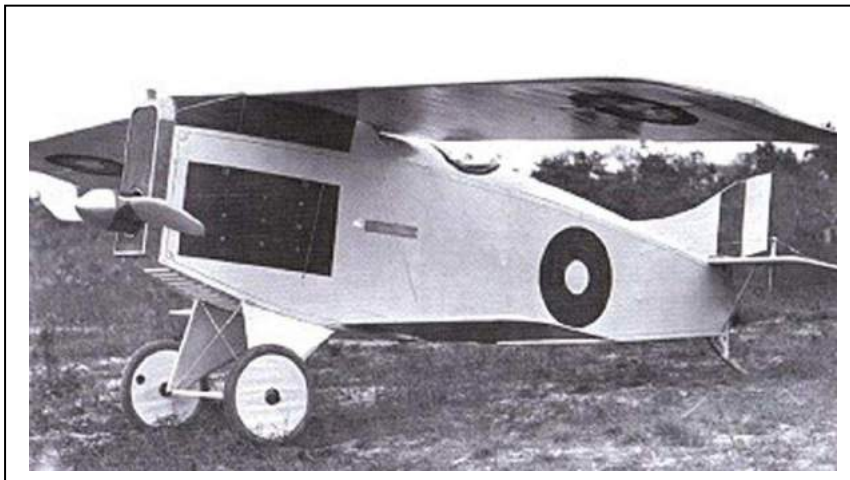
02 June 2019	YCCA Chinchilla QLD	Chinchilla Biggest Morning Tea Cancer Council Fundraiser and Sausage sizzle
08 June 2019	YMRG Murgon (Angelfield)	Burnett Flyers Breakfast Fly-In
6 July 2019	YWSG Watts Bridge BVSAC	BVSAC Fun Fly Poker Run
20 July 2019	YWCK Warwick	QRAA Jumpers & Jazz Fly-in Brekky

### Mystery Aircraft (This Issue)

What's this?



### Mystery Aircraft (Last Issue)



Above: Designed by Dr William Whitney Christmas, who was described by one aviation historian as the "greatest charlatan to ever see his name associated with an airplane", this "revolutionary" prototype biplane fighter had no struts supporting the wings; instead, they were supposed to flap like a bird's. Both prototypes were destroyed during their first flights – basically, because Christmas's "breakthrough" design was so incapable of flight that the wings would twist off the airframe at the first opportunity. Widely regarded as the worst aircraft design in history (US Government).



**GATTON AIRPARK ANNUAL BREAKFAST FLY-IN**  
**SUNDAY MAY 12**



2019 Gatton Airpark, Mother's Day Breakfast Fly-in

Once again, the Gatton crew pulled off a beautiful day amidst not so good ones on Sunday, May 12, for its annual Breakfast Fly-in. Now held back on the original site on the Western side of the strip, aircraft started turning up as early as 0630 and continued to arrive throughout the morning. Everything from a single seat MXL Quicksilver ultralight to a Piper twin, a DeHavilland Moth to a Yak 52 making a total of around 45 aircraft plus one helicopter. Everyone seemed to enjoy the hearty breakfast put on by the local Men's Shed team, as well as the very fine coffee from Jack. As one of the most successful Airpark concepts in Australia, it is a great opportunity for the residents to share their lifestyle with fellow aviators. The relaxed atmosphere and the closeness of the aircraft, not to forget the nice sunshine certainly made for a great Mother's Day.

Marty Hone.



Steve Newing's Great Lakes Biplane



Retractable Tecnam



## - Brisbane Valley Flyer -



Bill Finlen's restored to better than new, DH60 Moth



The South African copy of the Bantam, the Bat Hawk



A line of coloured tails



Aeroprakt 32 Vixen

----- ooOOoo -----



The best Keep Out sign I have seen for a while

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### **Keeping up with the Play** (Test yourself – how good are you, really?)

1. Deviation affects all magnetic compasses. What causes deviation?
  - A. Turbulence or flying out of balance.
  - B. Magnetic dip.
  - C. Misalignment of relevant isogonals.
  - D. Electrical circuitry in the airframe and ferrous metals.
  
2. The most correct document used to determine a CTAF is
  - A. NOTAMS.
  - B. ERSA.
  - C. WAC Chart.
  - D. VTC chart.
  
3. When operating in a DANGER area in Class G Airspace.
  - A. A clearance is required ONLY if the DANGER Area is active.
  - B. A clearance is always required to operate with n a Danger Area.
  - C. No VFR entry is permitted when the Danger Area is active.
  - D. No clearance is required.
  
4. An aeroplane is in a level, 45° banked turn to starboard. The pilot notices the skid ball is out to the right. This indication is likely caused by which of the following options?
  - A. Too much right rudder is being held.
  - B. Too much left rudder is being held.
  - C. This is appropriate for a correct turn to starboard.
  - D. The aeroplane is out of trim.
  
5. Comparing the stalling speed when a stall is carried out into wind with one downwind:
  - A. Increases when flying into wind.
  - B. Reduces when flying downwind.
  - C. The same regardless of wind.
  - D. The stall speed is the same regardless of the direction of flight.

ANSWERS: 1. D, 2. B, 3. D, 4. B, 5. D.

If you have any problems with these questions, call me (in the evening) and let's discuss it. Rob Knight.

## Aircraft Parts and Tools for Sale

Item	Condition	Price
SAAP Oil Pressure Gauge & Dedicated Sender	Brand New (in original box)	\$100.00
VDO Volt Readout instrument	Brand New	\$70.00
EGT sensors (2 of)	Brand New	\$30.00 (each)
Skystrobe Strobe light for Ultralight	NEW – IN BOX	\$75.00
Propeller spacer (45 mm) with bolts	Never used	Make an Offer
Airspeed Indicator	Brand New	\$60.00
Altimeter – non-sensitive with subscale in “Hg.	Brand new	\$50.00
Brand New ¼ drive Torque Wrench (SCA)	Brand New 60.00	\$60.00
ASA brand, Pilot’s headset - (functions perfectly)	Near new	\$80.00

NEW Addition

Twist Pliers, 9 Inch	Excellent condition	\$30.00
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Contact Rob Knight at:

[kni.rob@bigpond.com](mailto:kni.rob@bigpond.com), or

Phone 0400 89 3632



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### Aircraft for sale

#### **¾ scale replica Spitfire**



Powered by a 6 cylinder engine, this delightful aircraft has good performance and low hours. Available for quick delivery.

For details contact William Watson, Tel: 0447186336.

**\$60,000**

#### **GR Lightwing – Reluctant sale.**



In mint condition, a 1995 factory built, 582 powered GR Lightwing. Always hangared, not currently registered. Good skins and good paint.

TTIS engine and airframe – 306 hours - complete with logbooks.

Includes two headsets and a substantial assortment of spares and accessories, a spare 3-bladed propeller, and pickets. Inspections invited at Gatton Airpark.

For details call Josh on 0410 577 401

**\$12000.**



# B.V.S.A.C.

## FUN FLY POKER RUN 2019

### THE EVENT

The Brisbane Valley Sport Aviation Club's Fun Fly Poker Run will be held on Saturday 6th July 2019.

Starting time is 9:00am and finishing at 2:00pm.

It doesn't matter what you fly— Recreational, Homebuilt, General Aviation, Aerobatic or even a Gyroplane. We would love to have you join in the fun !!

### THE GAME

Fly to any three of the participating airfields, Forest Hill\*, Kilcoy\*, Gatton Airpark or Mc Carron's Field and collect an envelope which contains a playing card from underneath the primary windsock\*.

**DO NOT OPEN ANY ENVELOPES UNTIL REGISTERING AT THE B.V.S.A.C. CLUBHOUSE — WATTS BRIDGE.**

You can start anywhere you like and go to the airfields of your choice in any order that suits you. Then just fly on to Watts Bridge Memorial Airfield where you pay your entrance fee of \$5.00 and register your hand.

BBQ, Drinks and Snacks will be available all day.

### THE WINNER

The organizers will have drawn two cards at random prior to the start of the game. These cards will complete the five card hands for all players.

The best Poker Hand wins the Trophy for 2019.

**THIS IS FUN FLYING AT ITS BEST, SO COME ON EVERYONE - GIVE IT A GO !!**

### CONTACT

Richard Faint

Mobile: 0412-317-754

Email: [pokerrun@bvsac.org.au](mailto:pokerrun@bvsac.org.au)

Poster, airfield information and pilot notes at <https://bvsac.org.au/fun-fly-poker-run-2019>

### AIRFIELD LOCATIONS

FOREST HILL*	S 27° 36.3'	KILCOY*	S 26° 58.2'
	E 152° 22.3'		E 152° 34.0'
GATTON AIRPARK	S 27° 35.4'	Mc CARRON'S FIELD	S 27° 05.9'
	E 152° 15.4'		E 152° 36.2'

WATTS BRIDGE S 27° 05.9'  
E 152° 27.6'

\* Kilcoy and Forest Hill cards can be found in the aircraft parking area. Please do not park on the runway.





# Pilot Notes.....

## SAFETY:

As always in aviation, safe operations are the #1 priority.

All pilots in command are encouraged to make the appropriate decision as to the suitability of each of the airfields based on their own experience, the airfield's characteristics, their aircraft's performance and the weather conditions on the day.

If you do not feel confident about operating safely at any of the airfields, simply fly away. Do not attempt to land at that airfield. Tell the organizers of your decision and the cards will be worked out so that you are still in the game - having made a good piloting decision.

Each of the airfield's owners have granted permission for pilots to operate at their airfield at the pilot's own risk.

## AIRFIELD INFORMATION:

NOTE: Unlike previous years, Bradfield is not an airfield for the 2019 poker run.

The organizers of the poker run have been granted permission to use the respective airfields. There is no requirement for individual pilots to seek permission to use the airfields on the day.

E.R.S.A. pages for Watts Bridge, Kilcoy and Gatton Airpark are attached.

An information page for Forest Hill is attached.

There is no documentation for Mc Carron's Field.

The runway is approximately North/South.

The runway has a significant slope with the low end to the north. Due to the slope, runway length is not a factor.

Most all pilots elect to land from the north (land up hill) and take off from the southern end (take off down hill).

If landing from the northern end, perform a right hand circuit to avoid the hill on the eastern side of the runway.

Mc Carron's Field can be visually daunting, but when established on final it is actually not bad at all.

To see a video taken from a Cessna 182G landing at Mc Carron's Field go to:

<https://bvsac.org.au/fun-fly-poker-run-2016> , and then and fast forward to the 6:00 minutes mark.

## CARD LOCATIONS:

At Gatton Airpark, and Mc Carron's Field the cards will be located adjacent to the primary windsock.

At Kilcoy the cards will be located at the base of the corner post of the aircraft parking area. Pilots are requested to park their aircraft in the parking area whilst collecting a card.

At Forest Hill the cards will be located in the aircraft parking area.

Pilots are requested to park their aircraft in the parking area whilst collecting a card.

At Watts Bridge go to the Brisbane Valley Sport Aviation Club to register your winning hand!



# B.V.S.A.C.

## FUN FLY POKER RUN 2019

**GATTON AIRPARK****ELEV 460****FULL NOTAM SERVICE NOT AVBL**

6L  
01 QLD 273524S 1521524E UTC +10 YGAS  
AD OPR Gatton Airpark Body Corporate, C/O The Secretary, PO Box 64, Gatton, QLD, 4343. Email: aerobiz1@gmail.com. PH 0419 368 696. UNCR

**REMARKS**

1. This is a private residential airfield - PPR.
2. For airfield conditions PH 0419 368 696, 0458 273 249 or 0401 296 943.
3. AD HR of OPR - HJ. Visiting MIL ACFT may OPR HO.

**ATS COMMUNICATIONS FACILITIES**

FIA BRISBANE CENTRE 121.2

**FLIGHT PROCEDURES**

Right hand CCTS RWY 19.

**CTAF** 126.7

**ADDITIONAL INFORMATION**

Animal hazard exists.

**CHARTS RELATED TO THE AERODROME**

WAC 3340.

**KILCOY****ELEV 400****FULL NOTAM SERVICE NOT AVBL**

 QLD  
265816S 1523355E UTC +10 YKCY  
AD OPR South East Sport Aircraft Club Inc. (SEQSAC), PO Box 195, Kilcoy, UNCR  
QLD, 4515. Email: kilcoyairfield@gmail.com. PH 0449 074 713 (Onsite  
Information). Website: www.kilcoyairfield.club.

**PASSENGER FACILITIES**

WC.

**PHYSICAL CHARACTERISTICS**

RWY 09/27. Grass. Slopes down to the west.

**ATS COMMUNICATIONS FACILITIES**

FIA BRISBANE CENTRE 129.0 On Ground

**LOCAL TRAFFIC REGULATIONS**

1. Visitor ACFT PRKG south of hangars and west of TWY.
2. HEL OPS: hovering and PRKG S of hangars and E of TWY only. HEL to exercise extreme caution as rotar wash may dislodge RWY marker cones.

**FLIGHT PROCEDURES**

1. CCTS for YKCY resident aircraft permitted HJ only.
2. Commercial CCTS operations not permitted.
3. HEL OPS HN require written permission from AD OPR, except in EMERG.

**CTAF** 126.7**NOISE ABATEMENT PROCEDURES**

1. Avoid flying over noise sensitive farm house 1NM to the north of the field.
2. Avoid low level CCTS on RWY 09.

**ADDITIONAL INFORMATION**

Following extended rain periods, parts of the AD SFC may become soft. Guidance should be sought from the OPR prior to use.

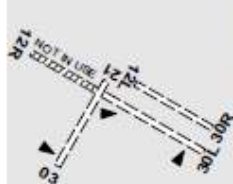
**CHARTS RELATED TO THE AERODROME**

WAC 3340.



**WATTS BRIDGE****ELEV 300****FULL NOTAM SERVICE NOT AVBL**

QLD  
270544S 1522735E  
AD OPR Watts Bridge Memorial Airfield Association, PO Box 98, Toogoolawah,  
QLD, 4313. Email: [info@wattsbridge.com.au](mailto:info@wattsbridge.com.au). PH 0427 699 239. Website:  
[www.wattsbridge.com.au](http://www.wattsbridge.com.au).

**REMARKS**

1. PPR.
2. Commercial training operations, charges and/or conditions apply. Operators contact [info@wattsbridge.com.au](mailto:info@wattsbridge.com.au).

**HANDLING SERVICES AND FACILITIES**

AVGAS available - self serve swipe card - MC and VISA card only.

**PHYSICAL CHARACTERISTICS**

DTHR exists on both RWY 21 and RWY 12R.

**ATS COMMUNICATIONS FACILITIES**

FIA BRISBANE CENTRE 129.0 Circuit Area

**LOCAL TRAFFIC REGULATIONS**

1. Carriage and use of radio is required by AD OPR.
2. Access to RWY 12L and 30R at RWY ends only.
3. Drainage ditches flank each TWY. Taxi on mown SFC and exit TWY to parking areas by marked access points only.

**FLIGHT PROCEDURES**

1. Right hand circuits RWY 12R and 30R.
2. CONTRA CIRCUITS IN OPERATION ON RWY 12/30  
**THERE IS NO DEAD SIDE WITH CONTRA CIRCUITS.**
3. Join circuit on downwind, base or final in accordance with published circuit join procedures.

**CTAF** 127.3

**NOISE ABATEMENT PROCEDURES**

1. Pilots are to operate aircraft with minimum audible and visual impact on the local community.
2. Circuits or local airwork not permitted before 0700 Local.
3. Avoid low level flight over houses.
4. Consult [www.wattsbridge.com.au](http://www.wattsbridge.com.au) for Fly Neighbourly information.

**ADDITIONAL INFORMATION**

1. Undershoot area to RWY 12R is not in use and marked with white cross markers.
2. Weather camera display AVBL: [www.wattsbridge.com.au/wx](http://www.wattsbridge.com.au/wx).
3. Low level aerobatic operations take place up to 5,000FT in the designated aerobatic box located SE of the airfield. Refer Watts Bridge Fly Neighbourly Map.
4. Intensive skydiving at Toogoolawah, 5NM NW of Watts Bridge.

**CHARTS RELATED TO THE AERODROME**

WAC 3340.

Forest Hill YFRH

CTAF

126.7

Elev:

333 ft

Unlicensed

Owner

Neville Wood

Contact

Location:

27° 36' 18" S / 152° 22' 21" E

Surface

Grass

Location

1.22 nm ESE of Forest Hill village

Circuit Direction

All left hand

Available Runway

600 m / 1970 ft

## Hazard List

- Airfield surrounded South end by trees up to 30 M
- Mechanical turbulence caused by proximity of trees
- Approach on runway 21 has power pole on centreline
- Beginning of runway 03 Slopes laterally down left to right

**Not to scale**

