# Newsletter

No.13: January 2021

## CAA New Drone and Model Aircraft Rules 18 December 2020

On 31 December 2020 the UK moves to a new set of rules for unmanned aircraft. For many people the basic rules on their day-to-day flying won't change but there are some important amendments that users need to be aware of.

The key elements of always keeping your drone/aircraft in sight, not flying above 120m (400ft) and staying clear of airfield restricted areas (unless you have specific permission to use them) remain unchanged.

The new rules focus on the risk of the flight, based on the weight and type of the drone/aircraft, and where it is being flown, to decide what you can do and whether you need a CAA authorisation for your flying.

This is a change from what we have currently where many of the requirements for needing permission are based on whether you are being paid to fly your drone/aircraft, or if it has a camera fitted to it.

The new laws set out three categories of flying, and you must always operate within one of these.

**Open-**'basic flying' which does not require an authorisation from the CAA;

**Specific-** more complex operations, which require an operational authorisation;

**Certified-** complex operations, which require the use of a certified UAS, operator, and a licenced remote pilot.

You can find details of these and other updates at **www.caa.co.uk/drones**

As well as being changed in the UK, the same new rules are also being introduced to EU countries so there will now be very similar rules across most of Europe.

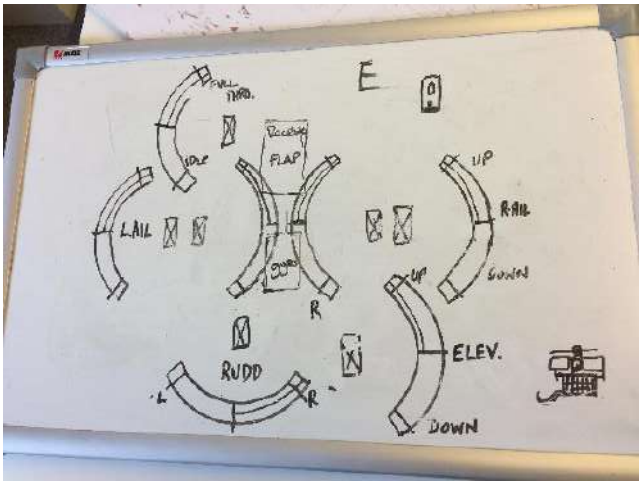
# Something Different *by Alan Veitch*

Like many others, my hangar is full. I have more planes than I can fly or maintain. I have set myself two winter projects. One is similar to a plane, a small Atom autogyro, which I have been given and the other is something a little different. Inspired by comments made in articles by other members about proper use of our highly technical transmitters, I realised that I have in my hands a very sophisticated computerised bit of kit. Yet here am I hardly using a fraction of its power, and my JR transmitter is a 10-year-old design using outdated protocols which are no longer even legal in most of Europe.  Yet here am I flying and not using any of its advancements, I may as well be flying with my son's old Hitec 4 channel, longing to advance to a 6 channel Futaba Challenger, WOW. I have set up a few complicated planes on my JR but blundered my way through them. I decided to actually learn how it should be used. My main problem is that I have read the manuals several times, namely every time I set up a new model, but still only have a smattering of actual knowledge of how to use it. In my defence, the manual although a big fat book talking about some complicated subjects, is clear as mud. It doesn't even tell you how to bind to the receiver, or how to range check the system. It goes into huge detail about how far you walk away and how to set up aircraft control surfaces, but not what buttons to push, or what to look out for on the receiver or the transmitter itself.

The next problem is when I set something up it needs me to link it to a plane and watch what it does to the plane. I regret that I am quite clumsy and have damaged planes trying to see if things are working as I would expect on a full-sized model as I move the sticks. My solution, a test board, which is small enough to see easily, set up as a big plane, with a receiver, servos, battery. Where I can watch the effects of any changes I make, without dancing around the workshop, avoiding my plane with wings screwed on.

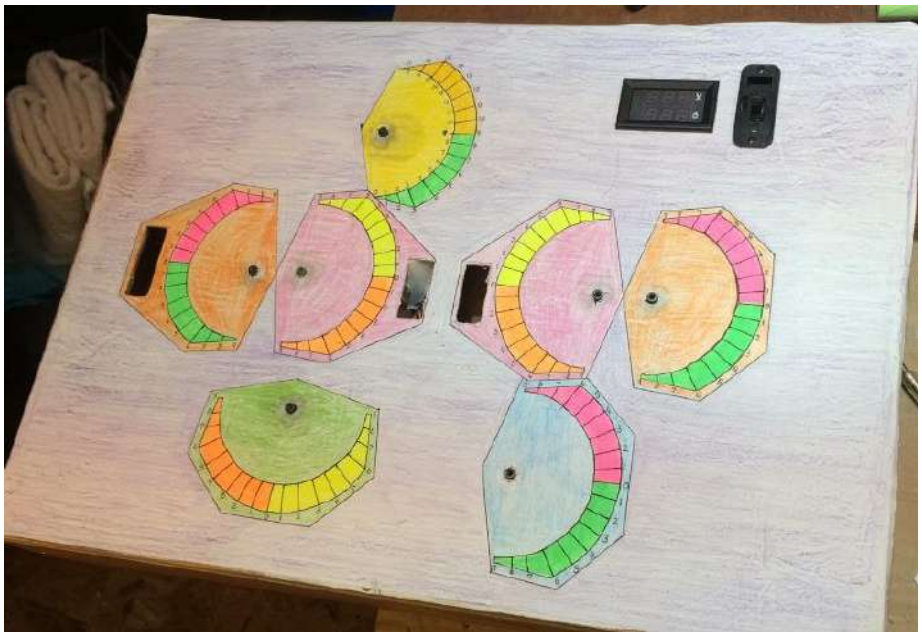
I have a lump of A3 size ply, 7 servos just cheap 9g ones, but all they're pushing is a pointer, a receiver, and switch, and a battery that are slightly suspect, and I don't trust in a plane. So here we go...

*A quick sketch to plan the layout.*

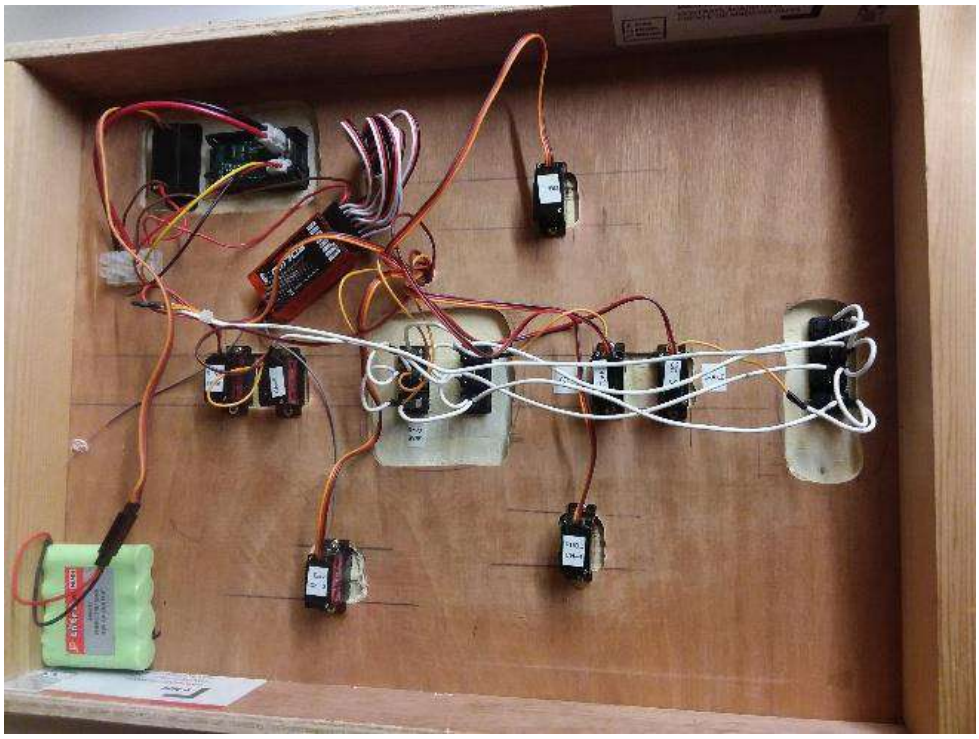



Rout out for the servos and ancillaries, as my ply isn't the sheet of aluminium or panel plastic that it probably should have been, cheapskate me yet again!

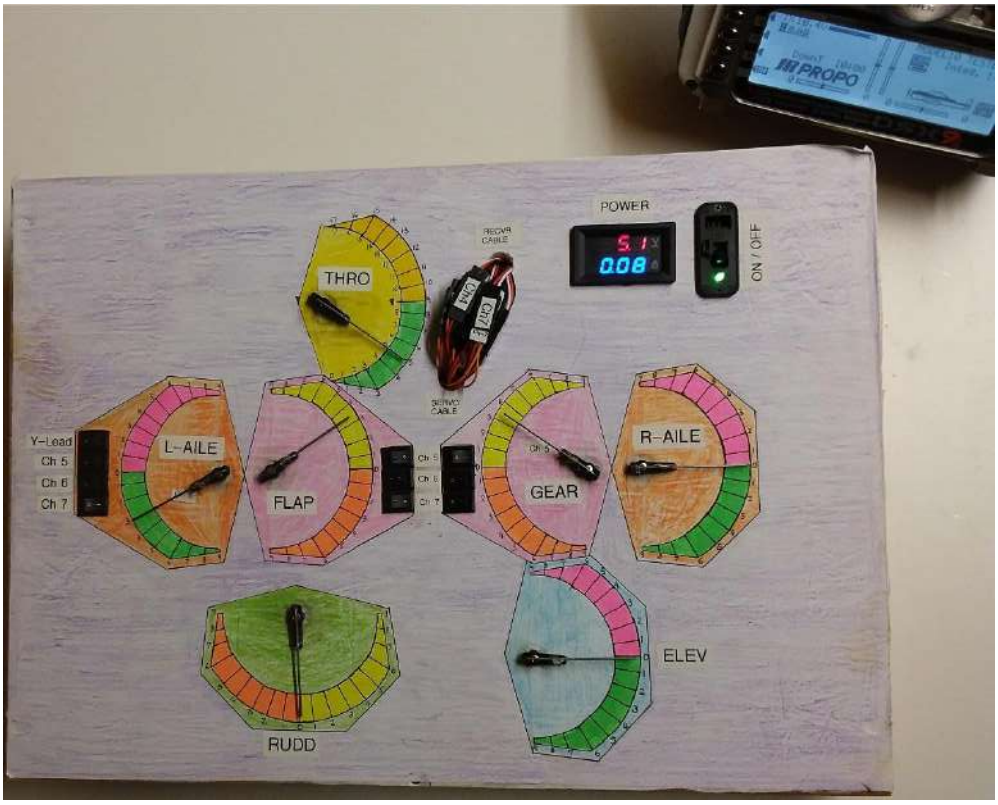
I then decided to make the servos interchangeable, as I don't tend to stick to the same protocols as to which channels to use for things outside of the basic 4 controls. This is due to my transmitter only having 2 three position switches, and my scatterbrain approach. So I have the extra expense of 10 switches adding yet another £3 to my costs. Or I might just set new protocols and change all of my models to a fixed setup, hence rewriting the instruction book, and standardizing all my setups. Which would be an improvement to my systems, saving me three quid, OK that convinced me. Who are you calling cheapskate?



I considered wiring in an ESC and using the power meter to calculate best prop match and even drew out the changes to the circuits. I then realised when making the wiring harness that my power meter was only 10amp. Back to the basics, just like me to be too ambitious.



Well, here's the finished product. Inside the only complication was my desire that apart from the 4 primary controls I wanted to be able to change which channels could control the 3 auxiliary controls. This is done by linking the signal wire from the servo via a set of 3 banks of switches.




This allows the L-aileron, Flap, and Gear servos to be controlled by any of the channels 5-6 or 7, on the transmitter or even coupled up Y fashion to any at the controls.

The huge bunch of cables appearing then disappearing next to the throttle are not just my messy planning but allow the connection of ancillaries to any of the channels in the receiver without having to strip it out of the box. I have a couple of gyros and a safe system which can simply be linked into these points and physically moving the gyro should generate needle deflections to match what the movement of the plane would cause.

What use is this board? some may be asking, well it is a cheap learning curve. I was busy building it when my son told me he has nearly crashed his new Hawker Typhoon. Not badly, it's nearly fully repaired he tells me, but he, like me has never really looked at programming his transmitter. However, a fellow flyer advised him to put an elevator mix in to stop it ballooning up when flaps were deployed, which he did. He checked it out on the ground after starting up his engine, all seemed fine until he took off and retracted his flaps. The plane started to climb, he put full down trim in and needed to hold down elevator to keep it in the air! This was the first flight after a perfect maiden an hour before, he landed hard on the grass in his panic (his site flies from a tarmac runway) damaging the retracts. He couldn't find anything wrong with the plane or controls, only when he took the mix of flaps and down elevator out did he realise that as well as down on down

flaps it had automatically put up elevator on raised flaps. Plus on my first use testing of the board, I have realised something I didn't know before. When I have put flap down/ elevator mix, which is a transmitter setup program on the JR, I always slow the servo speed down on flap deployment, to give me time to react. I didn't realise that the elevator compensation happens at normal speed to full reflection, while the flap crawls to its final position. And each type of transmitter is different, my old JR doesn't have the same foibles as my son's.

I hope over the weeks to master flaperons, which I have never managed to program, crow braking on an IC plane, and flight modes. Look out for spectacular crashes at the field.

# Repair of Super Stearman 46 *by Neil Grayson*

It all started with Billy Dunn asking me if I wanted a plane that he had had for a long time and that he would never fly again. After some stiff negotiation, it was agreed that it was mine for one packet of tomato flavoured crisps. In the end I got him a pack of six, which was still an excellent bargain.

We met at the field and the plane was transferred to my car and the crisps gratefully received.

The plane was in a sorry state with 3 of the 4 wingtips crushed and the horizontal tailplane also quite wobbly as though there was some loose wood in there somewhere. The covering was very dusty with numerous holes and rips. There was a servo with a label on it saying that it was new in 1995! I am not sure where Billy had stored the plane over the years but I am sure that something was stored on top of it. The firewall was fuel soaked and the engine mount had numerous holes in it so I expect Billy used a variety of engines over the plane's life. I understand he had a 4 stroke .52 as the last power plant.

I asked on Facebook - RC Classified Scotland if anyone had the plans for the Seagull Super Stearman 46 as I couldn't find it anywhere on the internet. All I could find was the Stearman Red Baron Pizza

Squadron for a 20cc engine. Luckily a man called Dougal who lives in Finzean, near Aberdeen answered my request and he said he had just finished building the same plane but he had put an Irvine 72 in his. He posted the instructions a couple of days later and he said that he didn't need them back. I can't say that the instructions were too useful as they were a bit vague, but at least it gave the C of G position and had a few pictures of the plane in various stages of construction. The measurements were a mixture of inches, centimetres and millimetres! It turns out that Seagull is based in Vietnam!

The first thing I did was repair the plastic fairing between the pilot and the tailplane using superglue and light weight filler, then finished off with some fuel proof clear varnish. Little did I know that that would be the easiest thing to put right!

After removing the wing struts and wire and taking pictures of how everything fitted together, I removed the covering and assessed the damage to the wingtips and ribs. The 3 out of 4 wingtips were reconstructed with laminated 2mm medium balsa with the wood grain at 90 degrees to add strength. Luckily one of the wingtips was still intact so I used that as a template to get the shape

correct and all the wingtips symmetrical. I reinforced the plywood round the wing servos and squeezed a little superglue into the screw slots which I find strengthens and tightens them up.

The fuselage, apart from the rear fairing wasn't in too bad a shape. I cleaned and tidied up the covering and added some extra red Oratrim to keep the design the same. The pilot's hat was painted white with some enamel and I cleaned up the windshield. The engine mount was removed and replaced and I sanded down the firewall and painted it black then added two coats of fuel proofer.

On fitting the new OS engine, I noticed that the silencer wouldn't fit on as it was catching on the side of the fuselage. I either had to cut away some of the fuselage or get an adapter. Rather than hacking away at the fuselage, I fitted a silencer extension adaptor.

The tailplane was stripped back to the wood. Both the horizontal and vertical tailplane had broken struts so they were replaced with strip wood from B & Q, which just happened to be the right size, and re-covered.

I traced round all the different sized stars on top of both the wings and on the tailplane and cut out new ones from Oratrim which takes ages with a pair of scissors.

For now, I have used the original wire struts for the wing bracing, but I have bought some turnbuckles which I may use with some control line Laystrate instead. I think it will look neater and it will certainly be lighter.

Once the plane was repaired and covered, I noticed that the wheels on the main undercarriage were different sizes! Luckily I had bought some larger 100mm wheels anyway to cope with our airfield's grass.

Dave Kelly has kindly offered to repair the cowl for me but at the moment this is on hold due to the Covid-19 restrictions. I am sure it will fly just as well without a cowl for its maiden flight.

I still don't have the electronics fitted correctly because I need to remove the battery each time, I want to charge it. The external battery charging socket doesn't seem to work. This is inconvenient as it means removing the wings to access the battery. I have built a plywood frame to keep the battery pack safe within the fuselage but it is awkward to get to so I need a rethink. I may also buy a new receiver battery as well as I have no idea how old the existing battery is and how long it will hold its charge.

I found that taking photographs whilst you dismantle a damaged plane is a great way to ensure that everything goes back as it should. The top wing mounting would have been impossible without referring back to how it was connected with the spars, wire braces and metal truces. Luckily, we don't have to send our photographs off to be developed anymore.

I was down at the field on 7th November and ran in the OS 46. Only Alan Veitch was brave enough to fly that day as it was cold and wet with very poor visibility. After a few more tweaks during lockdown the Stearman will be ready to fly. Of course, I will get someone with a more experienced eye to look it over before its maiden flight. One thing that does need sorting out is the twist in the elevator which I only noticed after it was covered. I may need to construct a new elevator if it won't straighten out.

*Extra parts required to complete*

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| OS 46AXII Max |
| Spektrum AR6600T Receiver |
| 300cc Fuel Tank |
| Oracover Red/White |
| Oratrim Red |
| Wheels |
| 2 x Servos Futaba FP-S148 |
| Receiver Battery |
| Propeller 11 x 7 |
| Irvine 63mm Spinner |
| Axles |
| Engine Mount |
| Wing Bolts |
| Silencer Extension Adaptor |

Overall, getting the plane was an excellent opportunity to practice my building skills. A word of advice though is….. don't try and repair or build a biplane as your first project. Twice as much wing and twice as much Oracover and trying to get them aligned with poor instructions is a nightmare.

Many thanks Billy for the donation of your old plane. Hopefully you will be there to see it fly again.

# Repair Shop *by Alan Veitch*

He's at it again I hear you say, well yes. It was me that advised Douglas Gilmour to get himself an Arising Star as he was returning to flying RC models. He tried to reconstruct my crashing through the pilot's box with my Beaver, and put it through the temporary pilot box slicing the wing in half. Then a short while ago, 4th Nov to be precise, Douglas had a senile moment and tried to plough the farmer's field with the Star. Neil managed to find the wreckage and returned nearly every splinter of it to the pits, having to make two trips across the muddy field. Whilst I'm sure that Douglas has the skill to get it flying again, I respect his decision to move on to a low wing trainer, a step I have yet to reach. He gave me his wreckage, for which I was most grateful.

As some of you will be aware, I am a great fan of the Arising Star so grabbed at this chance of getting one back in the air. By his comments I don't think he thought he would see it back again. Well I'm not going to bore you all with my last few days, just push a few pics in instead.


Needless to say I took some shortcuts and a lot of glue, it will probably fly like a brick, but the longest part of this rebuilding will be the running in of the new SC46 engine. Quite a few new wing ribs needed to be made, that old 1930s wardrobe back takes another pounding.

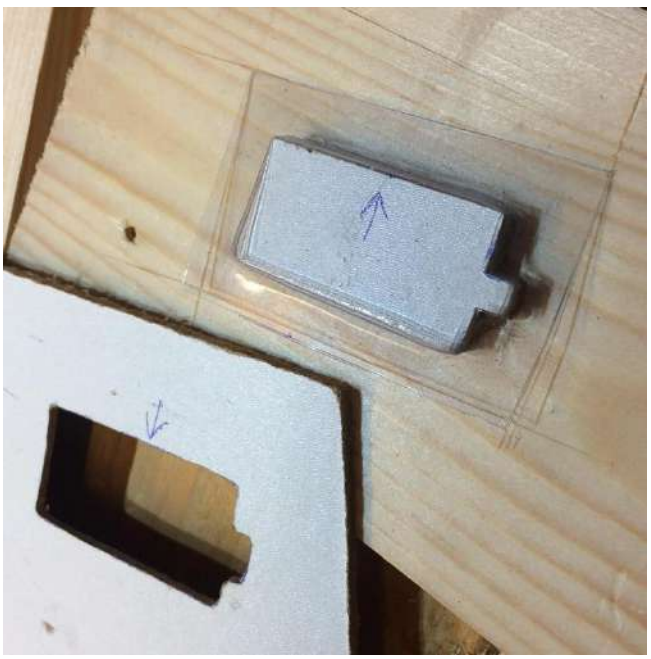
The wing, well one of them finished, I moved on to the fuselage.
New tank frame cut from a previous model part, so it's not all old wardrobe ply.

The balsa sides fitted back once steamed over my shed kettle, a good excuse for a cuppa.
stick it all back together and clamp up. The building board is essential to ensure a straight line, no one likes flying a banana round the sky. It quickly starts to look like a plane again once you stick some covering over the balsa.

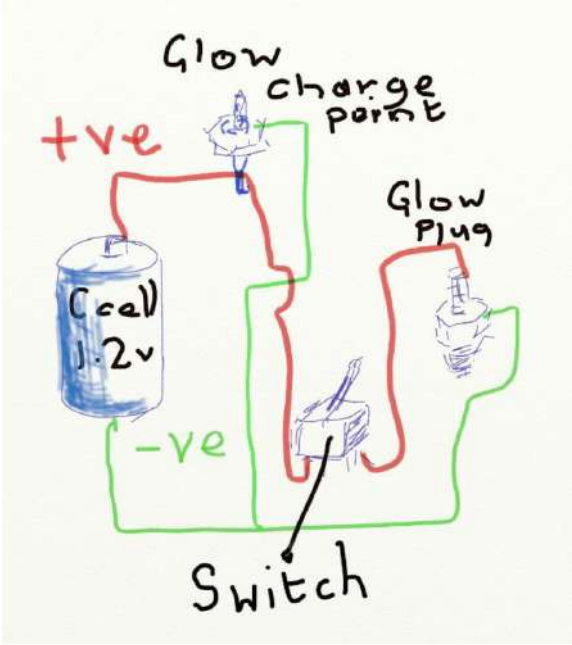
Bend some piano wire and we have an undercarriage. Put some gear in and hey presto.....

We're ready for a maiden flight. It obviously needs the decoration vamped up a little but that will come in time. I intend trying a couple of experiments on the plane. I have fitted a home-made constant current glow driver, I have always had trouble with engines, as no matter how I try I find them rather troublesome things. I have also moulded an acetate cover for the battery meter attached to the top of the fuselage. Back in the 90s we made a vacuum former to make canopies for models, but back then it was a frame holding the acetate, which after breakfast was placed into the gas grill until it turned wobbly. Then quickly transferred to a box attached to my wife's house vacuum cleaner and suck it down over a wooden plug. Unfortunately, I no longer have a grill, the toaster won't do it and my wife no longer trusts me with her Hoover.

I don't need that amount of shaping either, so I cut out a shape in ply and heated a bit of acetate packaging up with a hot air gun and pressed down hard. It made quite a good waterproof covering for the battery meter.



Battery meter on the top, I probably should have fixed the ply first, but it can always have covering stuck over it later. Also shown here is my homemade glow unit charge point. The remote glow consists of a clip on the plug attached through a switch to a C cell battery, which is powered on throughout the flight. The theory being that the glow draws heavily when starting, but then once up to heat uses very little power. The starting charge can be assisted by attaching a glow driver to the charge point during the starting of the engine.




We'll see how it turns out later.

Now a plea. The newsletter has been going for a year now. I started off the first couple of issues with help from our Secretary Billy, and Neil. After a very short time Neil took over the bulk of the work, and has done a sterling job of it. However, the mainstay of the newsletter was going to be the field reports, which due to Covid-19 have virtually dried up. He is still putting together the best newsletter that I have seen from any flying club, with lots of interest in it.

Please if you haven't yet done so write him an article, or if you already have, do another. Suggestions if you aren't crazy like me are, a profile of how you came into the sport, or how you do your hobby, your workshop, projects you are busy with. The list is endless, and yes we would all rather be just flying and crashing, but some of us are stuck at this time. It's a good way of keeping the club going, and it is a great club.

This space is yours.....

# Activity at the Field – December 2020

Unfortunately with the Covid-19 restrictions in place there wasn't much activity at the field. Let's hope we have a better and more harmonious 2021. All please keep in touch via the members WhatsApp group. If you want to be added to the group contact Alan V. Here is a picture from June to remind you what the flying field looks like....

## Newsletter Feedback and Contributions

Please let Neil or Alan know of anything you think should be included in the Newsletter, things you like or dislike. Any feedback would be much appreciated. If anything happens at the field whilst you are there send us an email (with pictures) for the Activities at the Field section. More articles are always needed. Let us know how you got into the hobby, what planes you have owned etc... It is hoped to publish the Newsletter monthly around the 1st of each month but on occasion it may be delayed for a few days. Email addresses for articles are: alnvkrmfc@gmail.com or krmfcng@gmail.com.

Do you have anything you want or have for sale? Send the details including pictures for inclusion in the next Newsletter.

THE COMMITTEE WISHES YOU ALL GOOD HEALTH

AND A HAPPY 2021