

**HAPS Challenge**

**Regulatory Considerations**

**This is guidance material only – please see Airservices/CASA/ICAO published documentation for existing policies and procedures.**

This document is intended to provide a short summary of major regulatory considerations with respect to the National Aviation Authority (NAA) – the Civil Aviation Safety Authority (CASA) and the National Communications Authority – the Australian Communications and Media Authority (ACMA).

## CASA Regulatory Considerations:

**Engage with CASA early**, before planning even begins if possible, this will greatly reduce frustration later with the approval process

**Altitude of operation** (note if <60000ft, then technically this will be within Class A or restricted airspace)

If Class A, more work may be needed to work with Airservices Australia and integration into Class A airspace. Has the operator engaged with ASA? [no engagement, initial engagement, multiple engagements/working relationship/Letter of Agreement in place]

If restricted airspace, has the operator engaged with the controller of the restricted airspace? (i.e., Woomera)

If above FL600, has the operator engaged with other HALE operators to ensure strategic deconfliction? (refer to: <https://hapsalliance.org/>)

**Beyond Visual Line of Sight (BVLOS)** Considerations

Regardless if an unmanned balloon or an RPAS, under regulation 101.073 of CASR, any operation outside of VLOS must seek an authorisation to do so

The main hazard that needs to be mitigated is a mid-air collision with another aircraft due to the lack of “see and avoid” capability onboard the balloon (note: it is a requirement under ICAO and Australian Legislation that both aircraft on a collision trajectory undertake this function, and it is only by bespoke approval that one of the aircraft can be allowed to function without this capability)

**If Balloon** (Note, due to payload requirement, this **will be classified** as a ***heavy balloon***as described in CASR 101.145(5)):

In order to operate under CASR 101.165 (release of medium and heavy balloons outside approved areas), you will be required to apply to CASA for an area approval and then demonstrate that the operation intrinsically does not pose a hazard to other persons or aircraft to have this apply (see Safety Case).

Indication of compliance (potentially compliance matrix with supporting documentation?) with CASR 101.165-101.225 (12 Regulations)

Particularly 101.180 (payload support), 101.185 (Equipment: redundant payload release system, radar reflector, SSR), 101.190 (day lighting) and 101.205 (night lighting)

Operation under CASR 101.165 (no area approval required)?

If yes then comply with requirements of CASR 101.165

If no, then data on Area Approval process [not started, applied, underway (expected completion?), Completed]

**If RPAS** does operator have:

Remotely Piloted Aircraft System Operating Certificate [not started, applied, underway (expected completion?), completed]

Area approval [not started, applied, underway (expected completion?), completed]

Appropriately licenced Remote Pilots/Remote Pilot in Command?

SORA analysis data:

SAIL Level – [SAIL I/II (Low Risk, fast approval), SAIL III/IV (medium risk, medium-slow approval), SAIL V/VI (High Risk, very slow approval)]

Same as balloons, the goal is to reduce the risk to third parties in the air and on the ground to an acceptable level (see Safety Case)

### Safety Case

There are two main risks to be considered:

**Risk to third parties in the air** (during ascent, during operation, during descent/cut-down)

For air risk please see SASP Document (“Guidance on a safety case for high-altitude operations”)

**Risk to third parties on the ground** (both part of the operation [during release] and uninvolved third parties)

Risk to third parties on the ground can be estimated using the expected casualty (measured in casualties per hour) formula below:

$$E\_{C}=P(unplanned descent)×D\_{pop}×A\_{C}$$

Probability of unplanned descent – See Section 15 of SASP document

Population Density (Dpop) Data (suggest using SA1 [high granularity ~200-800 people per area] or SA2 [medium granularity ~3000-25,000 people per area]) data

[https://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/1270.0.55.001July%202016?OpenDocument](https://www.abs.gov.au/AUSSTATS/abs%40.nsf/DetailsPage/1270.0.55.001July%202016?OpenDocument)

Critical Area (AC) Calculation

<https://www.faa.gov/about/office_org/headquarters_offices/ast/licenses_permits/media/99may_inert_rpt.pdf>

for RPAS, more detail will be required through the SORA process (<http://jarus-rpas.org/sites/jarus-rpas.org/files/jar_doc_06_jarus_sora_v2.0.pdf>) to demonstrate an acceptable level of risk has been met.

## ACMA Regulatory Considerations:

### Spectrum Licensing

The use of any frequency band not identified within the Low Interference Potential Devices (see <https://www.legislation.gov.au/Details/F2021C00090>) regulation (e.g., the 2.4 GHz Wi-Fi band) will require a license from the Australian Communications and Media Authority (ACMA). This can take some time for non-standard equipment and may incur a fee. If access to radio frequency spectrum is required, then you are advised to review information on ACMA’s web site (see <https://www.acma.gov.au/>) and seek advice on the regulation of spectrum.