

14<sup>th</sup> March 2018

Meeting - Airbus

- SORA:
  - o CASA in process of reviewing initial SORA, will advise of any foreseeable requirements
  - o AIRBUS also reviewing
- Estimate / SOW received
- Estimate PAID
- CASA requested training org docs be sent (preferably while <sup>s 22</sup> still in SA)
  - o T-Spec (Type Training Manual)
  - o Samples of lessons and plans
- Current simulator issues may prevent all scenarios being flown however requirement for three training scenarios still obtainable
- CASA's aim for training approval:
  - o No international standard RePL or equivalent so converting a licence is not possible. Also cannot authorise a person to be licenced in another state (UK)
  - o Need to the CRP to have a RePL prior to UK if training org to be successfully setup in UK
- Or
- Wait until operation comes to Aus - CRP to have RePL before his approval can be completed in aus
- OAR meeting on the 19<sup>th</sup> March – will require new airspace plans from AB before then
- Currently looking at 'Activity 3' – 'Civil' ops (aircraft to be RPAS – no VH registration), Facebook to provide payload and ops will be orbit up – 1 month endurance – cruise 50NM downrange for further testing
- <sup>s 22</sup>
- 2019 – May look at conducting ops of extended nature (outside Economic Zone) requiring restricted CofA

Notes:

90 day process for OAR to create ACP

Meeting talking points:

IREX:

- Shift manager / duty CRP would have irex (multiple people with IREX - to obtain upon arriving in Aus) note If crp not contactable at all times then would need to have alternate CRP anyway

Or

- CRP contactable all the time

Or

- Exemption –  
We may consider IREX exemption (never been done before) and is not in the estimate and difficult to arrange

Training:

- Confirm if there is a minimum standard of qualifications that Airbus are hiring. <sup>s 22</sup> [REDACTED] mentioned that they do not necessarily have instrument rating vs <sup>s 22</sup> [REDACTED] initially saying they would
- RPAS VLOS Level 1 Course must contain components to teach to an Ab Initio student
- Find out from <sup>s 22</sup> [REDACTED] if possible to assess if different people teach different lessons during training assessment
- Discuss training documentation supplied / Mapping document?

Ops manuals:

- Discuss manuals supplied

Schedule - review:

- See UK Action Items document

Notes:

Existing exemptions that Airbus have held overseas have been in restricted airspace and so the case is different in Australia

4<sup>th</sup> April 2018

Meeting - Airbus -

s 22

- **Training org material (lessons)**

- do not have the selection we need. I would generally go for a Nav, Air-law and Risk module. We can't get that from what we have so far. Can't get a feel for the whole course in context. Need to see if this is possible in the time frame and make a decision for training org approval
- If going forward with this require Mapping document or decide if CASA to conduct
- Also need exam questions

Options if can't provide training and op training in UK:

- Could go to UK and assess the practical scenarios, then do the theory lesson assessment via Video Link
- If pilots wanted to convert to AUD PPL these could be converted to RePL (after airbus gives operation only training) s 22 to facilitate expedited (hand delivered) processing
- Could offer operation only course approval (challenge is that people can't be trained in the UK)
- Austrian provider training in Australia – could speed up possibly by having some of the course delivered online

Going to go down the PPL conversion path and become an operation only training org:

- Looking to do type training only
  - o Work in the sim
  - o Modules in the theory that are aircraft specific will need to be taught so a sample of these would need to be seen eg high altitude operation theory etc
  - o 1or2 modules of theory
    - Theory subject to support operation only - s 22 has sent through list - CASA to advise which ones for testing.
  - o 1or 2 modules of prac in the sim s 22
    - Aircraft (Sim) scenarios - s 22 has sent through list - CASA to advise which ones for testing
    - Testing criteria developed given this is not a normal org.
- Forms filled in for PPL conversion
  - o s 22 to obtain and begin process, s 22 to check paperwork is correct
  - o Email to me, email to s 22 and he will hand walk these to

- **SORA – results of run through today**

- o Ground risk is benign
- o Air Risk is quite high though - Glass G is quite trick to deal with. Discuss to see if they can get

# Released under Freedom of Information

- Continue assessment
- ~~RePL Academic Training Online:~~ RePL training may be possible online but the exam is not. I would assume Airbus eventually want to train and examine their own, but are looking for how to get the first wave done. We could give them info for schools in Perth, Maybe Rotor West or GDS would fit the bill.
- ~~PPL Learning Credit:~~ Can we take any credit for existing EASA PPL etc and our own Type training?
  - No. Need to complete the full VLOS RePL syllabus
- ~~Theory Examination~~ How can we be examined on the theory content, preferably before arriving in Australia — More info required
- ~~Flying Training Accreditation:~~ Can we be accredited to deliver our own flying training through simulator and an individual's first actual Zephyr flight segment in Australia and could this count as the CASA flight test and required 5 hours experience? Yes, provided 5 hrs completed in sim (if sim approved as a suitable replacement for aircraft)
- ~~Grant of RePL:~~ When, how and by whom would RePL be granted in these circumstances? — By CASA via notification of completed training from Airbus
- ~~AROC Requirements:~~ Do we need (several) AROC and, if so, what might be the options for obtaining them? Through a CASA approved RePL school? Is there a mechanism to recognise EASA qualifications? Don't need RePL for all pilots however if a radio broadcast is required it would be a legal requirement to hold a radio qualification.

If they converted their PPL then the radio qual would follow.

Or

Get one through Australian provider

- **IREX Requirements:** Given the likely overhead of achieving an exemption to the requirement for an IREX for BLOS operations, we propose that we achieve IREX for sufficient people (3 or 4) to enable us always to have a 'duty IREX holder' available on call in Australia. The IREX individuals will not necessarily be on shift or in any formal supervisory role but will be readily accessible in-country by phone. We will create a rule in our Flight Operations Manual CASA Annex which requires whoever is in charge/command to heed the IREX advice where applicable. Is this a satisfactory approach? Appropriately qualified person is located on site and will have an outcome based arrangement rather than specifying minimum time until being able to take command. Conversation of what 'command' means to take place down the track.

- **Aeronautical Data Originator:** AC101 Para 4.3.7 refers to training from CASA to become an Aeronautical Data Operator. The DPS NOTAM manual doesn't appear to mention anything about additional training but simply requests that a competent person is nominated as the NOTAMs Originator. Please confirm the requirements for Airbus HAPS to become an Aeronautical Data Operator so that we can initiate NOTAMs quickly and without recourse to third parties. Should be fine to organise, ASA form to fill in (both CASA and Airbus to fill in however CASA to initiate).
  - **Part 21 – CofA** – will be dealt with when required (they are already across)
  - **Schedule:** Confirm:
    - Patching for IREX Thursday
    - Will use the time in schedule for theory assessment as theory assessment to support operation only training instead
    - Availability for <sup>s 22</sup> while in UK – organised for the mornings and ties in with SORA workshops
    - ~~More time for theory delivery (1 day)~~
  - **Update from OAR / ASA:**
    - <sup>s 22</sup> to provide in the next couple of days
  - **Reporting / general procedures**
    - More than 10K reportable or complete hull loss
- <sup>s 22</sup> and <sup>s 22</sup> to check if correct
- <sup>s 22</sup> to supply process 'map'
- <sup>s 22</sup> to supply answers to the Q&A kiteworks document as above

## Items 'To Do':

- CRP assessment interview scenario – do we have time to do something around Broome? At least that will be fairly local to their actual ops
- Read / Compare / Comment Ops Manuals – A bit like the above it will take time as it's not our format, but allowed for in estimates

26<sup>th</sup> April 2018

Meeting - Airbus

s 22

- s 22 provided update on OAR/AsA and their current position:
  - o Written clarification expected next week
  - o s 22 endeavour to find AsA direct contact
- Expect Airbus to upload SORA v0.7 next week
- Airbus to continue hiring of PPL+ pilots
- CASA to find out:
  - o Being EASA / UK National Lics and implications
  - o Currency on type implications
  - o Currency on Ratings implications
  - o s 22 PPL conversion issues with AVID - seek a better way if possible
    - PPL conversion issues – signing the back of photos etc
  - o Part E requirements
  - o Org structure
  - o Confirmation that we have captured all the required approvals:
    - o - RePL
    - o - ReOC
    - o - BVLOS
    - o - +400ft
    - o - Training approval (operation only)
  - o NOTAM originator

3<sup>rd</sup> May 2018

Meeting - Airbus - s 22

SORA TH#12 – Safe Design.

It was set at a High level of robustness (which disagreed with TH#10, which was assessed together with TH#12). CASA will accept a TH#12 at a **Medium** robustness for TH#10/#12. This will align with JARUS WG-6 guidance.

Above sent via email to s 22 as requested

1. Airbus project update  
As per Approvals timeline document  
Still in transit with US testing equipment / people
2. Airbus update on Document Drop 3 progress  
SORA  
List of documents  
Reference documents that are ready
3. CASA progress towards a written airspace agreement – can we please set a target date for final agreement? 1 July?
  - Visibility (ability to be identified in the air), will be included in next upload
  - Ascending/descending profiles (more detail on this), updated the CASA approvals plan (CASA to read and respond with any feedback from OAR)
  - OAR/s 22 will be meeting with us next week
  - Airservices have started the assessment
  - Expect feedback in following weeks (date TBA)
4. CASA/OAR/ASA (?) airspace discussion – if not, can we set this up, I will come to Australia if necessary  
As above
5. CASA responses to ZP-PL-0047-v2.0 ARN s 47G - Plan for CASA Approvals (uploaded 26 April)  
To be assessed
6. CASA responses from Airbus-CASA Information Exchange Register v3 Items 11-15 (uploaded 26 April) – apologies, Item numbering is messed up, will fix at v4  
Test updating
7. Initial CASA reaction to draft v0.2 of Airbus CASA Operations Manual (uploaded just now)

To be assessed

8. Progress and next steps for [REDACTED] RePL application – including requirements for Visa number

[REDACTED] previously mentioned Visa not mandatory field on form

[REDACTED] to fix issues with application (run through)

Submit straight to [REDACTED] will be hand walked into correct desk with the hope that this will progress without AVID. As a backup still continue with AVID application

Make sure no concurrent application come in during this time

- Make sure all apply only for PPL

Confirm if there is any difference in terms of converting PPL to Aus PPL with regard to

Being EASA / UK National Lics – has to be issued by an ICAO state

Currency on type Nil – these should be removed from the form

Currency on Ratings Nil – these should be removed from the form

Part E - Training section in the ops manual (what does this have to contain)

Reference out to training manual/s as provided to casa on this date. If this is purely a training manual then make sure the ops manual at E has info re administration eg who can go on a course / facilities etc (only needs to be basic) – Needs to be assessed

NOTAM originator

[REDACTED] – Still waiting on update

Confirmation that we have captured all the required approvals:

- RePL - ok
- ReOC -ok
- BVLOS need form
- +400ft – need form
- Training approval (operation only) - need to request the form – email from them to request change from training+op to op only
- Movement area – Still finding out from [REDACTED]



10<sup>th</sup> May 2018

Meeting - Airbus-

s 22

1. AC015 – Permission for Zephyr Operations at Wyndham Airfield  
s 22 (Aerodrome Inspector) available to answer any of Airbus' questions at beginning of meeting
2. Airbus project update  
Depending on what is drop 3 if all comes at once on 15th June we may need more than 2 weeks to assess them all. 1st July may need to be moved back

NOTES:

s 22

Broom ops?

Zones in proposal aren't connected? Is it because once it is as above FL550 it won't interact

Require paperwork for approvals:

- BVLOS
- +400ft
- Training approval (operation only) - need to request the form – email from them to request change from training+op to op only

From Airbus,

s 22

3. Airbus update on Document Drop 3 progress  
Starting to push the timelines beyond the initial project plan, need to be cautious
4. SORA Feedback:  
Need a mapping of the documents (in the doc list) to SORA items/sections  
  
Need to make sure docs are uploaded into one folder for these also  
  
s 22 to update 4 items that we have our names against:
  - SORA – iridium, need to find someone who can provide stats etc
  - A06 - solved
  - A08 – environmental conditions
  - Critical infrastructure
5. Written airspace agreement / OAR/ASA (?) airspace discussion with s 22 –  
s 22 has not had an update from AsA  
Still being assessed  
Expect info next week (s 22 has a meeting with them next week)

- Will be a letter of agree AsA and Airbus
- The design or procedure

6. AC015/016 - CASA responses to Ops Manual

- Half done
- Part E - Training section in the ops manual (what does this have to contain)
- \*\*put this in ops man feedback\*\*
- Reference out to training manual/s as provided to casa on this date. If this is purely a training manual then make sure the ops manual at E has info re administration eg who can go on a course / facilities etc (only needs to be basic) – Needs to be assessed

7. CASA responses from Airbus-CASA Information Exchange Register

Edited to bring up to date - (prior to meeting), happy to continue with this process and upload new versions when edits are made

8. Updates on <sup>s 22</sup> PPL conversion application

Being processed now – appears to be positive in being able to not need an AVID. Note for further conversions – need to state that it is for PPL only (for RePL conversion) and no ratings to be converted. Aim to have confirmation of this in next couple of days then should proceed to process the next batch.

Gone to UK CAA for verification – 2 to 3 days

AVID will be required

Will be able to be witnessed by anyone in the UK is the same as the same as people in Australia

Documents will need to be sent once witnessed to AVID Company

<sup>s 22</sup> mentions argument that regs may allow for direct conversion from uk to aus repl

Regs only mention "if CASA is satisfied", Head of licencing will let <sup>s 22</sup> know if he is able to make this decision

9. AC12 - Aeronautical Data Operator

Check how they are going with that (info exchange updated) and it is for them to deal direct with AsA

10<sup>th</sup> May 2018

Meeting - Airbus-

off sick

1. Airbus project update

From Airbus/  
UMA pressure  
Training docs being organised by

2. SORA Feedback:

- is currently off sick

3. Written airspace agreement / OAR/ASA (?) airspace discussion with  
Update from :

Email: *Many thanks for the additional document. This document is exceptional in its coverage and has certainly answered the questions that the OAR posed.*

*It complements the OAR understanding and outcome of our risk assessment and therefore supports the decision of the OAR that Class G operations can be managed through the publication of NOTAMs.*

met with AsA this week and they are actively working on questions for OAR and Airbus

As soon as has these he will pass along

So whilst AsA have not provided any feedback they are saying they will definitely have something for next week

One of the questions they may have is about the Transponder being TSO'd however this may not be a requirement it would just change the procedure.

4. Updates on PPL conversion application

Documents arrived this morning from the UK and were intercepted in cbr

is off sick, however will have these on his desk for signing and action upon return


For the same reason has been unable to update on ability to grant licence without AVID (direct conversion from Int lic to Aus RePL

5. AC12 - Aeronautical Data Operator

No update

6. Medical Requirements:

# Released under Freedom of Information

Check with Licencing for PPL conversion (via )

## 7. Ops Manual

Go through changes and recommendations

21<sup>st</sup> May 2018

Meeting - Airbus-

s 22

Meeting with ASA

Share more info with asa

Tonight –

s 22

Advice s 22 we will be taking control (from

Before Thursday meeting will have contact as asa

Initially will have meeting (asa casa airbus) and that ay allow for direct comms asa to airbus in case of requiring documents

Need to check with s 22 if ok to release docs / how to go ahead with access to kiteworks potentially

Need a copy of s 22 emails to asa (s 22)

s 22 – contact him and make sure he is the correct point of contact (s 22)

Email address od AsA staff to give access to airspace folder in kiteworks

Sora - connection (CASA can share only CASA's version now Airbus)

NDA- Airbus, AsA

s 22

# Released under Freedom of Information

§ 22



§ 22



They have a particular process from OAR to AsA

Spoke with AsA

Having a casa meeting / asa

Put in writing

Want copies of what has been sent to asa

§ 22



will propose what is happening to

§ 22



24<sup>th</sup> May 2018

Meeting - Airbus-

s 22

s 22

ID Check

Done during meeting

AC020 - Requirement for an Aviation ID for PPL Conversion

Update from s 22 – no update for licence streamlining

AC022 - Document Drop 3:

Just need the following to enable sim sign-off

expected

25/5/18

Simulator Technical Log (scanned copy of actual log book)

expected

25/5/18

Z8 Simulator Qualification TRB (S2A-2)

AC023 - Intellectual Property

s 22

– no update as yet

AC023 - Airspace Approvals

s 22

has given go-ahead to send his response direct to AsA via password protected document via email:

Password for ASA:

s 47G

CASA / AsA meeting scheduled for Tuesday, in this meeting aim to schedule tri-party meeting the following Tuesday 5<sup>th</sup> (TBA at AsA+CASA meeting)

s 22

on leave next Thursday – meeting to still go ahead

s 22

SORA

s 22 To Update - noting the mapping document has only been avlb for toady for s 22 to look at

Confirmation of airspace - Broom, are Airbus still considering this area for operation?

s 22 Brome is in play as far as Air Services discussions.

Agree for now it is not forming part of the SORA assessment. Airbus want to add to this later.

s 22 : Ground risk will change Significantly; harm barriers will change and emergency response. The documentation will require more given it's populated environment If they hit SAIL 5 the whole SORA will change. If they can keep it at SAIL 4 (with Broome include) then this amendment may be able to go ahead as part of this (current) approval plan

s 22 : SORA complete 4th June – This may push to early July

s 22





05<sup>th</sup> June 2018  
Meeting - Airbus-

§ 22

- People on project introduction

Meeting Aim:

Airbus to circulate minutes and agreement requested asap

- Review of documents so far and access to Kiteworks – all OK
- Any questions re systems and or requests from AsA further information
  - o AsA ask what comms available to ATC
  - o Copper PSTN / GSM / Ground only based VHF
  - o Check VHF on GND in Wyndham – 3500FT LL
  - o § 47G
  - o
  - o
  - o
  - o 0-180 area - restricted area or class G
  - o OAR has deemed that protected airspace is not required with Series of NOTAMs (stepped in height), and visibly study. § 22 suggest around 10,000ft blocks
  - o Aerodrome operator to issue NOTAM for ground-based restriction eg runway closure and apron ops etc
- SORA may contain a relationship to what AsA will be assessing also – § 22 explains basic concept for AsA
- AsA will conduct separate RA from CASA's SORA assessment
- Create a draft instrument based on this discussion – sent to AsA for inclusion of the conditions, ensuring Airbus are kept in the loop so they can make sure any conditions are operationally feasible
- Brief Zephyr Australia CONOPS overview (if required) – Airbus
- Brief Zephyr Airspace Strategy Overview (if required) – Airbus
- Agree 'airspace' risk assessment requirements including SORA read-across - All
- Agree principles of safe operation in vicinity of Wyndham Aerodrome – Airbus/CASA
  - o Detailed comms with AD operator
  - o Reconfiguration of the airport
  - o Intention to become Originator
- Agree principles of safe operation in Class G airspace
  - o Radia calls to be worked out with CASA and conditions added
- Agree principles of safe operation in Class E and Class A airspace § 22
  - o § 22 terminology agreed
  - o AsA would want to be involved with permission to launch this allows AsA to know when to expect aircraft to reach FL160

- May have to treat like a pizza (blocks) given and released rather than using the whole 75NM radius
  - Separate manned aircraft via ADSB return may be possible also. Note ADSB is not TSO'd
  - CASA will need to provide information on how accurate the Transponder is as it is not TSO'd.
  - Altimetry equipment would need to be approved by CASA or otherwise be given the appropriate boundaries
  - Test of Transponder /ADSB equipment in Australia due issue encountered with previous operators. AsA to send detail where possible.
- Agree principles of safe operation above <sup>s 22</sup> [REDACTED] – Airbus/Airservices
  - Question as to restricted areas – Thursday need to have a discussion
- Agree principles of safe operation for key abnormal conditions
  - Gradual loss of flight performance – AsA note that given the amount of notice that is available (100ft/min) that this will be workable
  - Sudden hazardous loss of flight performance - AsA note that given the amount of notice that is available (2000ft/min) that this will be workable. Noting this is also standard ROD for Manned aircraft (which fits well with TCAS)
  - Transponder failure – may have to be treated almost like a link failure – Airbus to work with AsA on the management of this.
  - Generally with issues (where telemetry is still good), plan should not be for aircraft to be brought down (below FL550) in the first instance.
  - Voice communications problems
- Identify and scope additional documentation required – CASA/Airservices
- AsA mention that LOA may be the most likely outcome (due to complexity)
- Plan for completion of documentation, issue of approved operating instructions and final approvals – AsA to send Airbus an outline of what the LoA may look like - Airbus to draft and negotiate
- <sup>s 22</sup> [REDACTED] asks AsA if they may be able to share the format and what the LoA should look like.
- Route to preliminary agreement in principle (meeting record agreed) – Airbus [please note that we need this to be done as a bare minimum by Friday 8 June]
- Draft LoA process complete end requested by Airbus by end of July
- LoA process complete end requested by Airbus by end of July
- LOA is required for SORA completion (not the other way around).
- Rather than making this a pre-requisite for CASA approval, instead CASA will add this to the conditions (that LoA must be in place)
- 
- Channels of communication going forward

7<sup>th</sup> June 2018

Meeting - Airbus-

s 22

s 22

Airbus update:

- Wyndham operating procedures v1 is about to be issued however it is not an operational document until
- CASA will send Airbus a statement that CASA will run if asked by government or the public
- AIP/NOTAM – Question to OAR/AsA: for ops above FL550
- Airbus to provide an outline (most likely using the meeting actions/plans/minutes – a non-technical document) to AsA to get the ball rolling

CASA update:

All contingency is now used. Any delay now will push the approval issue date back. Airbus have acknowledge this and have said that operation will take place now anyway (even if minor delays occur) these will not stop the deployment. <sup>s 22</sup> has mentioned he will be reassign to other CASA responsibilities next week (as this was the original finalisation date this week). Airbus still have CASA's full attention and priority and will continue to work towards approval deadlines.

AC020 - <sup>s 22</sup> [REDACTED] Licencing:

- Licence still not produced by CLARC. Have requested update from <sup>s 22</sup> [REDACTED]
- <sup>s 22</sup> [REDACTED]
- Agree to send in batches (expect 3) rather than individually

AC022 - Document Drop 3:

Document updates:

Further to the email yesterday re timeline and required documents, it would be good to know if/when a mapping document will be provided for SORA reference material. <sup>s 22</sup> [REDACTED] have all started the assessment of these documents however we are conscious of expending time finding references. Airbus / CASA should discuss whether to continue to expend hour that may be more than necessary (without a mapping document) in an effort to try and keep to the assessment timeline or to hold off until Airbus supply said mapping document.

Current list of requested documents to progress application:

SORA

All data/documentation required for Ground Risk Assessment:

- Argument that the assessment of the Intrinsic Ground Risk should be based on the kinetic energy of the aircraft, rather than the wingspan
- Information on possible ground collision area given credible failure modes (i.e. non-rogue aircraft failure)
- Harm barrier integrity and assurance documentation to meet stated outcomes
- All data/documentation required for the Air Risk Assessment:
- Data to substantiate Air Risk Class adaption/robustness of mitigations for Stages 3/4/8/10 in particular (where relevant)
- Airspace argument that the SORA assessment of flight phase 'Climb/Descend 2 up to FL600' is overly conservative considering true encounter rates in this airspace

All data/documentation still outstanding for assessment of robustness of Threat Barriers:

- Threat Barrier #6
- Threat Barrier #10/12 – Safety Waypoint Plan
- Threat Barrier #13
- Threat Barrier #18
- Threat Barrier #20
- Threat Barrier #24
- This documentation should be in the Technical Note being prepared by Airbus

General

- CASA operations manual (with suggested revisions)
- CASA operations manual reference documents (as referenced in above)
- CASA operations manual library documents (as discussed located in a separate folder)
- Local Operating Procedure (LOP)- Wyndham, Australia

- Instructors handbook (or at least instructor notes within presentations) - uploaded
- Remaining Theory Lessons - uploaded
- Have asked for document list version 1.3 – wasn't uploaded to KW (already exists)

#### AC023 - Intellectual Property

s 22 [REDACTED] – has finalised

#### AC024 - Airspace Approvals

Discuss email minutes from s 22 [REDACTED]

Rebook meeting for Tues?

s 22 [REDACTED] to discuss Broome proposal (saw this come through re SORA)

#### SORA

s 22 [REDACTED] provides update

Mapping / Annex a / Tech note clarification and Airbus will send what they have so far (incomplete)

CASA to provide feedback tomorrow.

#### AC026 - ADSB

Re Airbus / AsA trying to determine if the ADSB unit will be compatible with AsA equipment, s 22 [REDACTED]

s 22 [REDACTED] suggests a possible test; If Airbus have a stand alone unit that could be sent to Airbus  
Canberra CASA could arrange a test with Canberra tower

Input from s 22 [REDACTED] email

Meeting 28/06/2018

s 22



Testing in Yuma underway

s 22

updated SORA – to have a meeting tonight with

s 22



s 22

provided update on Transponder – specialist for testing has been engaged (Testing to take place in Perth)  
ADSB antenna will see it but Eurocat will discard the info when set to SIL=0  
Airbus may be able to set SIL=2 however this needs to be confirmed during testing in Australia

What will this testing look like when Airbus comes to Australia;  
Stratospheric balloon to 'fly' the test equipment if required. AsA mention this need only be on the ground as  
the test is only to test the ability for Transponder to be picked up by Eurocat  
Airbus to have specialist talk direct with TX expert at AsA

CASA to push ahead with the understanding that TX will be usable however start process with OAR to design  
hypothetical protective airspace so this can be implemented if required at short notice (in case of TX not being  
avlb) Airbus will need to fill in some forms s 22 to provide.

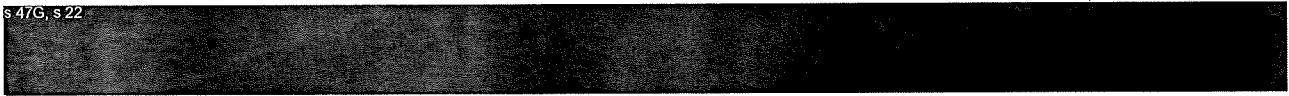
If can't be seen in Eurocat max overland procedural tolerance is 30NM (option in the case the TX cannot be  
used)

If it can be seen by Eurocat, since it is not TSO'd, tolerance was 5NM / 5000ft for a previous operator (CASA  
need to come up with this figure ultimately) – The SORA would be the basis to assess this? Testing from Yuma  
may help verify this also.

s 47G



s 47G, s 22



s 47G

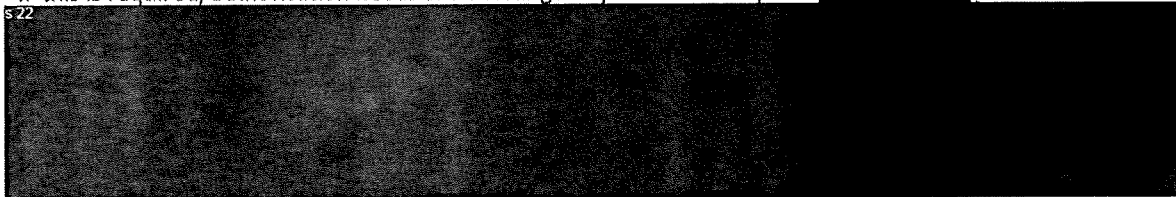


Concept LoA being worked on however AsA have not had feedback from Airbus; will need this to be able to  
finalise a draft. Airbus informed of this and have committed to updating.

Presently the LoA will not be able to accommodate for any ops inside PRD's  
IF this is required, authorisation needs to be arranged by Airbus directly with

s 22

s 22




s 22



RePL Issue:

Remaining RePL applicants:

- o  RePL needs to be issued
- o Airbus ReOC needs to be issued
- o Airbus Training Approval needs to be issued
- o Individuals need ARN's issued
- o Airbus type training given to individuals (logged in logbook etc)
- o Application:
  - Training org notification
  - Evidentiary material of uk licencing

19<sup>th</sup> July 2018

Meeting – Airbus

s 22

Revised dates for first flight of Zephyr is somewhere between 1<sup>st</sup> – 15<sup>th</sup> October 2018

Final fettling of aircraft when extracted from container shipping takes longer than thought

The team and equipment will still deploy to Wyndham on the same date

s 22

from Airbus is now in direct talks with AsA for all transponder testing arrangements

Airbus would like to confirm if the forms submitted for batch 1 have been filled correctly for when the time comes to submit them (after training org gets up)

Also note there has been a recent change to the form and Airbus want to know how this might affect batch 2. (or even if batch 1 will still be accepted on the old forms)?

Ops Manual:

- Worked through ops manual with s 22
- LLTA – chat to s 22 re BVLOS / VLOS and if that would have to go through SORA process

s 22

- 6.7 – check if this is ok to remove as they are always doing test flights

SORA:

In response to s 22 question, Airbus are working away and no issues or major questions at the moment.

s 22

– working on management of collision risk ocd.

Human factors CRM syllabus – tb16 is uploaded

Containment details – tail servo etc, s 22 is refreshing the assumptions mtbf

s 22

EFT Systems designs guys are locked in to dedicate time to answer many of the questions



26<sup>th</sup> July 2018  
Meeting – Airbus

CASA:

s 22

A rectangular black box redacting text.

Airbus:

s 22

A rectangular black box redacting text.

AirServices:

s 22

A rectangular black box redacting text.

is Airbus contact for transponder testing)

s 47G, s 22

A large rectangular black box redacting text.

s 47G, s 22

A large rectangular black box redacting text.

s 22

A small rectangular black box redacting text.

- CASA can provide via OAR the sign-off, CASA already think it would satisfy

Restricted zone required up to FL600 noting probability of interaction is remote above FL470

LoA – <sup>s 22</sup> has mentioned he will continue this and apologise for not getting this out sooner

Are AsA happy with an assessment of data collected from interaction with the UK Eurocat system (assuming this system is the same in the UK vs the Australian) – <sup>s 22</sup> - yes

Safety waypoints (of which only a few) will be developed and passed to AsA, in the case of contact from the pilot to a controller. Agree needs to be via something better than voice due lat long errors ie. human error)

<sup>s 22</sup>

GNSS / ADSB is showing accurate position data

<sup>s 22</sup>

...

We are sub 15kg with this one, flying with 3-5km of a location. VLOS is easy out to 3000m

I look forward to a catch up soon, as I need to be in place for when we start to move in.

- Since the LLTA is under 25kg it means the model does not need to be listed on the RePL – the <150kg category IS listed on the RePL and covers operation of any FW under 25kg
- LLTA is shown at Schedule 1 like any other machine
- Considerations for Ops manual
- Training approval ok for this also provided the procedures are included
- cannot operate the LLTA BVLOS; the BVLOS approval is aircraft specific – Airbus to operate LLTA VLOS only
- LLTA SORA. <sup>s 22</sup> can we please discuss how best (ie economically) to tackle this. I have uploaded to kiteworks a LLTA summary document which we provided to Yuma Proving Grounds – could this be a SORA substitute or at least a reference document? LLTA has a separate Flight Operations Manual which is also uploaded. I've added a new 'LLTA' kiteworks folder. \*\*\* Unless they can operate VLOS
- Confirm the approval to operate above 400ft - for LLTA this would be done under a standard 101-09 ???

Is this a major up-scope which would warrant additional payment or administration – going to add up hours given <sup>s 22</sup> has probably spent more time than anticipated and <sup>s 22</sup> less.

Ops manual received ok – will look at this in the next week

# Released under Freedom of Information

s 22



RePL conversion forms – check the format is correct for

s 22



s 22



has received paper copy of Lic

2<sup>nd</sup> August 2018

Meeting – Airbus

s 22

Clarify overall Airbus plan with milestone dates and relate to approval progress

- a. Program has changed
- b. 1<sup>st</sup> flight 8<sup>th</sup> October s 22
- c. 2<sup>nd</sup> flight 22 (facebook)
- d. 3<sup>rd</sup> flight Nov 15
- e. Absolute last landing 12<sup>th</sup> December
- f. Resume March / April 2019 – separate project (not costed)

SORA contingencies:

- Legal to inform us if an instrument can be issued based on a future SORA outcome

s 22

SORA updates:

Need to plan meeting for next week as s 22 was not available today:

Just need to reinforce to s 22 that the word document related specifically to the threat barriers, and that there is still required information regarding:

- Containment argument – as discussed in the meeting last week and via email RE SSA quantitative analysis of a rogue aircraft
- Airspace density assessment – as discussed in the meeting last week RE having some oversight of the tools used to calculate pMAC and pLoSS
- Critical Area/Lethal area calculations – as discussed in the meeting last week
- Probability of fatality on collision calculations – as discussed in the meeting last week.
- I also need to send something RE the ERP (which is my fault for not sending earlier).

Feedback from excellent dialogue today with Airservices re LoA including some changes to airspace geometry:

AsA to issue DRAFT, altitude blocks decided

Annex to present AIP like phraseology and sequencing

Companion document for actual figures for operation

Slight modification

s 22

- [§ 22] to update:

- [§ 22] sent a list of PRDs to [§ 22]

- Realised that cant include all areas in one approval.

[§ 22]

[§ 22] is putting together a list of direct dial numbers for Airbus to action when required

[§ 22]



Clarification, please, that we no longer need to follow the CoV process for RePL and that the bespoke 'instrument' now suffices – correct

As per previous email this week:

Remember we are not going down the path of converting PPL's any more, CASA have an instrument to allow international licences to act as the theory component of RePL issue. We add the training received on Zephyr by Airbus (once you are an approved training org) to complete the process of issuing the license.

- Training org - Is running
  - ARN – issued to individual
  - Zephyr Training
  - Logbook evidence
  - Names listed on instrument (internal CASA use)
  - Submission of 101-01 (not a PPL conversion) & logbook as per [§ 22] submitted forms
- 29/6/18

# Released under Freedom of Information

## Ops Manual:

- CASA suffered major IT outage again this week and that also meant I had corrupt data from the day the IT was actually working
- I have finished the initial review and there are only 3 items to fix - very minor
- LLTA – I will review this tomorrow and have the document back to you
- 

## Extra ops for LLTA:

VLOS only (no SORA process required)

+400ft approval required – use 101-09

Hours – <sup>s 22</sup> to update and send - approx. 30K

## Main Zephyr aircraft approvals

- BVLOS (does this cover the following or same approval etc)
- +400ft
- IMC
- Night

9<sup>th</sup> August 2018

Meeting – Airbus

s 22

SORA updates:

- Airbus have uploaded latest update and more documents
- s 22 to review and give feedback

Flight over populous areas", the regs state that you cannot operate over populous if you cannot 'clear the area' in the event of a failure. Given you have shown you can clear the area (via your ground impact prediction area and keeping this area outside of populous), you would not need an approval to operate over populous.

s 22

UPDATE:

s 22

has given Airbus points of contact for PRDs

s 22

AIRBUS Update:

s 22

Airbus still waiting on feedback from AsA after last weeks exchange.

Transponder – dependencies for LoA, highlight importance of impact to LoA, s 22 potential to raise a ACP / Restricted area.

Ops Manual:

- Run through any clarifications
- Discuss final version and amendment versions in future
- Process after manual accepted by CASA

16<sup>th</sup> August 2018  
Meeting – Airbus

CASA:

§ 22

A rectangular black box redacting content.

Airbus:

§ 22

A rectangular black box redacting content.

AirServices:

§ 22

A rectangular black box redacting content.

CASA Notes pre meeting (from § 22):

§ 47G

A large rectangular black box redacting content.

§ 22

A large rectangular black box redacting content.



s 47G, s 22



Airbus

Wyndham is almost complete and acceptance of infrastructure - arrival of aircraft within next 2 weeks

CASA Operations Manual

- plan to approval - s 22 to return comments by Friday and will meet Monday + Tues to finalise

Airbus:

s 22 email is not working - he has left Airbus and all correspondence to go to s 22 how

Telecon 23<sup>rd</sup> September - proposal to cancel - OK from CASAs side

SORA - Not much progress for Airbus side, s 22 to continue to deal direct with s 22

s 22



s 22

question to s 22: Clarify which airspace documents are correct as there are different requests - some for just over land and other refers to YMML YBBB and Mauritius:

s 22

- Asking if the extra airspace area can be applied for later.

s 22

- Do not want to hold up existing approval, as any extra airspace will still have to go through casa approval as per usual

s 22

- prioritise existing and ask for extra space later

s 22



9<sup>th</sup> September 2018

Meeting – Airbus

s 22



Airbus update:

ACP – Has and will delay the progress

Current plan for 2018 is diminishing

Working plan for 2018 is at the most 2 flight first flight 1 November (30 day flight), latest landing planned 7<sup>th</sup> December. Flight 2 one week in duration.

s 47G



2 aircraft in Wyndham now – one construct one in the box still. Undergoing build integration and testing (this will take quite a bit longer than originally anticipated, as learnt from Uma)

OPS manual - 3.1 ops manual (the final draft) will be sent through in lieu of the final version. Provide in next few days


s 22



SORA –  updates:

Thank you for airspace risk update

DO160 (environmental) - CASA to provide response soon

Comms person to help  out is on board but initial feedback is positive

s 22



updates:

SORA issue v2

Evidence from engineering flight trials (RPAS control)

RLP – <sup>s 22</sup> [REDACTED] is working on this now

Delivering evidence should be easier

Question over IRIDIUM, confirm that with restricted line of sight, should airbus proceed based on this. Safety waypoint in lie of the

Airspace:

- Short discussion on Tuesday – a member of the OAR team has been dedicated full time
- Early next week CASA should have a plan to share with airbus
- No outcomes as yet
- The only way that they may fly this year is if the result is no ACP required, given stakeholder engagement for ACP with consultation then flights this side of 2019 is not possible

<sup>s 47G, s 22</sup> [REDACTED]

Put a test case through AVID system took 3 months

<sup>s 22</sup> [REDACTED] Multi crew coordination, abnormal procedures have been uploaded for SORA  
<sup>s 22</sup> [REDACTED] and <sup>s 22</sup> [REDACTED] to catch up in Chengdu China next week at the conference

13<sup>th</sup> September 2018

Meeting – Airbus

s 22

Airbus update:

s 22

SORA – s 22 updates:

s 22

– updates:

Operations Manual is now accepted

Paperwork has been completed (from my side)

Waiting on Client Services to complete the certificate

s 22

For all updates on ppl conversion call CLARC directly

Need an email from CRP to s 22 to request changes as discussed, I know this was sent in before however there were a couple of other issues as discussed.

Checking if radio privileges will convert across during Int. Licence conversion to RePL. Worst case scenario is to have to get AROC

Clarify with s 22:

If it is ok just for theory – will the below process be ok:

- a) CASA to inform the selected school that they should submit 101-05 making note that this training covers theory only
- b) Form to be sent to myself rather than CLARC
- c) Usual evidence for operation only training from Airbus sent directly to myself
- d) Once I have both submit to CLARC with explanation.

s 22

updates:


## Airspace:

The OAR has reviewed the Zephyr risk assessment and expect to issues along the lines of:

- The activity has had changes to technical equipage which has resulted in a change to the Airspace Risk Assessment outcomes;
- I have chatted with Airservices about airspace requirements to meet safety outcomes;
- The OAR team has undertaken a screener meeting and assessed the updated risk assessment;
- The updated risk assessment is in need of minor adjustments which I will relay to you next week;
- I have come up with an airspace solution that will enable this operation this year given the current technical equipage levels;
- I can forecast that the OAR will be able to complete our assessment within a short (note time frame not being specified) time frame that will enable the November 2018 deadline.

Airspace design will include the following:

- Normal CTAF ops within the 10 NM Wyndham CTAF – i.e. radio calls and a NOTAM to ensure other aircraft are aware of the location of the Zephyr as it takes off and ascends up to 5,000 feet AMSL;
- TRA 5,000 feet AMSL to base CTA (Class E Airspace) of same 10NM radius as the Wyndham CTAF (i.e. a cylinder on top of the notional CTAF cylinder);
- From base Class E Airspace FL 180 to FL600 the TRA will have a radius 70NM radius centred on Wyndham Aerodrome between 330 degrees true through north to 090 degrees, and 75NM radius from 090 degrees through south to 330 degrees;
- This will allow the ascent in Class G within a 10NM radius up to CTA and will then align the TRA with the Airservices draft LOA which will present an opportunity for a 'dry run' of Airservices procedures in the LOA whilst permitting the aircraft to operate later in normal Class E and A airspace after a suitable transponder has been fitted.

This design will meet safety of flight outcomes whilst permitting airspace for the 'test run' of all systems (Airservices and Zephyr) <sup>s47G</sup> 

**AIRBUS**

**Airbus Defence and Space  
Zephyr RPAS  
Confidential Information  
Minutes of Meeting**

Doc: Z8B-MI-0522  
Issue: 0.1  
Date: 05 Jun 2018  
Page: 1

<b>Title of Meeting:</b> Zephyr RPAS Airspace Management		<b>UK Export Control Rating: 9E102</b> Rated by: [REDACTED] Date: 06/06/2018 The technical information or software contained within this transmission is subject to UK Export Control Regulations and is authorised for export under GEA001 reference GBOGE2014/00763			
<b>Reference No:</b> Z8B-MI-0522					
<b>Date:</b>	05 June 2018	<b>Time:</b>	0600 hr BST	<b>Location:</b>	Telecon
<b>Author</b>	[REDACTED] Zephyr Head of Flight Operations				
<b>Attendees:</b>	[REDACTED] Airservices Australia (ASA) Operations Standards [REDACTED] ASA Standards [REDACTED] Acting Manager Office of Airspace Regulation (first 30 min only) [REDACTED] Manager RPAS Branch, CASA National Operations & Standards [REDACTED] RPAS Inspector CASA RPAS Branch [REDACTED] Commercial RPAS Inspector CASA RPAS Branch [REDACTED] Technology Futures Analyst CASA RPAS Branch [REDACTED] Airbus Zephyr Chief Remote Pilot [REDACTED] Airbus Zephyr Certification and Approvals (from 0645 hr)				

**Agenda:**

1. People on project introduction
2. Review of documents so far and access to Kiteworks
3. Any requests for further information
4. Airbus have requested all participants be familiar with Sections 4, 5 and 7 of ZP-PL-0047-v2.0 ARN [REDACTED] - Plan for CASA Approvals (Airspace Documents folder in kiteworks)
5. Brief (very!) overview of relevant Zephyr system features (if required) – Airbus
6. Brief Zephyr Australia CONOPS overview (if required) – Airbus
7. Brief Zephyr Airspace Strategy Overview (if required) – Airbus
8. Agree 'airspace' risk assessment requirements including SORA read-across - All
9. Agree principles of safe operation in vicinity of Wyndham Aerodrome – Airbus/CASA
10. Agree principles of safe operation in Class G airspace
11. Agree principles of safe operation in Class E and Class A airspace ([REDACTED]) – Airbus/Airservices
12. Agree principles of safe operation [REDACTED] – Airbus/Airservices
13. Agree principles of safe operation for key abnormal conditions - All:
14. Gradual loss of flight performance
15. Sudden hazardous loss of flight performance
16. Transponder failure
- 16a Lost link
17. Voice communications problems
18. Identify and scope additional documentation required – CASA/Airservices
19. Plan for completion of documentation, issue of approved operating instructions and final

**AIRBUS**

**Airbus Defence and Space  
Zephyr RPAS  
Confidential Information  
Minutes of Meeting**

Doc: Z8B-MI-0522  
Issue: 0.1  
Date: 05 Jun 2018  
Page: 2

approvals - All

20. Route to preliminary agreement in principle (meeting record agreed) – Airbus [please note that we need this to be done as a bare minimum by Friday 8 June]

21. AOB

22. DONM

**Decisions:**

Items 1-7

There were a number of points of clarification in amplification of pre-meeting read-in to ZP-PL-0047-v2.0 ARN <sup>s 47G</sup> - Plan for CASA Approvals:

VHF communications – no through-RPA relay, GCS broadcasts only, ASA confirmed Brisbane Centre VHF coverage down to approximately 3,500ft in the area of Wyndham.

<sup>s 47G</sup>

Item 8

Although ASA aware of rigorous JARUS SORA methodology used by CASA, they will conduct an independent airspace risk assessment using their standard methodology. Nevertheless, it was acknowledged that the threat and harm barriers developed to support SORA would also support ASA risk assessment and vice-versa. All parties agreed that the SORA SAIL<sup>1</sup> which are based on default European air traffic levels would be disproportionate to the environment in WA and that Airbus analysis could support decrement. For Class E and Class A airspace, the principal Risk Control Measure (Threat Barrier) for both ASA and the SORA will be the provisions of the eventual LoA (see Item 18). It was agreed that the SORA itself would not need to cite the detail of airspace management procedures but would simply reference the (eventual) LoA hence removing a potentially time-consuming dependency.

Items 9-12

See Annex B for outline of discussed normal operations Threat Barriers and airspace management principles.

<sup>s 22</sup>

*Post-meeting note: the proposed overall mission area could encroach all of the Curtin upper restricted areas between FL550 and FL600 (ie R803B, R807B, R810B, R809B and R810B + R811 if NOTAM'd). Overflight down to FL550 of the SW sector of the Darwin/Tindal restricted area complex (ie R264 C, D, F, G, J, K and R is also proposed although these have no defined upper boundary (by NOTAM only). We will plan to avoid the R225 complex.* <sup>s 22</sup>

<sup>s 22</sup>

<sup>1</sup> Safety Assurance Integrity Level



**AIRBUS**

Airbus Defence and Space  
Zephyr RPAS  
Confidential Information  
Minutes of Meeting

Doc: Z8B-MI-0522  
Issue: 0.1  
Date: 05 Jun 2018  
Page: 3

ASA cited an example of incompatibility between an RPA ABS-B unit and their surveillance equipment. **Airbus Action. ASA Action.**

ASA advised that they would need to take traffic co-ordination action in the event that Zephyr flew within 50nm of an international FIR boundary – could Zephyr remain >50nm clear and still complete mission requirements? **Airbus Action.**

*Post-meeting note: Airbus confirms that planning for Zephyr to remain >50nm clear of an international FIR boundary is entirely consistent with mission objectives.*

ADS-B coverage at FL200 was checked by ASA and found to cover most of the proposed airspace volume except for parts of the NE sector; coverage at FL300 was complete. Airbus agreed to plan to position Zephyr in an area of solid ADS-B coverage whenever possible. *Post-meeting note: Airbus will endeavour to include ADS-B coverage information into GCS map layers to aid crews in maintaining coverage.* **Action Airbus.**

s 22

*Post-meeting note: requirements for completions of ICAO Flight Plans not discussed, Airbus proposal to re-submit every 24 hours if required by ASA.* **Action ASA**

Items 13-18

See Annex C for outline of discussed abnormal operations Threat Barriers and airspace management principles.

s 22

s 22

Also noted that in most cases, the deeper any required CA (ie the lower the height to which Zephyr might need to descend), the longer the likely notice period. Eg a minor problem just before sunrise would cause a minimal additional descent before the Zephyr would collect solar energy and begin to climb.

Item 18

Following some discussion, it was agreed that the best format for detailed procedures for Class E and Class A airspace would be an ASA/Airbus Letter of Agreement (LoA) which would be assured by CASA OAR.

*Post-meeting note: Airbus proposes that the detailed procedures for Class G airspace (up to FL180 in the Wyndham area) should be contained in the Airbus Wyndham Local Operating Procedure (WLOP) to be assured in this respect by CASA/OAR.* **Action CASA/OAR**

The eventual CASA Instrument of RPAS Area Approval for Zephyr would cite the approval of both WLOP and LoA as conditions thus removing the latter documents as dependencies for the issue by CASA of the RPAS Area Approval.

The airspace boundaries proposed by Airbus in 'ZP-PL-0047-v2.0 ARN s 47G - Plan for CASA Approvals' were accepted in principle (see also Annex B).

Zephyr pilot to ATCO communications will be via multiple redundant means: dedicated land lines, mobile phone and satellite phone. Matrix of communications means to be agreed with

**AIRBUS**

**Airbus Defence and Space  
Zephyr RPAS  
Confidential Information  
Minutes of Meeting**

Doc: Z8B-MI-0522  
Issue: 0.1  
Date: 05 Jun 2018  
Page: 4

defined fall-back sequence. No requirement for VHF R/T communication between Brisbane Centre and Zephyr pilot.

**Item 19**

Airbus proposed the following outline plan for the generation of the LoA:

Action	Owner	Date
Meeting minutes with outline of agreed airspace management principles.	Airbus	6 June
Topics list and structure for typical LoA provided to Airbus.	ASA	11 June
Comments and some suggested 'Zephyr' LoA text to ASA.	Airbus	15 June
Draft LoA to Airbus.	ASA	22 June
Comments on LoA to ASA.	Airbus	asap
Final draft LoA complete (further iterations as necessary).	ASA	30 June
LoA approved (or agreed and lacking only administrative sign-off).	ASA	30 July
LoA issued (no later than)	ASA	15 Aug

ASA advised that administrative LoA approval has taken up to two months in the past; this would jeopardise the 1 September earliest launch date. ASA undertook to determine how to expedite the approval of the LoA. **ASA Action.**

**Item 20**

Airbus agreed to provide minutes by 6 June including outline of the airspace management approach agreed at the meeting. ASA and OAR/CASA undertook to provide attributable endorsement and comment by 11 June. <sup>s22</sup>

<sup>s22</sup> **Action ASA. Action CASA/OAR.**

**Items 21 and 22.**

No AOB. Next meeting as required.

See below for actions.

Tracking ID	Action	Responsible	Date due for Completion
Z8B-MI-0522-001	Determine how to expedite the eventual approval of the LoA	ASA	15 Jun 18
<sup>s22</sup>			
Z8B-MI-0522-004	Conduct analysis and/or testing to assure the compatibility between the Zephyr SageTech transponder and ASA surveillance equipment in support of ASA risk assessment.	Airbus	30 Jul 18
Z8B-MI-0522-005	Provide available technical information on historical incompatibility between RPA ADS-B and TAAATS.	ASA	15 Jun 18
Z8B-MI-0522-006	Advise ASA if, and when, it may be necessary to approach within 50nm of an international FIR boundary. Complete – see Item 9-17 above.	Airbus	8 Jun 18
Z8B-MI-0522-007	If practicable, incorporate ADS-B coverage information into GCS map layers to assist flight management.	Airbus	1 Aug 18

**AIRBUS**

**Airbus Defence and Space  
Zephyr RPAS  
Confidential Information  
Minutes of Meeting**

Doc: Z8B-MI-0522  
Issue: 0.1  
Date: 05 Jun 2018  
Page: 5

Tracking ID	Action	Responsible	Date due for Completion
Z8B-MI-0522-008	Provide attributable endorsement and comment on minutes and outline airspace management principles by 11 June.	ASA CASA/OAR	11 Jun 18
Z8B-MI-0522-009	Determine any requirement for ICAO Flight Plan submission	ASA	15 Jun 18
Z8B-MI-0522-010	Assess feasibility of ADS-B coverage GCS map layer	Airbus	15 Jun 18
Z8B-MI-0522-011	Provide into SORA avionics design assurance levels	Airbus	15 Jun 18
Z8B-MI-0522-012	Specify where airspace management procedures for Class G airspace should be located; Airbus proposal is within Wyndham Local operating Procedures document.	CASA/OAR	15 Jun 18

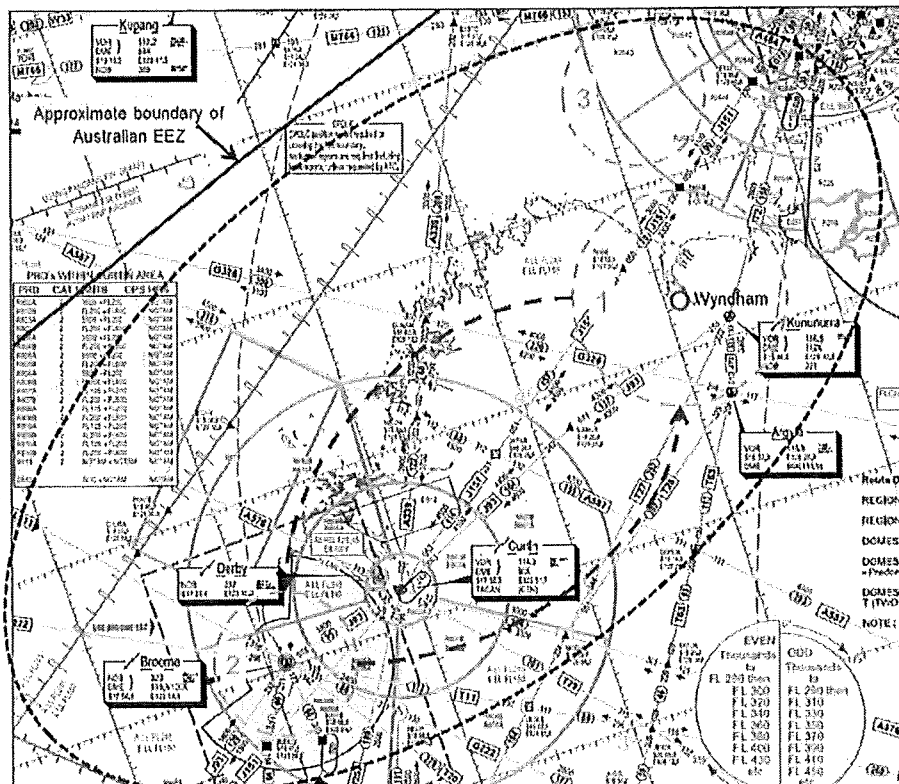
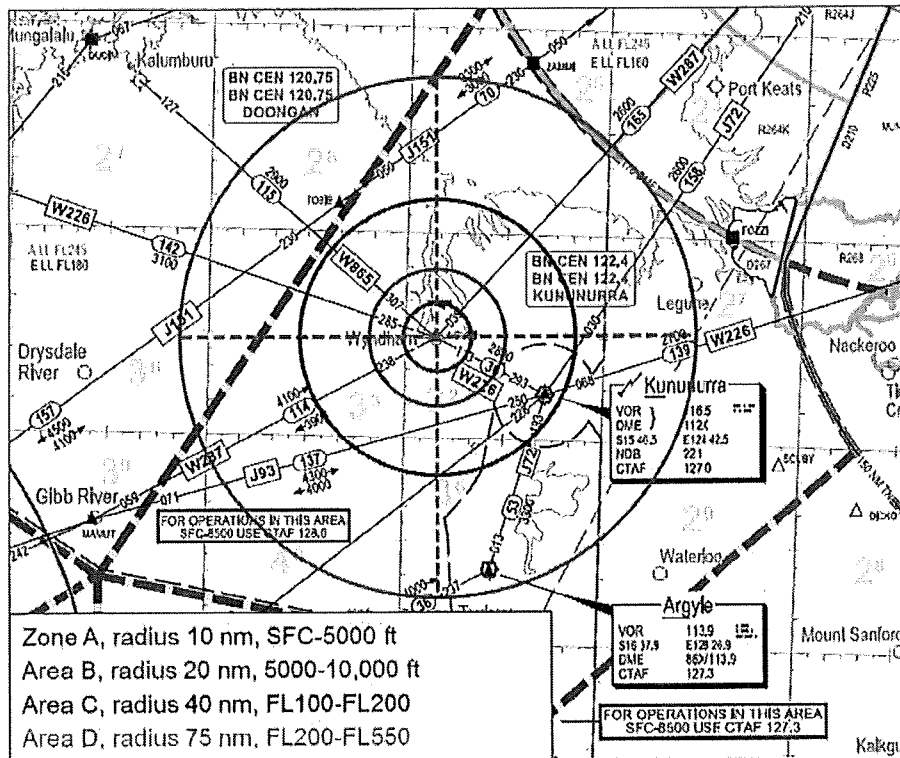
**AIRBUS**

**Airbus Defence and Space  
Zephyr RPAS  
Confidential Information  
Minutes of Meeting**

Doc: Z8B-MI-0522  
Issue: 0.1  
Date: 05 Jun 2018  
Page: 6

**Annex A to Z8B-MI-0522 Zephyr RPAS Airspace Management**

Proposed Airspace diagrams from ZP-PL-0047-v2.0 ARN S 47G - Plan for CASA Approvals



**AIRBUS**

Airbus Defence and Space  
Zephyr RPAS  
Confidential Information  
Minutes of Meeting

Doc: Z8B-MI-0522  
Issue: 0.1  
Date: 05 Jun 2018  
Page: 7

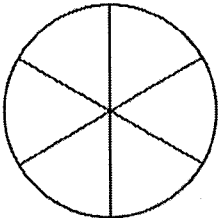
## Annex B to Z8B-MI-0522 Zephyr RPAS Airspace Management

<b>Normal Operations</b>	
<b>Surface to 5000 ft Class G Airspace</b>	
Zephyr Flight Path	
<ul style="list-style-type: none"> <li>• Hand launch from Wyndham aerodrome at dawn</li> <li>• Slow climb (100 ft/min, 12 KTAS) in YWYM overhead taking approx 1 hour</li> <li>• Final descent and local manoeuvre to landing at dawn</li> </ul>	
Airspace Definition	
<ul style="list-style-type: none"> <li>• Zone A, radius 10 nm from YWYM, SFC-5000 ft</li> </ul>	
Airspace Safety Management Principles	
<ul style="list-style-type: none"> <li>• NOTAM advising users of intended RPAS activity issued in advance of launch or arrival</li> <li>• Airbus GCS calls on CTAF before and during operation in Zone A</li> <li>• Airbus response to other aircraft calling on CTAF</li> <li>• Brisbane Centre information calls a/r</li> <li>• Zone A and aerodrome reopened below Zephyr when RPIC declares 'no return'.</li> </ul>	
Other Threat Barriers	
<ul style="list-style-type: none"> <li>• Low background air traffic density, all VFR</li> <li>• Zephyr not to be launched or recovered in poor weather or when predicted drift excessive</li> <li>• Aerodrome Operator to NOTAM aerodrome closed throughout operation, suitable runway markers deployed</li> <li>• Zephyr visual conspicuity (ZP-TN-0100-v1.0 Zephyr Conspicuity in Visual Environment)</li> <li>• Aerodrome operator notification to known aviation stakeholders (in particular, all local air tourism operators)</li> <li>• Time of day (less other traffic)</li> <li>• Visual and aural observations from YWYM</li> </ul>	
Matters Outstanding	
<ul style="list-style-type: none"> <li>• Precise NOTAM airspace responsibilities (Airbus, CASA or ?)</li> <li>• Detail of CTAF calls</li> <li>• Role, if any, of Brisbane Centre</li> <li>• ZP-PR-0011v1.0 Local Operating Procedures - Wyndham Aerodrome, Western Australia currently contains estimated procedures which will need to be updated following this dialogue.</li> </ul>	
<b>5000 ft to FL180 Class G Airspace</b>	
Zephyr Flight Path	
<ul style="list-style-type: none"> <li>• Slow climb (100 ft/min, 15 KTAS) near YWYM overhead taking approx 3 hours</li> <li>• Slow descent (100 ft/min, 15 KTAS) near YWYM overhead taking approx 3 hours</li> </ul>	
Airspace Definition	
<ul style="list-style-type: none"> <li>• Area B, radius 20 nm from YWYM, 5000-10,000 ft</li> <li>• Area C, radius 40 nm from YWYM, FL100-FL180 (Proposed upper level reduced from FL200)</li> </ul>	
Airspace Safety Management Principles	
<ul style="list-style-type: none"> <li>• NOTAM advising users of intended RPAS activity issued in advance</li> <li>• Brisbane Centre information calls a/r</li> </ul>	
Other Threat Barriers	
<ul style="list-style-type: none"> <li>• Low background air traffic density, all VFR</li> <li>• Zephyr not to be launched or recovered in poor weather or when predicted drift excessive</li> <li>• Zephyr visual conspicuity (ZP-TN-0100-v1.0 Zephyr Conspicuity in Visual Environment)</li> </ul>	

**AIRBUS**

**Airbus Defence and Space  
Zephyr RPAS  
Confidential Information  
Minutes of Meeting**

Doc: Z8B-MI-0522  
Issue: 0.1  
Date: 05 Jun 2018  
Page: 8

<ul style="list-style-type: none"> <li>Aerodrome operator notification to known aviation stakeholders (in particular, all local air tourism operators)</li> <li>Zephyr transponder triggers ACAS advisory messages for equipped aircraft</li> </ul>
<b>Matters Outstanding</b>
<ul style="list-style-type: none"> <li>Details of NOTAMs</li> <li>Details of radio procedures (both Airbus and Brisbane centre).</li> </ul>
<b>FL180 to FL550 Class E (to FL240) and Class A Airspace</b>
<b>Zephyr Flight Path</b>
<ul style="list-style-type: none"> <li>Slow climb (100 ft/min, 20-40 KTAS) in allocated sectors taking approx 7-8 hours</li> <li>Slow descent (100 ft/min, 40-20 KTAS) in allocated sectors taking approx 7-8 hours</li> </ul>
<b>Airspace Definition</b>
<ul style="list-style-type: none"> <li>Area D, radius 75 nm from YWYM, FL180-FL550 divided into sectors</li> <li>ASA proposed that the 75nm radius Areas be divided into more segments to provide greater flexibility. Airbus proposes 6 segments: 000-060, 060-120, 120-180, 180-240, 240-300, 300-000 (NB Annex A diagram has not been modified).</li> <li>Given an adequate altitude block, it will be possible for Zephyr to remain within any one sector for several hours at a time and for the crew to predict in good time when access to an adjacent sector may be required.</li> </ul>

<b>Airspace Safety Management Principles</b>
<ul style="list-style-type: none"> <li>Zephyr remains within allocated airspace sector(s) and altitude block(s)</li> <li>Altitude blocks closed and opened below/above as Zephyr climbs and descends</li> <li>Airspace sectors closed and opened as Zephyr manoeuvres (or drifts) laterally</li> <li>Zephyr crew provides expected time of arrival at agreed FL or sector boundary</li> <li>Brisbane Centre takes action on other aircraft to avoid the airspace block allotted to Zephyr</li> </ul>
<b>Other Threat Barriers</b>
<ul style="list-style-type: none"> <li>Zephyr transponder triggers ACAS advisory messages for all other aircraft</li> <li>Zephyr freedom of movement permitting, sectors chosen for low traffic density</li> <li>Regular dialogue between Zephyr pilot and controller</li> </ul>
<b>Matters Outstanding</b>
<ul style="list-style-type: none"> <li>Details of pilot-controller communications</li> <li>Definition of airspace buffers (if required) – Zephyr no closer than 5 nm inside sector boundary?</li> <li>Detail of how to sequence sectors and blocks</li> <li>ATCO internal procedures</li> </ul>
<b>Above FL550 Class A and Class G(?) Airspace</b>
<b>Zephyr Flight Path</b>
<ul style="list-style-type: none"> <li>Diurnal cycle: climb and charge during the day, initially descend overnight and then level and discharge at dawn altitude</li> <li>Lateral manoeuvre according to mission requirements and weather</li> <li>Zephyr will not normally over-fly Areas of Intense Air Activity (AIAA)</li> <li>AIAA may be over-flown for defined periods when specific mission requirements warrant it</li> </ul>
<b>Airspace Definition</b>
<ul style="list-style-type: none"> <li>Agreed operating area above FL550</li> </ul>
<b>Airspace Safety Management Principles</b>
<ul style="list-style-type: none"> <li>NOTAM of unusual activity to preclude distraction in the event that Zephyr is detected by</li> </ul>

**AIRBUS**

**Airbus Defence and Space  
Zephyr RPAS  
Confidential Information  
Minutes of Meeting**

Doc: Z8B-MI-0522  
Issue: 0.1  
Date: 05 Jun 2018  
Page: 9

other aircraft
<ul style="list-style-type: none"><li>• Regular dialogue between Zephyr pilot and controller</li></ul>
Other Threat Barriers
<ul style="list-style-type: none"><li>• Zephyr transponder triggers ACAS advisory messages for all other aircraft</li><li>• Zephyr freedom of movement permitting, sectors chosen for low traffic density</li><li>• Regular dialogue between Zephyr pilot and controller</li></ul>
Matters Outstanding
<ul style="list-style-type: none"><li>• Details of pilot-controller communications</li><li>• ATCO internal procedures</li></ul>



**AIRBUS**

Airbus Defence and Space  
Zephyr RPAS  
Confidential Information  
Minutes of Meeting

Doc: Z8B-MI-0522  
Issue: 0.1  
Date: 05 Jun 2018  
Page: 10

Annex C to Z8B-MI-0522 Zephyr RPAS Airspace Management

<b>Abnormal Operations</b>	
<b>Gradual Loss of Flight Performance</b>	
<b>Zephyr Behaviour</b>	
<ul style="list-style-type: none"> <li>• Zephyr will descend lower than expected over a period of time (hours) and/or may have reduced/no climb capability</li> <li>• No change in other flight characteristics in most cases</li> <li>• Aim will be to route back to Wyndham using 'stepping stone' CA as necessary</li> <li>• Hold near Wyndham as high as possible to await landing weather window</li> <li>• Normal recovery or, if not possible, pre-meditated cut down over planned area</li> </ul>	
<b>Airspace Safety Management Principles</b>	
<ul style="list-style-type: none"> <li>• Zephyr pilot will advise ATCO of problem and predicted descent location and base</li> </ul>	
<ul style="list-style-type: none"> <li>• In some circumstances, a pre-agreed CA may be kept dormant as a 'sanctuary' and activated as necessary</li> <li>• ATCO takes action on other aircraft to avoid CA</li> </ul>	
<b>Other Threat Barriers</b>	
<ul style="list-style-type: none"> <li>• Zephyr transponder triggers ACAS advisory messages for equipped aircraft</li> </ul>	
<b>Matters Outstanding</b>	
<ul style="list-style-type: none"> <li>• NOTAM airspace responsibilities (if any)</li> <li>• Buffer airspace when Zephyr inside CA</li> </ul>	
<b>Sudden Hazardous Loss of Flight Performance</b>	
<b>Zephyr Behaviour</b>	
<ul style="list-style-type: none"> <li>• Immediate descent in 'shuttlecock', spin or spiral modes with/without structural collapse</li> <li>• Avionics continue to function (including transponder, telemetry and lights)</li> </ul>	
<b>Airspace Safety Management Principles</b>	
<ul style="list-style-type: none"> <li>• Brisbane Centre warning broadcasts a/r</li> </ul>	
<b>Other Threat Barriers</b>	
<ul style="list-style-type: none"> <li>• Only planned and temporary flying in vicinity of AIAA with predicted cut-down vector kept clear of AIAA as far as possible</li> <li>• Zephyr transponder triggers ACAS advisory messages for equipped aircraft</li> <li>• Can squawk distress code</li> </ul>	
<b>Matters Outstanding</b>	
<ul style="list-style-type: none"> <li>• Details of radio procedures (Brisbane centre)</li> <li>• Required distress transponder code</li> </ul>	
<b>Transponder Failure</b>	
<b>Zephyr Behaviour</b>	
<ul style="list-style-type: none"> <li>• Loss of Mode S transmissions and, in all likelihood, simultaneous loss of ADS-B broadcast</li> <li>• Otherwise no effect on performance or function</li> </ul>	
<b>Airspace Safety Management Principles</b>	
<ul style="list-style-type: none"> <li>• Increased frequency of verbal position reporting to ATCO</li> <li>• Return to Wyndham overhead by agreed route</li> <li>• Hold and await landing weather window</li> <li>• Normal recovery</li> </ul>	



**AIRBUS**

**Airbus Defence and Space**  
**Zephyr RPAS**  
**Confidential Information**  
**Minutes of Meeting**

Doc: Z8B-MI-0522  
 Issue: 0.1  
 Date: 05 Jun 2018  
 Page: 11

Other Threat Barriers
<ul style="list-style-type: none"> <li>• Zephyr transponder triggers ACAS advisory messages for all other aircraft</li> <li>• Zephyr freedom of movement permitting, route chosen for low over-flown traffic density (precaution in case of further failures)</li> </ul>
Matters Outstanding
<ul style="list-style-type: none"> <li>• Detail of how to sequence sectors and blocks for descent</li> <li>• Required reporting</li> </ul>
<b>Telecommand and/or Telemetry Link Failure</b>
Zephyr Behaviour
<ul style="list-style-type: none"> <li>• Multiple links channels reduces likelihood of total link failure</li> <li>• Aircraft will follow last-uploaded Safety Waypoint Plan (SWP)</li> <li>• Pilot responsibility to maintain optimum SWP upload and to ensure that ATC are aware</li> <li>• Common library of SWP + information exchange protocol – no surprises</li> <li>• Squawk 7400?</li> </ul>
Airspace Safety Management Principles
<p>s 22</p> <ul style="list-style-type: none"> <li>• Route chosen to mitigate consequences of any further unrelated failure</li> <li>• Aircraft can be tracked if ADS-B still working (likely) or possibly via Iridium location service (internet based – available to ATCO if required); fall-back is continuous open-loop trajectory prediction based on actual weather</li> <li>• Possible line-of-sight link pick up then normal recovery</li> <li>• If link not regained, aircraft will time-out (pre-selected value) and cut down – intention over known clear area</li> </ul>
Other Threat Barriers
<ul style="list-style-type: none"> <li>• Zephyr transponder triggers ACAS advisory messages for all other aircraft</li> </ul>
Matters Outstanding
<ul style="list-style-type: none"> <li>• Details of pilot-controller communications – how much prior information about SWP is required?</li> <li>• ATCO internal procedures</li> </ul>
<b>Voice Communication Failure</b>
Zephyr Behaviour
<ul style="list-style-type: none"> <li>• Normal</li> </ul>
Airspace Safety Management Principles
<ul style="list-style-type: none"> <li>• Normal</li> </ul>
Other Threat Barriers
<ul style="list-style-type: none"> <li>• Use alternative pilot-ATCO communication means</li> <li>• Slow Zephyr movement – no rush</li> </ul>
Matters Outstanding
<ul style="list-style-type: none"> <li>• Details of communication matrix and means</li> </ul>