



Orbital Debris Mitigation: Operational Policy

Issue/Version Control

Version	Date	Amendments
V3	10 May 2023	<ul style="list-style-type: none"> • New recognised standards/guidelines added • Information for overseas hosted payloads added • Clarification on verification process

1.1 Purpose of this document

This is the New Zealand Space Agency (NZSA) policy relating to the recognition and assessment of the orbital debris mitigation plans (ODMP) required for launch licence and payload permit 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**). It sets out the approach that will be taken by the NZSA when assessing applications under the Act.

1.2 When to apply this policy

This policy will be applied when assessing applications for:

- + Launch licence
- + Overseas launch licence
- + 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 the prescribed requirements. The relevant sections in the Act are:

Launch

- + [8\(2\)](#): Application for launch licence
- + [9\(1\)\(c\)](#): When launch licence may be granted
- + [12](#): Renewal of launch licence
- + [24\(2\)](#): Application for overseas launch licence
- + [25\(1\)\(c\)](#): When overseas launch licence may be granted

Payload

- + [16\(2\)](#): Application for payload permit
- + [17\(1\)\(b\)](#): When payload permit may be granted
- + [33\(1\)\(b\)](#): When overseas payload permit may be granted

Overseas Authorisation

- + [51](#): Minister may take into account authorisation granted in country other than New Zealand

- + [28](#): *Renewal of overseas launch licence*

The Regulations prescribe the requirements for an ODMP for the purpose of the above sections. The relevant regulation is:

- + [Regulation 13](#): *Requirements for orbital debris mitigation plan*

Regulation 13 prescribes that an ODMP must:

- specify any international standard or guidelines followed (if any);
- specify any independent person or body that has assessed the plan (if any), and the result of that assessment;
- specify the orbital debris mitigation measures taken or intended to be taken, which measures must be sufficient to ensure:
 - the release of debris during the normal operations of the vehicle or payload is limited;
 - the potential for break-up of the vehicle or payload while in orbit is minimised;
 - the potential for the vehicle or payload to collide with debris other than debris released in the course of the activity to which the licence or permit relates is minimised; and
 - at the end of the activity to which the licence or permit relates, the vehicle or 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).

1.4 Policy intent

New Zealand has established a licence and permit process for launch vehicles and payloads. The requirement to supply an ODMP as part of that process is consistent with international best practice and is intended to ensure that proliferation of debris by space objects is limited, thus reducing the risk of collisions in space and the potential for debris to cause damage in orbit and upon atmospheric re-entry.

The application of this policy is intended to evolve to reflect the development of new technologies, changes in the satellite and broader space industry and the orbital debris environment.

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 regulations
- + the applicant's submitted orbital debris mitigation plan and, where applicable, the orbital debris mitigation plan for the host satellite (for New Zealand payloads that are hosted by another satellite for a launch taking place overseas, both the host and payload permit applicant must meet the orbital debris mitigation requirements in the Act and 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.

Note that [Section 51](#) of the Act allows the Minister to treat an overseas licence, permit or other authorisation as satisfying some or all of the criteria for the granting of a launch licence, overseas launch

licence, payload permit and overseas payload permit. Currently, the Minister treats the following overseas licences, authorisations or ODMP as satisfying some, or all, of the regulation 13 criteria:

- + **US Federal Aviation Administration (FAA)**. The FAA licence does not meet New Zealand requirements for end-of-life disposal. Applicants will also need to demonstrate compliance with this requirement
- + **US Federal Communications Commission (FCC)** for payloads with radio-communication capabilities
- + **National Aeronautics and Space Administration (NASA)** for NASA and NASA sponsored payloads.
- + **US Department of Defence (DoD)** for US DoD or DoD authorised payloads
- + **European Space Agency (ESA)** while not a regulator or licensing body, ODMP assessed by ESA as meeting its standards, demonstrate full compliance with New Zealand requirements.

Applicants are encouraged to apply international technical standards when developing the mitigation measures for the ODMP. Compliance with the following guidelines and standards will generally meet the requirements of regulation 13 and the Inter-Agency Space Debris Coordination Committee (**IADC**) [Space Debris Guidelines](#);

- + NASA-STD-8719.14 – [NASA Technical Standard](#)
- + ISO 24113 - **Space Debris Mitigation Standards** (and any other space debris-related ISO standards), are available through [Standards New Zealand](#)
- + [Space Debris Mitigation Guidelines](#) of the Committee on the Peaceful Uses of Outer Space (UNCOPUOS)
- + JMR-003D – JAXA Space Debris Mitigation Standards
- + ESSB-HB-U-002 – ESA Space Debris Mitigation Compliance Verification Guidelines.

Both NASA and ESA provide guidance on suggested ODMP format which includes all the relevant sections.

Applicants are requested to provide an ODMP using the latest DRAMA or DAS software to show compliance with regulation 13. If DAS or DRAMA return a non-compliant result, we may require the applicant undertake a high-fidelity assessment and provide this to MBIE.

If the applicant wishes to use a tool different from DAS and DRAMA, the applicant must justify its use from a technical standpoint and MBIE must approve its use.

1.6 Verifying an ODMP's compliance

Regulation 13 prescribes requirements for an ODMP for the purposes of the Act. A summary of regulation 13 is set in 1.3 of this policy. The approach to verifying compliance with regulation 13 may vary. Currently, an application may take one of two paths:

- 1.6.1 **The applicant may rely on an authorisation that has been treated by the Minister as satisfying New Zealand's orbital debris mitigation requirements** in accordance with section 51 of the Act, or an assessment by ESA has been completed. The authorisations that the Minister currently treats as satisfying the requirements are listed in section 1.5 of this policy.
- + Where an applicant has an authorisation from one of the listed agencies, or has had its orbital debris mitigation plan independently assessed by ESA as meeting its standards, no further assessment of the orbital debris mitigation plan is required.
 - + For our own purposes of ensuring compliance with the terms of any granted licence or permit and as an evidence base should an on orbit collision occur, the NZSA may still require a copy of the ODMP that was submitted in support of the overseas authorisation.

- + Over time the NZSA may undertake further conformity assessments of other overseas licences, permits or authorisations with a view to adding to the list detailed in section 1.5 of this policy.

1.6.2 Where an application is made and an overseas authorisation has not been assessed as meeting New Zealand’s requirements for an orbital debris mitigation plan, applicants will need to demonstrate that the ODMP provided with the application is compliant with regulation 13. In this case the NZSA will assess the applicant’s ODMP by reviewing the technical information required, including ensuring the relevant analyses are carried out with a suitable tool and appropriate inputs.

Additionally, NZSA *may*:

- + assess the ODMP using the latest DRAMA or DAS software to verify compliance with regulation 13; or
- + arrange an independent assessment of the ODMP by a suitably qualified entity, such as ESA.

1.6.3 Where an application is made for an overseas hosted payload, the applicant is required to submit the ODMP for the carrier payload and the hosted payload. NZSA will assess these in accordance with either 1.6.1 or 1.6.2, whichever is applicable.

Further information

Where an ODMP 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.

Where our verification process reveals a potential non-compliance with the standards using DAS or DRAMA, we may request the applicant to undertake a high-fidelity assessment as per section 1.5 of this policy.

Where an applicant is unable to show compliance with New Zealand’s regulation 13, no launch licence, overseas launch licence, payload permit, or overseas payload permit may be granted.

1.7 Waivers

The regulations do not permit a waiver to be issued if the ODMP does not meet New Zealand’s regulatory requirements.

1.8 Conditions

The Minister may impose conditions on the licence or permit in relation to orbital debris. Such conditions may include, but not be limited to, requirements to notify the NZSA of:

- + Any change, expiry or revocation to a licence, permit or authorisation treated by the Minister as satisfying New Zealand’s orbital debris mitigation requirements
- + payload deviations from the planned orbital trajectory
- + any incident or accident (e.g. a conjunction, near miss or collision), or notification of debris associated with the object, including details of that incident or accident
- + initiation of re-entry or other end-of-life processes¹.

¹ End-of-life processes include passivation and any disposal manoeuvres.