



Payloads on Lunar Missions: Operational Policy

1.1 Purpose of this document

This is the New Zealand Space Agency (**NZSA**) policy which sets out the approach that will be taken when assessing the post-mission disposal of payloads on lunar missions (such as missions that will orbit, flyby, or impact the Moon) as part of applications made under the Outer Space and High-altitude Activities Act 2017 (**the Act**) and in accordance with the Outer Space and High-altitude Activities (Licences and Permits) Regulations 2017 (**the Regulations**).

1.2 When to apply this policy

This policy will be applied when assessing applications for:

- + Payload permit
- + Overseas payload permit

1.3 Relevant sections in the Act and Regulations

The Act requires the Minister to be satisfied that the applicant has an orbital debris mitigation plan (ODMP) that meets prescribed requirements and that the proposed operation of the payload is consistent with New Zealand's international obligations. The relevant sections in the Act and the Regulations are:

- + [16\(2\)](#): *Application for payload permit*
- + [17\(1\)\(b\)](#): *When payload permit may be granted*
- + [32\(2\)](#): *Application for overseas payload permit*
- + [33\(1\)\(b\)](#): *When overseas payload permit may be granted*
- + [Regulation 13](#): *Requirements for orbital debris mitigation plan*

1.4 Policy intent

Payloads must be disposed of in a way that is consistent with New Zealand's international obligations and meets orbital debris mitigation requirements.

The disposal of payloads at the end of their missions is an important aspect of meeting obligations under New Zealand's international obligations and for ensuring the sustainability of space more broadly. Furthermore, applicants must supply an ODMP which demonstrates that at the end of the activity, the payload is disposed of in a way that minimises risks to, or in, Earth's environment and in the space environment (including the risk of collisions). This is consistent with international best practice and is intended to ensure that the proliferation of debris by space objects is limited.

While standards exist for the disposal of payloads in Earth orbit, there are no international guidelines for lunar post-mission disposal. Therefore, the approach outlined in this operational policy is designed to be flexible whilst managing any risks to New Zealand's international obligations and orbital debris generation.

1.5 Information to be taken into account when applying this policy

Information to be taken into account in the application of this policy includes:

- + relevant sections of the Act and the Regulations
- + the applicant's submitted ODMP and, where applicable, the ODMP for the host satellite (for New Zealand payloads that are hosted by another satellite being launched overseas, both the host and payload permit applicant must meet the orbital debris mitigation requirements in the Act and the Regulations)
- + any applicable technical advice, reports, or assessments provided by other space agencies, regulators, or experts
- + any overseas licence, permit, or other authorisation relevant to the proposed activities

You should also refer to New Zealand Space Agency's [‘Orbital Debris Mitigation’ operational policy](#) for information on the operational policy relating to recognising and assessing ODMPs.

1.6 Approach to assessing the disposal of lunar payloads

As part of applications for payloads on lunar missions, the following will be considered:

+ The probability of successful disposal

Applicants are encouraged to apply international technical standards when assessing the probability of successful disposal. Compliance with the following standard will generally meet the requirements of Regulation 13:

- ESSB-ST-U-007 – [ESA Space Debris Mitigation Requirements](#)

+ The disposal method

The NZSA considers the following post-mission disposal methods to be acceptable for payloads on lunar missions:

- controlled lunar surface impact (directed to a particular location)
- semi-controlled lunar surface impact (directed to impact along a particular ground track)
- transfer into a heliocentric orbit
- Earth re-entry

The applicant may choose any of these disposal methods depending on the mission objectives.

If the applicant chooses a controlled or semi-controlled lunar surface impact as the disposal method, the impact site chosen should be at an appropriate distance from any areas of activity or protected sites, such that the impact, or the dust generated by the impact, does not interfere with these activities or protected sites. This distance will be assessed based on the characteristics of the disposal impact.

+ Planetary protection principles

Planetary protection is aimed at preventing biological contamination of both the celestial body concerned and the Earth (in the case of sample-return missions).

Applicants should be able to demonstrate that the mission meets an international technical guideline or standard for planetary protection. This could include, but is not limited to, one of the following:

- + [Committee on Space Research \(COSPAR\) Policy on Planetary Protection](#)**
- + NASA-STD-8719.27 – [NASA Technical Standard – Implementing Planetary Protection Requirements for Space Flight](#)**

Further information

Where an application is incomplete, contains deficiencies or inconsistencies, or in any other way fails to satisfy the requirements of the Act and Regulations, further information will be requested from the applicant. This may occur at any point during the application and assessment process.