The Defence Space Safety Program Manual

Volume 2: Defence Space Safety Regulation

Introduction

Purpose

1. This Volume establishes requirements for the management of Defence space safety.

Structure

2. The Defence Space Safety Regulations (DSSR) are comprised of:

a. General Requirements (GR), which are set out below in four subparts:

i. GR.100, *Scope and Applicability* – defines the scope and applicability of the DSSR

ii. GR.200, *Space Safety Authorisation* – establishes requirements for the issue and maintenance of a Space Safety Authorisation

iii. GR.300, Accidents, *Occurrences and Investigations* – establishes requirements and provisions for reporting, investigating and addressing occurrences and accidents,

iv. GR.400, *Oversight and Enforcement* – establishes provisions for the conduct of oversight and enforcement against the regulations.

b. the DSSR Parts, which are set out in Annex A.

3. DSSR clauses and sub-clauses may have associated supporting information in the form of:

a. **Acceptable Means of Compliance (AMC)**. AMC is information published by the Defence Space Safety Regulator to identify a means of meeting one or more requirements of the DSSR. Regulated entities are required to either comply with AMC or propose an Alternative Means of Compliance (AltMoC) to the Defence Space Safety Regulator. Any such proposal will be subject to assessment by the Defence Space Safety Regulator to determine whether the approach is compliant with the DSSR.

b. **Guidance Material (GM).** GM provides additional information to assist the application of the requirement and/or explain the AMC.

4. The Defence Space Safety Regulator is referred to as ‘the Regulator’ in AMC and GM.

Context

5. This Volume implements applicable requirements set out in Defence Space Safety Program (DSSP) Manual Volume 1, *Requirements for the DSSP*.

6. DSSP Manual Volume 3, *DSSP Guidance*, provides further information to support understanding of, and compliance with, the DSSR.

Definitions

7. The following definitions apply within this Volume:

a. **Accident.** An accident involving a space object occurs if a person dies or suffers serious injury of the operation of the space object.

b. **Agent (of the Commonwealth).** A person who is authorised by the Commonwealth to conduct space activities on behalf of the Commonwealth and who has consented to perform that role.

c. **Australian Territory.** Australian territory means the following:
- the Territory of Australia and of each external Territory
- the territorial sea of Australia
- the waters of the sea on the landward side of the territorial sea of Australia, but not within the limits of a State or internal Territory
- the territorial sea of each external Territory
- the waters of the sea on the landward side of the territorial sea of each external Territory, but not within the limits of the external Territory.

d. **Launch.** Launch of a space object means to launch the whole or a part of the object into an area beyond the distance of 100 km above mean sea level, or attempt to do so.

e. **Launch facility**. A facility (whether fixed or mobile) or place specifically designed or constructed as a facility or place from which space objects can be launched, and includes all other facilities at the facility or place that are necessary to conduct a launch.

f. **Launch vehicle.** Means any technology designed to project objects into space or near to space, including expendable launch vehicles and reusable launch vehicles.

g. **Occurrence.** An incident, malfunction, defect, technical defect or exceedance of limitations that endangers or could endanger the safe operation of a space object.

h. **Payload.** Payload refers to an object carried by a spacecraft that travels over, or returns from over, 100 km above mean sea level.

i. **Return.** Means return the space object from an area beyond the distance of 100 km above mean sea level to Earth, or attempt to do so.

j. **Satellite.** A satellite is a spacecraft with a bus and one or more payloads that orbits around a body in space.

k. **Satellite payload.** A set of instruments or equipment which performs a user mission.

l. **Spacecraft.** Crewed or uncrewed vehicle designed to orbit or travel in space.

m. **Space debris.** All non-functional, artificial objects, including fragments and elements thereof, in Earth orbit or re-entering into Earth's atmosphere.

n. **Space object.** Means: (a) an object the whole or a part of which is to go into or come back from an area beyond the distance of 100 km above mean sea level; or (b) any part of such an object, even if the part is to go only some of the way towards or back from an area beyond the distance of 100 km above mean sea level.

o. **Space safety.** The state in which continuing processes of hazard identification and risk management ensure that risks to the health and safety of personnel arising from space activities are eliminated or otherwise minimised so far as is reasonably practicable (SFARP).

p. **Space Safety Authorisation.** Space Safety Authorisation (SSA) is the generic term for any formal notification document/artefact issued in response to an application from the Defence space safety community in accordance with the Defence Space Safety Regulations. SSA includes, but is not limited to, launch, return and payload permits, and launch facility licences.

q. **Space Safety Authorisation Holder.** The person in a role responsible for the Space Safety Authorisation, accepting the rights and obligations for the space activity.

r. **Space System.** A space system is composed of four functional segments (Space Segment, Link Segment, Ground Segment, and User Segment) that provide space-derived services and products.

s. **UN Space Treaties.** Means the following:

- Convention on International Liability for Damage Caused by Space Objects 1972
- Convention on Registration of Objects Launched into Outer Space 1972
- Treaty on Principles Governing the Activities of States in the Exploration and Used of Outer Space, including Moon and Other Celestial Bodies 1967
- Agreement Governing the Activities of States on the Moon and other Celestial Bodies 1979

- Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space 1968.

8. Further definitions are available in the DSSP Glossary.

General Requirements (*** WITH GM ***)

GR.100: Scope and Applicability

GR.110 Scope

(a) The Defence Space Safety Regulations (DSSR) focus on protecting human life. ►**GM1** ►**GM2** ►**GM3**

GM1 GR.110(a) – Focus of the DSSR

1. **Purpose.** The Defence Instruction, Military Command Support Provision 3 (MCS3), establishes the Defence Space Safety Program (DSSP) and appoints Chief of Joint Capability as the Defence Spaceworthiness Authority and the Director General Defence Aviation Safety Authority (DASA) as the Defence Space Safety Regulator (hereafter 'the Regulator'). The DSSP Manual Volume 1 then expands on the DSSR objectives and scope, but is necessarily brief. A common and deep understanding of that scope is required to enable effective implementation of the regulations. This regulation establishes the DSSR context by identifying the focus of the DSSR.

The DSSP

2. The launch, operation and return of space objects presents many complex safety hazards. Space safety regulations provide structure through prescribing requirements and standards for the design, construction, maintenance and operation of space objects and facilities. These regulations, when coupled with a generative space safety culture combined with independent assurance, enable Defence commanders and managers to achieve a credible and defensible level of Defence space safety.

3. The DSSP is intended to regulate and assure achievement of safety outcomes associated with the Defence space domain. The DSSP must be consistent with the safety objectives of the *Space (Launches and Returns) Act 2018* (the SLR Act) and be designed to achieve a safety standard commensurate with the safety standards established under that Act.

4. Defence also has space safety obligations additional to the safety standard established by the SLR Act (as do civilian space activities). To enable commanders and managers to achieve a credible and defensible level of Defence space safety, the DSSP also encompasses relevant

safety requirements from other Australian legislations, international Treaties and Defence policies.

Protecting human life

5. The DSSR endeavour to minimise duplication with extant Defence regulations, policies and systems that already manage health and safety effectively. For this reason, the DSSR do not cover those hazards that are common across Defence, for example hazardous materials and common workplace hazards.

6. Instead, the DSSR focus on hazards that are unique to Defence space activities, and often require risk controls that may not be evident to the Defence space community. Furthermore, to reduce the complexity of the regulations, the DSSR focus only on the more severe of these hazards, where the substantial harm is a credible risk.

7. This strong focus on protecting human life allows the DSSR to coalesce the key elements of the SLR Act and the *Work Health and Safety Act 2011* (WHS Act) safety scopes, without creating a regulatory burden that may be disproportionate to Defence risks in the space domain.

GM2 GR.110(a) – Alignment with Australian Legislation, UN Treaties and Defence Policies

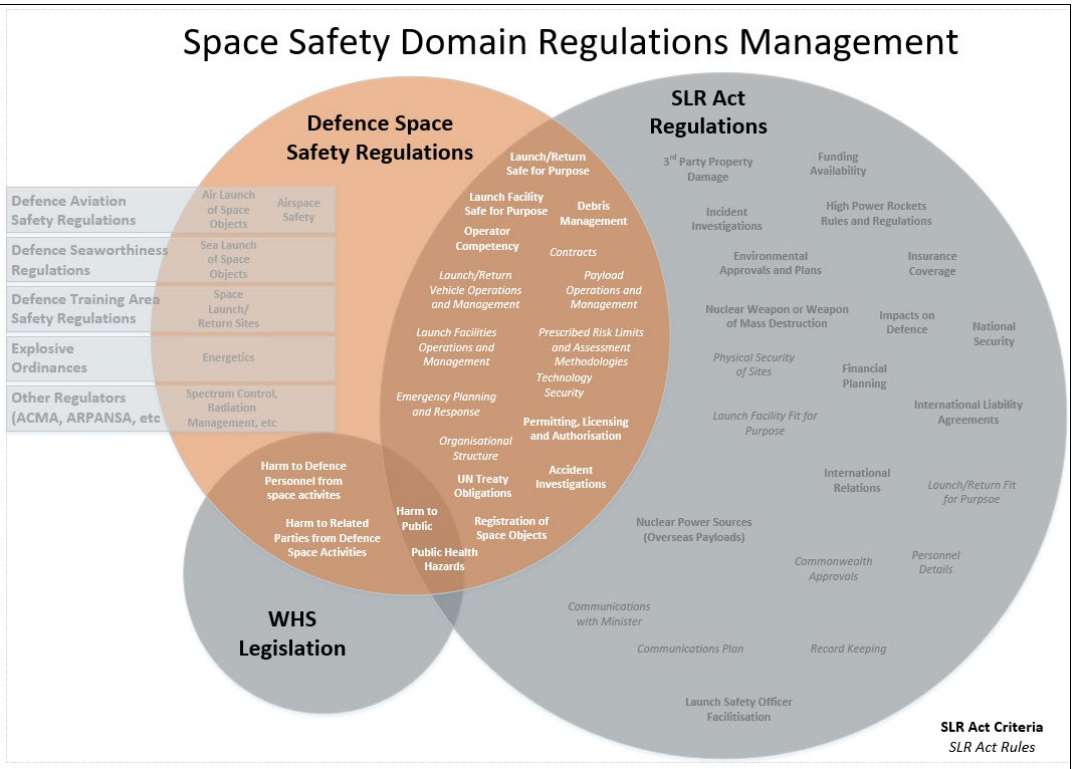
1. The DSSR promote compliance with many safety-related elements of Australian Legislation, UN Treaties and Defence regulations and higher policies.

Alignment with the SLR Act and other Australian Legislation

2. Parts of the SLR Act are directly applicable to Defence. Other parts of the SLR Act do not directly apply to Defence (due to the 'Commonwealth not bound' clause), but they would probably be used as a benchmark for liability in the event of an accident. Furthermore, the SLR Act and associated Rules often reflect international 'good practice' in ensuring space safety, so it makes sense for Defence to take advantage of this captured knowledge.

3. Consequently, the DSSR aim to achieve a space safety standard commensurate with the safety standards established under the SLR Act, where they are relevant to protecting human life.

4. Conversely, the SLR Act and Rules provide coverage of numerous issues that are beyond the scope of space safety as it pertains to protecting human life. The following diagram summarises the overlaps and differences.



5. The above diagram demonstrates a significant overlap between the DSSR and the SLR Act. Each of the overlap items are where there is a direct link to the protection of human life. For SLR Act items that present both safety and non-safety obligations, only the former overlap with the DSSR.

6. The diagram also indicates several areas where the DSSR is broader than the SLR Act, notably:

a. The safety focus of the SLR Act is on the general public, with the protection of workers and other persons being subject to separate legislation. In Defence's context, this separation is not useful to commanders and managers. Consequently, the DSSP extends beyond the SLR Act to encompass the protection of workers and other persons in accordance with the WHS Act.

b. Defence has other regulations in place that can contribute to space safety, for example, the air launch of space vehicles could be covered by the DASR. To reduce waste through overlap and duplication, the DSSR needs to interface with those other regulations.

7. Conversely, the diagram identifies numerous elements where the DSSR is purposely narrower than the SLR Act and Rules - notably elements of the SLR Act that focus beyond the protection of human life, including damage to property, industry development, environmental protection and heritage site protection. While Defence must still manage all

of these elements, they do not receive the benefit of the DSSR nor the Regulator's independent assurance. This issue is further examined in GR.220(b)(4), where commanders and managers are informed that many risks outside the scope of the DSSR will also require their attention. As a service to commanders and managers, the DSSP Manual Volume 3 (to be issued) will present non-authoritative and non-exhaustive guidance to assist in identifying these broader responsibilities.

8. Finally, other legislative requirements may affect Defence space activities. Further information is provided in the DSSP Manual Volume 1 Chapter 2.

Alignment with UN Treaties

9. Australia has signed and/or ratified six international Treaties that have the potential to affect Defence's space activities, as follows:

a. *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and other Celestial Bodies* 1967

b. *Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space* 1968

c. *Convention on International Liability for Damage Caused by Space Objects* 1972

d. *Convention on Registration of Objects Launched into Outer Space* 1976

e. *Agreement Governing the Activities of States on the Moon and other Celestial Bodies* 1979

f. *Convention and Constitution of the International Telecommunications Union* 1994.

10. To the extent they affect the DSSR focus on protecting human life, elements of these Treaties are covered within the DSSR. Further information is provided in the DSSP Manual Volume 1 Chapter 2.

11. The UN and other bodies can issue Guidelines that may affect space safety, for example the *UN Committee on the Peaceful Uses of Outer Space, Guidelines for the Long-Term Sustainability of Outer Space Activities*. However, only when the Australian Government has formally adopted them as policy (or, to ensure a consistent whole-of-government approach to space safety, where ASA has adopted them) will they be included within the DSSR. The DSSP Manual of Standards (MOS) may reference these Guidelines, but only as 'recommended' (not mandatory)

design and operational considerations (see GM to GR.210(e)) for commanders and managers.

Alignment with Defence Regulations and higher policies

12. The DSSR intention is to not duplicate the safety requirements already mandated through other Defence regulations and higher policies. The DSSR will, however, identify relevant outcomes from those other regulations and policies, and integrate them into the DSSR.

GM3 GR.110(a) – Relevance of Liability Considerations

1. The DSSR focus on protecting human life. Defence's liability for space accidents does not initially appear relevant to that focus, and yet several DSSR require applications for an SSA to include evidence that Defence's liability assignment has been identified and accepted. Justification for the inclusion of liability considerations in the DSSR is presented in this GM.

Obligation

2. The *Convention on International Liability for Damage Caused by Space Objects* 1972 (*UN Liability Convention*) covers damage to people and property - on earth, in flight or in space. The Australian government has ratified the Convention, thus acknowledging that Australia bears international responsibility for its national space activities.

Relevance to DSSR

3. The DSSR focus on protecting human life, whereas space liability focuses on compensation after an accident. Hence, at face value, liability does not seem relevant to the DSSR scope.

4. Effective safety risk management relies on Defence clearly identifying its statutory safety duties. When Defence is the sole owner and operator of a space object, that safety duty can be straightforward. However, the more common scenario where Defence jointly owns or operates a space object with an international civil or government partner (or both), can add many complexities to risk management. Notably, the *UN Liability Convention* makes States (not civil corporations) liable for space accidents, adding more complexity to identifying Defence's safety duties. Even a foreign military launch from a Defence site can present liabilities for Australia, suggesting Defence may have a partial safety duty.

5. The assignment of international liability for space accidents can provide insight into Defence's safety duties. Since the *UN Liability Convention* makes provision for joint liability, understanding the extent of Australia's liabilities can help Defence take proportionate measures to control risk as a shared duty holder. Perhaps more importantly, it will

minimise the possibility of a safety risk being left unmanaged because Defence commanders and managers assumed another party was responsible. Each of the three DSSR Parts therefore require applications for an SSA to include evidence they have explored and understand their international liabilities.

6. The cessation of international liability is also used as one criterion for cancelling an SSA for payloads and orbital operations, per GR.210(j)(3).

(b) The following Defence space activities are within scope of the DSSR: ►**GM**

GM GR.110(b) – Scope of the DSSR

1. **Purpose.** The purpose of this regulation is to categorise the space activities that are regulated under the DSSR, to ensure the Defence space safety community is aligned on applicability.

Note: A Defence space activity is broadly described as an activity where Defence is the partial or full owner of a space object or facility, and/or where Defence may be liable if an accident occurred as a result of a space object's launch, operation or return.

(1) launch facilities ►**GM**

GM GR.110(b)(1) – Scope of the DSSR: Launch Facilities

Applicability

1. The preparation and launching of a space object is a hazardous activity due to the abundance of energetic materials, often unproven launch vehicles, the myriad systems that contribute to a safe launch, the criticality of flight monitoring and termination systems, uncertainties in debris impact zones, and so on. Several of these risks can be reduced through the careful design and management of the launch facility.

2. The DSSR for a Launch Facility License (DSSR.LFL) guide commanders and managers in eliminating or otherwise minimising space launch facility safety risks SFARP, by regulating the design, construction, maintenance and operation of:

a. Defence launch facilities

b. commercial launch facilities in Australia used for Defence activities,

c. foreign military launch facilities in Australia not regulated by the Australian Space Agency (ASA).

3. Each of these launch facilities may be fixed or mobile. Mobile facilities may be land-based, airborne or shipborne.

4. Provided the relevant DSSR.LFL requirements are met, the Regulator may issue a Launch Facility Licence for the facility.

Launch facility coverage

5. As noted in GM2 to GR.110(a), the DSSR do not cover hazards that are common across Defence, for example hazardous materials and common workplace hazards. Rather, the DSSR focus on hazards that are unique to space activities, and often require risk controls that may not be evident to the Defence space community.

6. The DSSR.LFL use the beginning of the launch sequence to identify the temporal point at which DSSR applicability for launch facilities commences, as follows:

> *Beginning of launch is when the payload and launch vehicle arrive at the launch site and when any pre-flight ground operation at the launch site meets all of the following criteria:*
> - *is closely proximate in time to flight, and*
> - *entails critical steps preparatory to initiating flight, and*
> - *is unique to space launch, and*
> - *is inherently hazardous ie when hazardous pre-flight operations commence at a launch site that may pose a threat to the Defence personnel and/or the public.*

7. The DSSR.LFL are applicable only to launch facility systems directly involved with the safety of the launch after this temporal point. This includes, for example, systems associated with the safe loading of propellant, gantries holding the launch vehicle in place, launch safety bunkers, range control systems, and so on. It does not cover transporting the launch vehicle to the launch site, long-term storage of energetic materials, road safety, 'slips, trips and falls', hazardous materials exposure, and so on. These and many other hazards prior the beginning of the launch sequence still require careful management, but do not benefit from DSSR coverage or Regulator independent assurance.

Alternative to a Launch Facility Licence

8. An alternative to attaining a Launch Facility Licence is for the launch facility to be assessed and approved as part of the Launch and/or Return Permit (see GM GR.110(b)(2)).

9. For a fixed launch facility, a Launch Facility Licence is likely to be an efficient option when the facility will be used multiple times, even with different launch vehicles.

10. Mobile launch facilities using Defence aircraft or ships are unlikely to benefit from a Launch Facility Licence. The Defence Aviation Safety Regulations and Defence Seaworthiness Regulations respectively have

extensive coverage, and a long safety record, of managing hazards involved in the carriage and launch of long-range missiles. Clearances by the Defence Aviation Safety Regulator or Defence Seaworthiness Regulator would therefore cover most of the mobile launch facility hazards. The remaining hazards would be assessed and approved as part of the Launch and/or Return Permit.

(2) launches and returns ►**GM**

GM GR.110(b)(2) – Scope of the DSSR: Launches and Returns

Applicability

1. Space launches and returns present risks to people in debris zones on the ground/water, in aircraft and in space. Additional risks are present for people on or near the launch site, due to the abundant use of energetic materials.

2. The DSSR for a Launch and Return Permit (DSSR.LRP) aid commanders and managers in eliminating or otherwise minimising space launch/return safety risks SFARP, by regulating the design, construction, maintenance and operation of space objects involved in launches/returns and their launch facilities (unless a Launch Facility Licence has been issued) when:

a. space objects are launched or returned by Defence

b. civil space objects not regulated by the Australian Space Agency (ASA) are launched or returned for Defence purposes

c. civil space objects not regulated by the ASA are launched from or returned to Defence facilities or Defence controlled range areas,

d. foreign military space objects not regulated by the ASA are launched from or returned to Australia.

3. Three of these scenarios make specific mention of regulation by ASA. The intention is to ensure that either Defence or ASA provides regulatory oversight for every launch within scope of the DSSP, but accepts that (circa 2025) the delineation of responsibilities between the two agencies is still evolving. Where launches and returns of space objects include both Defence and non-Defence elements, the Regulator in consultation with ASA will determine the extent of DSSR application.

4. Provided the relevant DSSR.LRP requirements are met, the Regulator may issue a Launch and/or Return Permit for the space activity.

Launch/Return coverage

5. As noted in GM to GR.110(a), the DSSR do not cover hazards that are common across Defence, for example hazardous materials and common workplace hazards. Furthermore, the DSSR focus on hazards that are unique to space activities, and often require risk controls that may not be evident to the Defence space safety community.

6. The DSSR use the beginning and end of the launch sequence, and the span of return activities, to identify the temporal limits of DSSR.LRP applicability, as follows:

Beginning of launch is when the payload and launch vehicle arrive at the launch site and when any pre-flight ground operation at the launch site meets all of the following criteria:

- *is closely proximate in time to flight, and*
- *entails critical steps preparatory to initiating flight, and*
- *is directly related to the space launch, and*
- *is inherently hazardous ie when hazardous pre-flight operations commence at a launch site that may pose a threat to ADF members and/or other persons.*

End of launch is when:

- *for launch of an orbital Expendable Launch Vehicle (ELV), Launch ends after the permit holder's last exercise of control over its launch vehicle.*
- *for launch of a Reusable Launch Vehicle (RLV) delivering a payload into orbit, Launch ends after deployment of the payload.*
- *for any an orbital RLV that does not deliver payload into orbit, Launch ends upon completion of the first sustained RLV orbit matching targeted orbital elements.*
- *for a suborbital ELV or RLV launch not involving a Return, Launch ends after reaching apogee.*
- *for a suborbital ELV or RLV launch involving a Return or the vehicle landing, Launch ends after all activities necessary to return the vehicle to a safe condition on the ground.*

A Return spans the following activities:

- *pre-return operations in orbit to determine Return readiness*
- *return flight from the initiation of Return until the vehicle reaches its designated landing or impact site*
- *post-impact or landing activities including all necessary operations to secure the vehicle and ensure the vehicle, and its components, are in a safe condition.*

Space operations in between launch and return

7. The operation of a satellite and/or satellite payload in the period between the end of Launch and the commencement of Return is normally covered by the DSSR for payloads and orbital operations.

8. For space activities where the period between Launch and Return is temporarily orbital (for example a space vehicle making several earth orbits and then returning), the Regulator will decide how the activity will be approved. Depending on the circumstance, the Regulator may expand the Launch and/or Return Permit to cover those few orbital operations, or may require a separate Payloads and Orbital Permit.

Launches and/or returns authorised under a Payloads and Orbital Permit

9. The overseas launch of a Defence satellite and/or satellite payload will not normally require a DSSR Launch Permit. Instead, the sufficiency of the Launch Service Provider would normally be assessed as part of the application for a Payloads and Orbital Permit.

10. Satellites and/or satellite payloads destined for atmospheric demise do not require a Return Permit. Rather, the demise assessment and approval is included as part of the assessment of the Payloads and Orbital Permit.

Benefits of a Launch Facility Licence

11. The effort needed to obtain a Launch and/or Return permit is likely to be reduced if a Launch Facility Licence has been issued for the facility and the licence covers the launch vehicle type. Where a facility is intended to be used for multiple space launches the provision of a licence is likely to be an efficient option to meet regulatory requirements.

(3) payloads and orbital operations. ►**GM**

GM GR.110(b)(3) – Scope of the DSSR: Payloads and Orbital Operations

Applicability

1. Modern satellite payloads are increasingly used for safety-related activities (eg emergency communications, aircraft safe separation, medical services, etc.), so damage from other space objects could credibly contribute to fatalities. This effect would be magnified if resultant space debris collides with other satellites. Satellites can also present risks to people on the ground/water and in aircraft if a planned atmospheric demise is not fully effective.

2. The DSSR for a Payloads and Orbital Permit (DSSR.POP) aid commanders and managers in eliminating or otherwise minimising satellite

and/or satellite payload safety risks SFARP, by regulating design, construction, maintenance and operation when:

a. a satellite is partially or fully owned by Defence

b. a satellite payload is partially or fully owned by Defence

c. Defence operates or issues instructions to operate a satellite

d. Defence controls or issues instructions to control a potentially hazardous function of a satellite payload,

e. Defence sponsors or conducts the design, construction or maintenance of a satellite, satellite payload or satellite element.

3. For satellites and/or satellite payloads that include both Defence and non-Defence (eg civil or foreign military) elements, only the Defence owned/operated elements are within the scope of the DSSP.

4. Provided the relevant DSSR.POP requirements are met, the Regulator may issue a Payloads and Orbital Permit (POP) for the satellite and/or satellite payload.

Outside of scope

5. The DSSR do not regulate (and therefore a POP is not required) in any of the following situations:

a. Defence acquires data from a satellite or satellite payload that is neither owned nor operated by Defence

b. Defence controls, or instructs the control of, User Segment elements that do not affect the safety of a satellite or satellite payload

c. Defence designs spacecraft equipment, structure or a system for developmental or prototyping projects, but they are not used in space,

d. Defence Ground Segment elements or Link Segments elements are used by a non-Defence entity to control a non-Defence satellite or non-Defence satellite payload.

6. For atypical arrangements, the Regulator will determine the applicability of the DSSR.POP.

Payloads and orbital operations coverage

7. The DSSR.POP primarily address hazards associated with satellite and/or satellite payload design and construction, plus hazards associated with orbital operations (ie the period between the end of launch and the beginning of return, as defined in GM to GR.110(b)(2)).

8. However, the DSSR.POP also provides some limited coverage of hazards associated with launches and returns, as follows:

a. Where a Launch Permit covers the launch vehicle issued either under the Australian SLR Act or by Defence, the DSSR aid in confirming the satellite and/or satellite payload will not adversely affect the launch vehicle

b. Where an overseas Launch Service Provider (LSP) will launch the Defence satellite and/or satellite payload, the DSSR aid in confirming the LSP is able to safely launch the satellite and/or satellite payload, plus confirming the satellite and/or satellite payload will not adversely affect the launch vehicle,

c. Where a satellite and/or satellite payload is designed for atmospheric demise, the DSSR aid in confirming the demise will be complete.

9. The DSSR identify temporal limits of DSSR.POP as follows:

Orbital operations begin when the satellite or satellite payload is inserted into a launch vehicle. If Defence does not have ownership or control during launch, orbital operations commence at the time when Defence first takes ownership or control of the satellite or satellite payload after launch.

Orbital operations end when:

- *for satellites not being removed from orbit, all end-of-life activities are complete, or*
- *for satellites with a planned Return, pre-Return operations commence, or*
- *Defence ceases to hold any liability for the satellite and/satellite payload and associated operations.*

10. **Non-orbital operations?** The DSSR for payloads and orbital operations focus on spacecraft that will occupy a stable and sustained orbit. Spacecraft that exceed the usual bounds of satellite operations, for example on-orbit satellite maintenance, travelling to another celestial body, etc, are outside the DSSR scope. Should Defence identify a need for such operations, the Regulator may issue a bespoke SSA per GR.210(d).

Nomenclature

11. International nomenclature for payloads is not standardised, even internally to some countries. The term 'payload' can be used to refer to the entirety of a satellite, part of a satellite, a mission function on a satellite, the mounting hardware plus the satellite on a launch vehicle, and so on.

12. This DSSR employs the following nomenclature related to orbital objects:

a. ***Space system.*** A space system is composed of four functional segments (Space Segment, Link Segment, Ground Segment, and User Segment) that provide space-derived services and products.

b. ***Spacecraft.*** Crewed or uncrewed vehicle designed to orbit or travel in space.

c. ***Satellite.*** A satellite is a spacecraft with a bus and one or more payloads that orbits around a body in space.

d. ***Satellite Payload.*** A satellite payload is a set of instruments or equipment which performs a user mission.

13. These and other definitions are presented in the DSSP Glossary.

(c) By way of exception from GR.110(b), the Defence Spaceworthiness Authority may declare a Defence space activity to be outside the scope of the DSSR, if compliance with the DSSR will provide negligible benefit to Defence space safety. ►**GM**

GM GR.110(c) – Justifying an exemption from the DSSR

1. **Purpose.** The Defence Instruction, Military Command Support Provision 3 (MCS3), directs the Defence Spaceworthiness Authority to establish the DSSP, and lists the broad Defence space activities to be encompassed by the DSSR. However, it does not delve into the myriad permutations of design, ownership and space operations that may affect the safety benefits of the DSSR. The purpose of this regulation is to make provision for the Defence Spaceworthiness Authority to declare that the DSSR are not applicable to a particular Defence space activity.

Safety risks and Defence's influence

2. The DSSR have been designed for compatibility with the range of space activities, ownership and operations arrangements that Defence might reasonably encounter. If the DSSR are found to be excessive or incompatible with a particular space activity or arrangement, the Regulator has the ability to tailor the DSSR via the flexibility provisions presented in GR.130(a) and GR.130(b).

3. However, a particular Defence space activity and arrangement could conceivably emerge whereby the application of even an extensively tailored DSSR do not provide tangible safety benefits. In that case, the Regulator would petition the Defence Spaceworthiness Authority to declare the space activity to be outside the scope of the DSSR.

4. The petition to the Defence Spaceworthiness Authority would be based on evidence that most of the following elements are valid:

a. Defence is not liable for any damage caused by the space object

Note: Evidence of specialist legal assessment would be required. A company's assertion that they retain liability is unlikely to be sufficient, since the UN Liability Convention makes provision for States, not companies, to be liable.

b. Defence has no ability to influence operational risk controls

Note: Contracting of operational control to another party will not normally satisfy this criterion. First, Defence will usually be able to expand the contract to incorporate this influence. In addition, the WHS Act (Section 272) does not permit an agreement or contract to purport to transfer a safety duty to another person.

c. Another government will provide full regulatory oversight of the space activity

Note: Similar to the application of 'recognition' per GR.210(g)(1), the Regulator must be satisfied that the regulatory coverage is similar to that provided under the DSSR, plus there must be evidence that the other Authority will continue to provide credible and defensible oversight.

d. There is a negligible safety risk.

Note: A limited period of risk exposure would not normally be accepted as a primary argument.

5. The Regulator must be satisfied that the application of the DSSR will make, at most, a trivial safety contribution before agreeing to petition the Defence Spaceworthiness Authority.

GR.120 Applicability

(a) The DSSR are applicable to the following: ►**GM**

(1) members of the Australian Defence Force
(2) persons acting as an employee of Defence
(3) persons acting as an agent of the Commonwealth (Defence)
(4) persons in commercial organisations whose contractual arrangement with Defence requires compliance with the DSSR.

GM GR.120(a) – Applicability of the DSSR

1. **Purpose.** Since the DSSR are non-legislative regulations, applicability is not automatic. This regulation identifies who in the Defence space community is subject to the DSSR.

2. Each of the persons identified in the regulation is explored below.

Members of the Australian Defence Force

3. The DSSP, established by the Secretary of the Department of Defence and the Chief of the Defence Force through the Defence Instruction, Military Command Support Provision 3 (MCS3), states that the DSSP contains policies, responsibilities, directions, regulations, processes and definitions relating to the DSSP activities. It further requires that Defence personnel to whom an SSA is issued must comply with, and ensure Defence personnel whom they command or control comply with, any condition of the SSA.

4. Through approving the DSSP Manual Volume 1, the Defence Spaceworthiness Authority specifically directs that commanders, managers and ADF members responsible for activities within the scope of the DSSP are to ensure compliance with the applicable DSSR.

Persons acting as an employee of Defence

5. The above provisions apply equally to managers and other persons acting as an employee of Defence.

6. While both groups could have been merged within this regulation, the separation is useful for regulations related to risk management.

Persons acting as an agent of the Commonwealth (Defence)

7. An agent of the Commonwealth (in this case Defence) is a person who is authorised by the Commonwealth to conduct space activities on behalf of the Commonwealth and who has consented to perform that role.

8. The SLR Act declares that a person acting as an agent of the Commonwealth is not bound by Division 1 of the Act (ie they are not required to obtain licences and permits before undertaking certain space activities). This provision precludes the Australian Space Agency (ASA) from providing regulatory oversight of the agent's actions.

9. The Commonwealth is likely to be liable for damage caused by the agent. Accordingly, the DSSP Manual Volume 1 Chapter 2 requires that the DSSR are to be applied to parties acting as agents of the Commonwealth on behalf of Defence for any aspect of the design,

construction, maintenance or operation associated with the launch/operation/return of space objects or space launch facilities.

10. The requirement to comply with relevant parts of this manual and subordinate space safety policy must be formalised with the agent. While a contract is not strictly necessary to create an agency relationship, the clearest way of making a person an agent would be through a written agreement (ie contract or deed). This would confirm that the Defence gives authority to the person to conduct the space activities as an agent of the Commonwealth, and that the person consents.

11. Where Defence intends to engage a person as an agent, specialist legal advice is recommended.

12. **Organisational applicability?** Defence will normally engage organisations, rather than individual persons, to conduct space activities on its behalf. However, since the SLR Act specifically identifies persons (not organisations) as agents, the DSSR does likewise. The DSSR expectation is that the person(s) engaged as agents will ensure that their organisation complies with the DSSR.

Persons in commercial organisations whose contractual arrangement with Defence requires compliance with the DSSR

13. Defence engages commercial organisations to assist in the conduct of Defence space activities. Since the DSSR are non-legislative regulations, a means of requiring compliance with the DSSR is normally required. For Defence personnel this is achieved through the chain of command but for non-Defence entities this would normally be accomplished by a contractual arrangement.

14. Where Defence intends to engage a commercial organisation to assist with the conduct of space activities, and they will not be an agent of the Commonwealth, specialist legal advice is recommended.

Foreign military applicability?

15. Absent from the applicability list in this regulation are foreign militaries that may conduct space activities in Australia. This is separately covered at GR.120(c).

(b) A space activity authorisation issued under the Australian SLR Act or by an international space authority for a Defence space activity does not preclude compliance with the DSSR. ►**GM**

Note: The term 'space activity authorisation' encompasses any formal authorisation, approval, instrument, permit, licence, or similar artefact issued by a government authority.

GM GR.120(b) – Effect of external space activity authorisations

1. **Purpose.** The ASA and some international authorities enforce regulations for their national space activities. Authorisations received under those regulations will be issued within the context of their unique legislative, policy and operational environment, and hence their relevance to Defence's particular environment cannot be presumed. The purpose of regulation is to provide clarity on the applicability of extant authorisations.

Defence SSAs

2. Space Safety Authorisations (SSAs) issued by the Defence Space Safety Regulator are contextualised for Defence's unique context, including:

a. Australia's legislative environment (eg SLR Act, WHS Act, Explosives Act, Radiocommunications Act)

b. Defence's policy environment (eg Defence's policies on risk management, ranges and explosives),

c. Defence's operational environment (eg Australia's geography, Defence's space launch experience, etc).

3. International space activity authorisations are likewise contextualised for their national environments. Consequently, international authorisations are unlikely to entirely align with Defence's needs and obligations.

4. Space activity authorisations issued under the Australian SLR Act have greater potential to align with Defence's needs and obligations, given the common reliance on the safety standards inherent in the SLR Act. However, as explained in GM GR.110(a) - which explores the similarities and differences between the SLR Act and DSSR scopes - the DSSR have less coverage in some areas and more coverage in others because they are contextualised for Defence's needs. A notable example is that authorisations under the Australian SLR Act do not take into account the WHS Act obligations for workers and others at a launch site.

5. Consequently, the DSSR remain applicable to all Defence space activities, even where there are extant international authorisations. However, to reduce the regulatory burden on SSA Applicants, GR.210(g)(1) makes provision for extant authorisations to contribute to compliance with the DSSR.

(c) Where Defence intends to sponsor a foreign space activity in Australian territory, the Defence Space Safety Regulator may consult with the Australian Space Agency (ASA) to determine who is the Australian regulatory authority for the activity. ►**GM**

GM GR.120(c) – Foreign space activities in Australian territory

1. **Purpose.** The SLR Act requires persons carrying on various space activities in Australian territory, and Australian nationals carrying on various space activities outside Australia, to have the activities approved. Since Defence is not directly bound by that SLR Act requirement, to maintain a comparable safety standard the DSSP similarly requires Defence to have its space activities approved. However, some space activities may not clearly fall into either category. The purpose of this regulation is to ensure that foreign space activities in Australia that involve Defence, but are not clearly Defence space activities, are regulated by either Defence or the ASA.

Approval of foreign space activities

2. There are likely to be three options for approval of foreign space activities in Australian territory:

a. Option 1: a permit or authorisation is issued under the SLR Act

b. Option 2: The Regulator issues an SSA under the DSSR, or

c. Option 3: Another arrangement, as agreed by the Australian government.

3. Circa 2025, ASA and the Regulator are yet to explore the legal and other issues that might impede or necessitate Options 1 and 2. A collaborative investigation will occur during 2026, and may or may not derive a set of unambiguous criteria for determining which agency should authorise foreign space activities that involve Defence but are not clearly Defence space activities. In the meantime, this regulation recognises that Defence-sponsored foreign space activities in Australia are possible, and makes provision for ASA and the Regulator to collaboratively resolve who should regulate the activity.

4. Option 3 may emerge as a future option for a novel space activity or arrangement if, for example, ASA and the Regulator conclude that neither has the authority to regulate the activity.

Australian Territory

5. The regulation makes reference to ‘Australian Territory’, which is defined in the SLR Act as meaning the following:

a. the territory of Australia and of each external Territory

b. the territorial sea of Australia

c. the waters of the sea on the landward side of the territorial sea of Australia, but not within the limits of a State or internal Territory

d. the territorial sea of each external Territory,

e. the waters of the sea on the landward side of the territorial sea of each external Territory, but not within the limits of the external Territory.

GR.130 Flexibility Provisions

(a) Where an equivalent level of protection to that attained by the application of the DSSR can be achieved by other means, the Defence Space Safety Regulator may approve an exception from those DSSR. ►**GM**

GM GR.130(a) – Exceptions to DSSR via alternative means of compliance

1. **Purpose.** Acceptable Means of Compliance (AMC) is information published by the Regulator to identify a means of meeting one or more requirements of the DSSR. The purpose of this regulation is to provide the Defence space safety community with the flexibility to propose an alternative means of compliance that achieves an equivalent level of safety.

Demonstrating compliance

2. The Defence space safety community is required to either comply with AMC or propose an Alternative Means of Compliance (AltMoC) to the Regulator for approval. AltMoC enables the Defence space safety community to deviate from AMC when they consider another compliance approach achieves an equivalent level of safety but is more appropriate in their circumstance.

3. Any such proposal will be subject to assessment by the Regulator to determine whether the approach is compliant with the safety benchmark inherent in the DSSR (inclusive of the DSSP Manual of Standards (MOS)).

Applying for AltMoC approval

4. An application for AltMoC approval would normally follow this sequence of actions:

a. The Applicant for the SSA identifies an AMC element or MOS specification/standard they consider could more efficiently be achieved by another means

b. The Applicant presents their AltMoC proposal to the Regulator, accompanied by an argument why it achieves an equivalent (or greater) level of safety

c. The Regulator assesses the AltMoC, and if assured the safety benchmark inherent in the DSSR is maintained, provides a formal confirmation to the Applicant

d. The AltMoC in implemented and evidence of compliance is incorporated into the SSA application,

e. The Regulator documents the AltMoC approval on the SSA Certificate, to ensure the SSA Holder remains aware of the AMC departure into the future.

(b) The Defence Space Safety Regulator may allow a credible and defensible level of military space safety performance where an equivalent level of protection to that provided by the application of the DSSR cannot be demonstrated, but can be supported by the application of sound risk management principles. ►**GM**

GM GR.130(b) – Exceptions to DSSR via risk management

1. **Purpose.** The Regulator recognises that Defence is a military force that sometimes needs to operate at levels of risk greater than would normally be accepted by civil space authorities. The purpose of this regulation is to provide the Defence space safety community with the flexibility to propose a DSSR non-compliance that is justified by a military capability imperative.

Exceptions to the DSSR

2. As a military force, Defence must at times operate under levels of risk that exceed those typically accepted by civil space authorities. These elevated risks may arise from:

a. the design and/or production of space objects or facilities not entirely meeting commonly-accepted safety specifications and standards

b. an inability to obtain, for acquired military space objects, adequate disclosure of the design and production specifications and standards

c. operational imperatives necessitating that a space object or facility be operated, despite there being known deficiencies in its design, construction, maintenance or functionality.

3. This regulation allows Defence to operate outside the normal DSSR benchmarks for design, construction, maintenance and/or operation, provided sound risk management principles are applied to the elevated risk and the departure is justified by a military capability imperative.

4. This flexibility provision does not exempt Defence from a duty under the Australian *Work Health and Safety Act* (WHS Act). Consequently, where operations under the flexibility provision are

contemplated, the risks to health and safety of persons must still be eliminated or otherwise minimised SFARP. Provided the Regulator concludes this risk management is credible and defensible in the circumstance, an SSA may be issued.

Justification for an Exception

5. An Exception to a DSSR requirement may be justified where all of the following have been met:

a. there is a relevant capability imperative

b. compliance with an element of the DSSR will impede that capability imperative

c. the proposed approach will eliminate or otherwise minimise safety risks SFARP

d. the residual safety risk has been characterised,

e. Command has agreed to retain that safety risk (and, by extension, has agreed to monitor for future opportunities to eliminate or further minimise the risk).

6. Provided the Regulator is assured the above five prerequisites have been met, the Regulator will issue an 'Exception' to the DSSR. Exceptions are equally relevant to the specifications and standards in the DSSP Manual of Standards (MOS).

Application for Exception approval

7. An application for an Exception to the DSSR would normally follow this sequence of actions:

a. The Applicant for an SSA identifies a regulation, an AMC element or a MOS specification/standard that would unacceptably impede a Defence capability imperative

Note: The Regulator does not 'second-guess' the capability imperative. Rather, the capability imperative, once disclosed, will normally be accepted by the Regulator at face value.

b. The Applicant presents proposed changes to the regulation, AMC or MOS that do not impede the capability imperative, but nonetheless eliminate or otherwise minimise the safety risks SFARP to the Regulator

c. The Regulator assesses whether the argument appears credible and defensible

d. If assured, the Regulator will formally approve the Exception

e. The Regulator will document the Exception on the SSA Certificate, to ensure the SSA Holder remains aware of the regulation/AMC/MOS departure into the future. The accompanying text on the SSA will identify the issue and require the SSA Holder to monitor and review the particular risk throughout the life of the SSA, with the aim of eliminating or further minimising the elevated risk,

f. As part of its ongoing oversight and enforcement activities (see GR.400), the Regulator may assess whether Command's approach to monitoring and reviewing this elevated risk remains credible and defensible.

(c) Commanders may deviate from the substantive requirements laid down in the DSSR in the event of compelling operational imperatives or emergencies.
►**GM**

GM GR.130(c) – Deviations from DSSR requirements in compelling circumstances

1. **Purpose.** The purpose of this regulation is to provide flexibility for operational commanders to deviate from DSSR requirements in the event of compelling operational imperatives or emergencies.

Deviations from DSSR requirements

2. The Regulator issues an SSA when assured that a Defence space activity complies with the DSSR, inclusive of approved AltMoC (GR.130(a)) and Exceptions (GR.130(b)). However, the Regulator also recognises that Defence is a military force that sometimes needs to operate at levels of risk greater than would normally be accepted by civil space authorities, and that an operational imperative may arise at very short notice.

3. This regulation provides flexibility for operational commanders to deviate from DSSR requirement in an emergency or compelling circumstance. Such deviations should only be made where there is insufficient time to seek the Regulator's approval for AltMoC or an Exception.

4. Operational commanders must keep a record of such deviations, and present them to the Regulator:

a. upon request, to contribute to the Regulator's oversight activities, or

b. in the event of substantial departures from the level of safety inherent in the DSSR, within a reasonable time (nominally 7 days) after the emergency or compelling circumstances has concluded.

5. The Regulator will use these notifications to shape its oversight activities per GR.400, plus to determine whether an enduring change to the SSA or the DSSR might be warranted.

GR.140 Legal

(a) Nothing in these regulations supersedes or permits non-compliance with the following: ►**GM**

(1) Australian legislation, regulations, rules or bylaws

(2) United Nations (UN) Treaties that have been ratified by the Australian Government

(3) Defence regulations or higher policies.

GM GR.140(a) – Effect of DSSR on internal and external obligations

1. **Purpose.** The purpose of this regulation is to confirm that the DSSR cannot supersede or permit non-compliance with Australian government direction or higher Defence policies.

Australian legislation, regulations, rules or bylaws

2. Commanders and managers for Defence space activities need to manage their compliance with all Australian government legislations, regulations, rules and bylaws, independently of the DSSR. While the DSSR will assist commanders and managers in those endeavours as they relate to the preservation of human life, this neither diminishes nor replaces any of these requirements.

3. For avoidance of doubt, the DSSR are non-legislative regulations. Consequently, if a DSSR requirement could be construed as superseding or permitting non-compliance with an Australian government requirement, this is inadvertent and incorrect.

4. Should commanders and managers identify a space capability need that is impeded by an Australian government requirement, approval to deviate from that requirement would be pursued through normal Defence channels. That approval, if relevant to the DSSR, will provide the basis for the Regulator to approve an Exception from the DSSR via GR.130(b).

Ratified United Nations (UN) Treaties

5. Australia has signed and/or ratified international Treaties that have the potential to affect Defence's space activities. Six of those Treaties are identified in DSSP Manual Volume 1 Chapter 2. For signed or ratified Treaties, the provisions at paragraphs 2 to 4 above equally apply.

6. In addition to Treaties, the safe and responsible use of space is a topic that continues to be explored by international bodies such as the UN, who may issue standards and guidelines. Where the Australian Government has adopted or ratified these standards or guidelines, the DSSR will direct compliance with them. Furthermore, to promote a consistent approach across Government, Defence will align with the relevant policies and practices of the Australian Space Agency where practicable within the Defence context.

Defence regulations or higher policies

7. The DSSR have been designed to harmoniously co-exist with other Defence regulations and higher policies. In some instances, the DSSR will even promote compliance with those regulations and policies, for example with the Explosive Safety Regulatory Framework (ESRF), cybersecurity policies and electromagnetic spectrum licencing requirements.

8. However, the DSSR cannot direct or authorise a non-compliance with any Defence regulations or higher policies. In the event a conflict is identified, the Regulator should be consulted. Options to temporarily resolve the conflict may include a dispensation from the other Regulator or policy lead, or for the Regulator to approve AltMoC or Exceptions against the DSSR per GR.130(a) or GR.130(b) respectively. The Regulator will then pursue a permanent action to resolve the conflict.

9. **Local policies**. This regulation specifically targets 'higher policies', to avoid the inference that local Unit policies can supersede DSSR compliance. The Regulator's expectation is that local Defence policies will be adapted for compatibility with the DSSR, on the basis that the DSSR reflects 'good practice' in space safety and therefore presents a credible and defensible benchmark. However, if this approach is rejected by the local policy sponsor, options include the following:

a. If the local policy retains an equivalent level of safety to the safety benchmark in the DSSR, approval via AltMoC (per GR.130(a)) will usually be possible,

b. If the local policy presents an elevated risk to the safety benchmark inherent in the DSSR, approval of an Exception via GR.130(b) will only be considered by the Regulator if the accompanying risk management is assessed as credible and defensible. Otherwise, issue of an SSA may be precluded.

GR.200: Space Safety Authorisation

GR.210 Issue of a Space Safety Authorisation

(a) A Space Safety Authorisation (SSA) must be obtained before commencing a Defence space activity within the scope of the DSSP. ►**GM**

GM GR.210(a) – SSA required prior to Defence space activities

1. **Purpose.** The Defence Instruction, Military Command Support Provision 3, identifies the issue of SSAs as a requirement for space launches, returns, payloads and launch facilities. The purpose of this regulation is to prevent unintended non-compliance by clarifying that SSAs are required prior to commencing Defence space activities.

Space activity commencement

2. SSAs are cornerstone to the DSSR. An SSA is a formal declaration by the Regulator that:

a. the Applicant has provided evidence that targeted space safety behaviours have been met

b. the Regulator has completed independent assurance of that evidence and concluded either:

(1) it demonstrates compliance, or

(2) the imposition of Conditions and/or Limitations on the SSA (see GR.210(g)(2)) will maintain a credible and defensible level of safety.

c. the SSA Holder has agreed to ensure the space activity remains compliant with the DSSR.

3. An SSA must be granted prior to commencing a Defence space activity, to ensure the entire safety-related lifecycle of the space activity is covered. While the three DSSR Parts provide further guidance, the commencement of a Defence space activity is generally as follows:

a. Operation of a space launch facility: The commencement of the launch sequence for the first space launch at the facility (see GM to GR.110(b)(1))

b. A space launch: The commencement of the launch sequence (see GM to GR.110(b)(2))

c. A space return: The first actions that initiates the return sequence (see GM to GR.110(b)(2)),

d. Payloads and orbital operations. The insertion of a satellite or satellite payload into a launch vehicle, or the point in time where Defence assumes control over an orbiting satellite or payload (see GM to GR.110(b)(3)).

4. The activities at paragraphs 2a and 2b can be complex, often requiring considerable effort by the Applicant and the Regulator. The Applicant should therefore liaise with the Regulator early in the capability development phase, to agree on the actions and schedule to achieve a timely SSA.

5. Finally, it is worth emphasising that an SSA does not approve the commencement of a particular space activity. That always remains a Command decision.

(b) The following SSAs are available under the DSSR: ►**GM**

(1) launch facilities must achieve a licence in accordance with DSSR Launch Facility Licence (DSSR.LFL)

(2) launches and/or returns must achieve a permit in accordance with DSSR Launch and/or Return Permit (DSSR.LRP)

(3) payloads and orbital operations must achieve a permit in accordance with DSSR Payloads and Orbital Permit (DSSR.POP).

GM GR.210(b) – SSAs available under the DSSR

1. **Purpose.** The DSSR currently regulate three space activities, namely launch facilities, space vehicle launches/returns, and payloads and orbital operations. The purpose of this regulation is to identify the SSAs available under the DSSR.

Available SSAs

2. The DSSP Manual Volume 1 broadly defines the scope of the DSSP, while the Guidance material associated with GR.110 provides further refinement, as follows:

a. GM to GR.110(b)(1) – Scope of the DSSR: Launch Facilities

b. GM to GR.110(b)(2) – Scope of the DSSR: Launches and Returns,

c. GM to GR.110(b)(3) – Scope of the DSSR: Payloads and Orbital Operations.

3. The three Defence space activities covered by the DSSR (ie launch facilities, space vehicle launches/returns, and payloads and orbital operations) each have a dedicated DSSR Part. Each DSSR Part identifies the prerequisites for issue of an SSA.

4. Some space activities may need more than one SSA. For example, a launch vehicle to be launched from a new Defence launch facility and carrying a Defence satellite could potentially require all three SSAs. However, the majority of Defence space activities will require a single SSA.

5. Where a space activity is not obviously covered by any of the three DSSR Parts, the Regulator may:

a. prescribe supplementary regulations to one of the DSSR Parts to cover the intended space activity and issue an SSA under that Part, per GR.210(c)

b. issue a bespoke SSA covering specified conduct that might otherwise be precluded under the three Parts, per GR.210(d),

c. conclude the DSSR will not materially contribute to the safety of the space activity, and recommend to the Defence Spaceworthiness Authority that the DSSR not be applied to that activity (and therefore an SSA will not be issued), per GR.110(c).

Entry to the DSSR Parts

6. In addition to identifying the three DSSR Parts and the three available SSAs, this regulation provides an entry point to the three DSSP Parts. By providing an entry point from within the GR, it emphasises that the GR are always applicable to Defence space activities within scope of the DSSP.

(c) Where a Defence space activity includes designs or operations beyond those embodied in DSSR.LFL, DSSR.LRP or DSSR.POP, the Defence Space Safety Regulator may prescribe supplementary regulations. ►**GM**

GM GR.210(c) – Space activities extending beyond DSSR bounds

1. **Purpose.** To reduce their complexity, the DSSR coverage is limited to reasonably conceivable Defence space activities over the next 5-10 years. The purpose of this regulation is to make provision for the Regulator to expand the regulations for atypical space object configurations or activities.

2. The extant DSSR purposely exclude space object configurations or activities that:

a. provide capabilities that Defence is unlikely to pursue in the foreseeable future, for example crewed space objects, operations beyond the Earth's orbit, operations to a celestial body, and so on

b. provide capabilities where international regulations and policies are not yet publicly available or still evolving, for example on-orbit life extension or maintenance, weaponised spacecraft, and so on,

c. are highly novel, and therefore likely to present novel hazards (which, by their nature, are difficult to generically regulate).

3. Should a Defence space capability requirement emerge that is not encompassed by the extant DSSR, the Regulator will choose the DSSR Part that most closely aligns with the proposed space activity or configuration, and then supplement it to address the additional safety hazards of the space activity. Applicants should contact the Regulator early in the development process if they intend to pursue this regulatory avenue.

4. In the event that none of the DSSR Parts is suitable for a novel space activity, GR.210(d) makes provision for the Regulator to issue a bespoke SSA.

(d) By way of exception from GR.210(b) and GR.210(c), the Defence Space Safety Regulator may issue a bespoke SSA covering specified conduct that might otherwise be precluded or impracticable under DSSR.LFL, DSSR.LRP or DSSR.POP. ►**GM**

GM GR.210(d) – Bespoke SSA

1. **Purpose**. To reduce complexity, the DSSR coverage is limited to reasonably conceivable Defence space activities over the next 5-10 years. However, it is quite possible that a novel space activity emerges that is significantly outside that scope. The purpose of this regulation is to make provision for the Regulator to issue a bespoke SSA, so that Defence can still benefit from safety regulation without diminishing Defence capability effects.

Novel space activities

2. GR.210(c) allows the Regulator to supplement the DSSR Parts if a space activity presents hazards that are not entirely covered by the extant DSSR Parts. However, it is possible for a space activity to be so novel that it is patently unsuited to the three DSSR Parts and their associated SSAs, even with tailoring, for example:

a. the inherent hazards are extensively misaligned to the extant DSSR Parts, so supplementing those Parts is not practicable

b. the inherent hazards may span elements of multiple DSSR Parts, in which case a single bespoke SSA may be more useful than several heavily tailored SSAs

c. the inherent hazards are so narrowly focused that the application of the extant DSSR Parts would constitute gross over-regulation (even with tailoring),

d. other considerations may lead the Regulator to conclude that a bespoke SSA is in Defence's best safety interests.

5. Applicants should contact the Regulator early in the development process if they intend to pursue this regulatory avenue.

Note: This regulation reflects a similar provision in the SLR Act, Section 46U, which states, "The Minister may issue to any person an authorisation certificate covering specified conduct that might otherwise be prohibited by section 11, 12, 13, 14, 15 or 15A".
(SLR Act Sections 11-15A cover the requirement for licences and permits for space activities)

(e) Where the DSSR directs compliance with the specifications and standards in the Defence Space Safety Program Manual of Standards (MOS), those specifications and standards form part of the DSSR. ►**GM**

GM GR.210(e) – The Defence Space Safety Program Manual of Standards

1. **Purpose**. The Acceptable Means of Compliance (AMC) to the DSSR Parts can be sizeable, and may continue to grow as Defence's space safety knowledge expands. For readability, the Regulator consigns much of the detailed compliance information to the DSSP Manual of Standards (MOS - hereafter 'the MOS'). The purpose of this regulation is to empower the MOS through declaring that it forms part of the DSSR.

The DSSP MOS

2. The MOS, supports the DSSR by providing detailed technical and operational material. It may include standards and guidelines (tailored to Defence's context) for the design and manufacture of space systems, detailed descriptions of the way in which a space service or facility should operate, and other detailed material that contributes to Defence space safety. This information is derived from international good practice specifications/standards/procedures where practicable, adapted to Defence's unique context.

3. The MOS is effectively part of the AMC for a regulation. Normally, the AMC will prescribe what needs to be done to demonstrate compliance with the regulation, while the MOS will prescribe how it should be demonstrated. For example, an AMC might require a particular test to demonstrate compliance with a regulation, while the MOS might prescribe the specifications/standards/procedures for conducting the test.

4. Prescribing these specifications/standards/procedures separately in the MOS has a number of advantages:

a. the MOS content can require periodic updates as Defence's space safety knowledge expands, whereas the Regulator's preference for AMC is that it remains more stable

b. it provides designers of space objects, facilities and operations with a single structured repository for all specifications/standards/procedures,

c. reducing the size of the AMC can markedly improve readability, which is helpful to readers exploring the meaning and requirements of a particular regulation.

5. Since the MOS expands on AMC, a non-compliance with the MOS constitutes a non-compliance with AMC, and consequently failure to meet a regulation. However, just like AMC, Applicants are entitled to propose an alternative way of meeting MOS requirements that present an equivalent level of safety, per GR.130(a). Additionally, where a capability imperative does not allow a MOS element to be met in its entirety, the Regulator may still issue the SSA provided the elevated safety risks are minimised SFARP, per GR.130(b).

6. Finally, from time to time the MOS may recommend (not mandate) emerging 'good practice' that is not yet widely accepted/implemented, if the Regulator concludes it could increase the level of safety beyond DSSR safety benchmarks. Applicants use their judgement whether to meet a recommended requirement.

(f) An Applicant for an SSA must ensure the written application: ►**GM**

GM GR.210(f) – Applicant for an SSA

1. **Purpose.** Compliance with relevant DSSR Part must be demonstrated before the Regulator can issue an SSA. While many different people and organisations usually contribute to that compliance, for practicality a single entity applies for the SSA. The purpose of this regulation is to define the role of an 'Applicant' for an SSA.

Eligibility to be an Applicant

2. Per GR.210(h), the Regulator issues an SSA to a person in a role with the authority and resources to fulfil the SSA Holder responsibilities. The prospective SSA Holder is therefore an obvious candidate for submitting the application for an SSA. However, the Regulator recognises that Defence's space procurement, management and operations may be completed by separate organisations. As such, someone outside the prospective SSA Holder's organisation may be better placed to compile the DSSR compliance evidence. Consequently, the person submitting the application (termed the 'Applicant') can be, but does not need to be, the prospective SSA Holder.

3. There are no rank/authority/position/qualification limitations on who can be an Applicant. However, the Regulator must ultimately be satisfied that compliance with the DSSR has been demonstrated, and some of that evidence is likely to require a level of knowledge and authority that is not

available to a less experienced member. Consequently, if a junior member is an Applicant, formal attestations from more senior members for certain evidence may still be needed - for example, confirmation that safety risks have been eliminated or otherwise minimised SFARP.

(1) demonstrates compliance with DSSR.LFL, DSSR.LRP or DSSR.POP
►**GM1** ►**GM2**

GM1 GR.210(f)(1) – Demonstration of compliance

1. **Purpose.** The Regulator may issue an SSA only when assured that compliance with relevant DSSR have been demonstrated. The purpose of this regulation is to declare the need to demonstrate compliance with the relevant DSSR Part.

Demonstrating compliance

2. An application for an SSA can be made once the Applicant has ensured that evidence of compliance with every requirement of the relevant DSSR Part has been produced. Evidence of compliance against GR is not required.

3. This evidence may be in the form of design documents, analyses, safety assessments, test reports, approved procedures, organisational descriptions, training requirements for key personnel, compliance statements, and so on. The type and extent of evidence is sometimes defined in the AMC; in other cases, the organisation(s) will decide what evidence is needed to demonstrate compliance with the outcome specified in the AMC. The compliance evidence will either reflect what has been achieved (eg for the design of a satellite) or is likely to be achieved once the space activity commences (eg for the operation of a satellite). It is preferred that evidence of compliance is provided directly from working documents established within the organisations responsible for behaviours being targeted by the DSSR.

Regulator assessment

4. The Regulator will assess the evidence on a non-exhaustive basis. The depth of assessment may be influenced by the novelty and complexity of the space activity, the domain experience of the organisation(s), the potential safety effects of a non-compliance, and so on.

5. To support this assessment, the SSA application may include an index to the evidence, cross-referenced to the DSSR requirements. The Applicant may submit an evidence package to the Regulator, or wait for the Regulator to identify what evidence will be assessed.

6. Where the evidence is for future activities (eg operation of a satellite), the Regulator may initially assess the potential for compliance

with the DSSR, and confirm actual compliance via later oversight activities per GR.300.

GM2 GR.210(f)(1) – Safety risk benchmarks

1. Quantitative safety risk benchmarks are employed in DSSR.LRP and DSSR.LFL. To avoid repetition, this GM introduces the concept of quantitative safety benchmarks, for reference in the DSSR Parts.

2. The SLR Act, via the Flight Safety Code issued by the Australian Space Agency (ASA), employs quantitative benchmarks to assess whether certain launch and return activities are safe. Several major space authorities, including the US Federal Aviation Administration, the USAF Safety Center and the UK Civil Aviation Authority, do likewise.

3. The Regulator accepts that quantitative benchmarks represents international good practice for assessing whether certain launch and return activities are safe. In the context of the WHS Act, they can present a source of 'reasonable knowledge', contributing to an assessment that safety risks have been eliminated or otherwise minimised SFARP.

4. Meeting quantitative benchmarks is pivotal to Launch and/or Return Permits under DSSR.LRP, a contributor to Launch Facilities Licences under DSSR.LFL, and perhaps a contributor to Payloads and Orbital Permits under DSSR.POP. The following sections explore the application of quantitative benchmarks.

Personnel groupings

5. To provide granularity in the application of quantitative benchmarks, the DSSR identifies three categories of people:

a. ***Mission Essential Personnel***: All persons directly associated with the launch, return or in orbit operation of a space object, or briefed as part of the mission. Mission Essential Personnel (MEP) may, depending on the mission, include civilians, Defence personnel, and/or foreign military personnel. MEP must be aware of the operations, the associated hazards and be essential to the conduct of the space activity.

b. ***Informed Personnel***: Informed Personnel are personnel not directly involved in the launch/operation/return of the space object; however, they are reasonably informed of the space activity. Depending on the space activity, Informed Personnel may include Defence personnel and/or foreign military personnel and/or civilians. Examples include other range users attending daily range conferences/mass air briefs and/or personnel reasonably informed by sentries or signage of the space activity.

c. ***General Public***: The General Public includes all people that are neither MEP ,or Informed Personnel. This definition applies to all people regardless of whether they are in some mode of transportation (such as airplanes, ships, buses and crewed spacecraft), are within a structure, or are unsheltered. The General Public may, depending on the space mission, include civilians, astronauts, Defence personnel and/or foreign military personnel.

6. While safety risks to all three groups must be eliminated or otherwise minimised SFARP, there may be differences in the level of residual risk that may justified by Defence's operational needs. DSSR.LFL and DSSR.LRP both make use of these categories of people, and provide relevant requirements and guidance.

Risks to non-ADF members

7. Each of the above three categories of people will probably include people who are not members of the ADF. If a Defence space activity presents an elevated level of risk (nominally beyond the risk levels permitted by ASA's Flight Safety Code for civil launch and return activities), Defence may need to apply additional risk management.

8. While the WHS Act does not prevent Defence conducting space activities that present an elevated safety risk to people who are not members of the ADF, Defence must still do all that is reasonably practicable to minimise those risks. Some of these risk management measures are not intuitive, for example a 'duty to consult' with affected persons and others under the WHS Act, which can present additional options for eliminating or minimising safety risks.

9. The Defence aviation advisory circular, AC 002-2022, *Management of Aviation Risks to People Who Are Not Members of the ADF*, is available on the DASA Intranet website. While this advisory circular is targeted at Defence aviation activities, the content is extensively applicable to Defence space activities.

Risk groupings

10. DSSR quantitative risk benchmarks are presented in DSSR.LFL and DSSR.LRP, assigned against the following three risk criteria:

a. ***Individual risk:*** Individual risk is the risk to a single person exposed to a launch or return, or a series of launches or returns. Individual risk is normally expressed as the probability that an individual will become a casualty due to all hazards from an operation at a specific location. It may be assessed on both a per-launch and per-year basis.

b. ***Collective risk:*** Collective risk is the total risk to all individuals exposed to any hazard from an operation. Collective risk is normally the mean number of casualties predicted to result from all hazards associated with an operation, specified as either for a mission or per year. The collective risk should include the aggregated and accumulated risk.

c. ***Catastrophic risk:*** Catastrophic risk criteria is designed to protect against scenarios involving numerous casualties or fatalities.

11. The first two terms are also employed in ASA's Flight Safety Code, both on a 'per launch' basis. While the third term is not specifically employed, but is used in the DSSR for Defence compatibility, the Flight Safety Code does employ a similar concept when defining benchmarks for 'assets with catastrophic potential', referring to debris that could initiate a chain of events that could produce many casualties.

12. Individual risk is a useful decision tool where some individuals are exposed to significantly higher risk than others are, but is less useful where an activity exposes all individuals to broadly the same level of risk. Collective risk describes via a single number the total risk for an activity, and is therefore always a useful decision tool. Catastrophic risk is often used as a go/no-go criterion, and is particularly useful for risks presented to aircraft and ships due to the likely large numbers of fatalities.

13. Further information on these risk criteria is available in ASA's *Flight Safety Code* and the US Range Commanders Council document RCC 321-23, *Common Risk Criteria Standards for National Test Ranges*.

(2) identifies the intended SSA Holder ►**GM**

GM GR.210(f)(2) – Identifying the SSA Holder
1. **Purpose.** GM to GR.210(f) accepts that the Applicant for an SSA may not be the prospective SSA Holder, or even from the same organisation. The purpose of this regulation is to require identification of the proposed SSA Holder. 2. Where the Applicant is not the prospective SSA Holder, the Applicant must provide evidence that the prospective SSA Holder understands the duties of the role, and agrees to take those duties on.

(3) presents an exposition for how the SSA Holder will execute their duties. ►**GM**

GM GR.210(f)(3) – SSA Holder Exposition
1. **Purpose.** The purpose of this regulation is for the prospective SSA Holder to document how the duties will be executed.

Documenting SSA Holder arrangements

2. While SSA Holder duties are not usually onerous, they can be complex. This complexity increases when some of the duties will be executed (or rely on input) outside the SSA Holder's chain of command - potentially by another Defence organisation, a contractor, another government agency, or another military. Regardless of the arrangements, the Regulator requires the prospective SSA Holder to document how they intend to execute the SSA Holder duties. Each DSSR Part includes a regulation entitled "Duties of the SSA Holder", which provides a basis for identifying the duties.

3. There is no mandated title or format for this documentation. It could be a single document presenting all relevant arrangements and processes, or it could present an index to extant processes that already document these duties, or more commonly something in between. Importantly, the documentation must identify all other positions or organisations that will execute particular SSA Holder duties, including acceptance of those duties where acceptance is not implicit through a direct chain of command.

4. This documentation is termed an 'exposition' under the DSSR, and must be maintained throughout the life of the SSA.

(g) In evaluating an application for an SSA, the Defence Space Safety Regulator may:

(1) recognise relevant national and international space activity authorisations as contributing to the SSA application ►**GM**

GM GR.210(g)(1) – Recognition of external space activity authorisations

1. **Purpose.** Several international government authorities issue authorisations for their national space activities. To promote efficiency in the DSSR, this regulation enables SSA Applicants to leverage those extant authorisations when applying for an SSA under the DSSR.

Note: The term 'space activity authorisation' encompasses any formal authorisation, approval, instrument, permit, licence, or similar artefact issued by a government authority.

Recognition

2. To promote efficiency in the DSSP, the Regulator may recognise that another space safety authority has provided an authorisation for a space activity that is relevant to a proposed Defence space activity. For example, Defence could purchase a USA launch vehicle for launch from Australia, and that vehicle has a US Federal Aviation Administration (FAA) authorisation.

3. Leveraging off an extant authorisation (termed 'recognition') can assist the Applicant for an SSA, through reducing the need to produce their own DSSR compliance evidence, on the basis that a recognised authority has already

assessed that evidence. It may also assist the Regulator, through avoiding the repetition of credible independent safety assurance.

Authorisations recognised by the Regulator

4. While the Regulator's preference is for the government authority issuing the Authorisation to be organisationally independent from the body performing the space activity, several space agencies successfully employ an approach of functional independence - just as Defence does for aviation and space safety.

5. On the basis of their experience and past performance, the Regulator currently recognises space authorisations issued by the following agencies:

a. the Australian Space Agency (ASA)

b. the United States Federal Aviation Administration (US FAA)

c. the United States Space Force (USSF)

d. the National Aeronautics and Space Administration (NASA),

e. the United Kingdom Civil Aviation Authority (UK CAA).

6. Should an Applicant wish to leverage off an authorisation from an agency not included in the above list, the Regulator will evaluate the experience and performance of that issuing agency.

Leveraging off an extant Authorisation

7. When applying to the Regulator for an SSA, an Applicant may seek to leverage off an extant external authorisation. This may provide the Applicant with partial or full relief from producing their own evidence to show compliance with requirements of DSSR, as follows:

a. Full relief - where the extant authorisation covers the full scope of a particular DSSR requirement

b. Partial relief - where the extant authorisation:

(1) covers only part of a DSSR requirement,

(2) does not fully encompass Defence's unique context, and/or

(3) is underpinned by risk treatments that require re-assessment in Australia's legislated context (eg the WHS Act requirement that risks must be eliminated or otherwise minimised SFARP).

8. When applying to the Regulator for 'relief' based on an extant authorisation, the Regulator must be satisfied that:

a. the external authority must have a credible and defensible approach to issuing this particular type of authorisation

b. that approach must have been applied in this particular instance (or, if not entirely applied, any deltas must be understood)

c. Defence must fully understand the requirements applied by the authority in issuing the authorisation (so Defence can cover any gaps),

d. any safety risk treatment decisions approved by the authority (eg limitations, risk retention, etc.) must have been disclosed to Defence.

9. The Regulator may request additional information to support the application. Applicants are encouraged to engage early with the Regulator when proposing to leverage off an extant authorisation.

10. **Authorisations under the SLR Act.** Leveraging off extant Australian licences and permits can contribute extensively to compliance with the DSSR, since these authorisations have the advantage that they assess compliance with the SLR Act, and the DSSP is similarly aligned. However, as noted in GR.110(a), the DSSP is purposely broader in scope than the SLR Act, so an SLR Act instrument may not cover all DSSR requirements. For example, the DSSR also addresses Defence's safety responsibilities for workers and associated personnel, plus the DSSR has a clearer focus on orbital safety.

(2) impose Conditions and/or Limitations on the SSA. ►**GM**

GM GR.210(g)(2) – Conditions and Limitations on an SSA

1. **Purpose**. An application for an SSA may show temporary deficiencies against the DSSR, but nonetheless the space system might still be capable of safe operation within a limited scope. The purpose of this regulation is to enable the Regulator to issue an SSA with Conditions and/or Limitations that retain a credible and defensible level of space safety.

Conditions

2. To reduce schedule risk, commanders and managers are encouraged to achieve an SSA well before the commencement of their space activity. However, this may mean that compliance with some DSSR elements may not yet be fully established. As a matter of pragmatism, the Regulator may still issue the SSA, provided the SSA Holder agrees to implement a compliant system prior to an agreed event or time. This agreement will be recorded as a Condition on the SSA. Generally, Conditions:

a. will include an applicability date or requirement (eg 'prior to Jun 2026' or 'prior to first operation')

b. may eliminate an elevated risk, or may reflect an agreed temporary risk retention

c. are used sparingly; if numerous Conditions are needed, it may indicate that an SSA is not yet justified

d. are normally temporary; all parties should endeavour to implement enduring system or program improvements so that the Condition becomes redundant and can be removed.

3. A Condition may also result from a deficiency in the DSSR, requiring the SSA Holder to take certain actions in advance of a DSSR amendment being published.

Limitations

4. Limitations are a risk management tool that restricts what space activity can be performed. A Limitation may be applied when the proposed space activity does not meet an element of the DSSR, and the Regulator concludes a limitation on the conduct of the space activity is necessary to maintain a credible and defensible level of space safety.

5. Generally, Limitations are designed to eliminate or minimise an elevated safety risk, through restricting the specific actions that can be performed. Limitations may be temporary (ie removed once the deficiency has been resolved) or enduring (ie remaining on the SSA to ensure the continued visibility of the deficiency).

Documenting Conditions and Limitations

6. Conditions and Limitations are documented on the SSA Certificate. When the SSA Holder has resolved the issue that led to the Condition or Limitation, the Regulator will formally confirm that the Condition or Limitation is no longer applicable, and will re-issue the SSA.

7. Conditions and Limitations form an essential element of the SSA, so non-compliance may result in suspension of the SSA per GR.440(a)(2).

(h) The Defence Space Safety Regulator will issue the SSA to a person in a role with the authority and resources to fulfil the SSA Holder duties. ►**GM**

GM GR.210(h) – Capacity to hold an SSA

1. **Purpose.** The Regulator issues an SSA at a point in time, once assured the requirements of the DSSR have been met (or the Regulator has agreed to any departures from the DSSR). For the Regulator to be assured of the continued validity of the SSA, the SSA is issued to an SSA Holder. The purpose of this regulation is to define who can be an SSA Holder.

The SSA Holder

2. The SSA Holder is a person rather than an organisation, to ensure a single focus for safety accountability. However, recognising the transient nature of Defence postings, the Regulator issues the SSA to a position title rather than to an individual.

3. The SSA Holder duties do not need to be undertaken personally by the SSA Holder. Rather, they may be undertaken on their behalf by other persons or organisations, provided the SSA Holder can show that there is an agreement with the persons or organisations to ensure the Holder's duties will be properly discharged, per GR.210(f)(3).

Requirements for an SSA Holder

4. The Regulator will not normally issue an SSA to a commercial organisation. Rather, the SSA Holder would normally hold a role in a government entity, to ensure the SSA remains a sovereign authorisation that cannot be impeded by commercial or other considerations.

5. The Regulator does not stipulate particular rank or seniority requirements for an SSA Holder. Generally, however, the SSA Holder will need to be a senior position, so it has the authority to execute all SSA Holder duties. Prior to issuing the SSA, the Regulator will assure that the position:

a. is enduring (eg not a position in an acquisition project office)

b. is suitably placed to implement arrangements with external contributors

c. has the authority to effectively deal with the commanders and managers that own, operate and/or manage the space activity

d. has the resources to periodically monitor the execution of SSA Holder duties,

e. has the power to enforce compliance with Conditions/Limitations and DSSR requirements such as occurrence reporting.

6. While no explicit qualifications, training and experience (QTE) are mandated for the SSA Holder, nonetheless the Holder is expected to possess, or have direct access to staff with:

a. space domain knowledge relevant to the topic of the SSA

b. an awareness of the role of regulation and Regulators in Defence

c. an understanding of the aims and structure of the DSSP

d. an understanding of the relevant DSSR,

e. a deep understanding of the SSA Holder duties.

(i) For the duration of the SSA, the SSA Holder must: ►**GM**

(1) sustain the safety controls submitted as part of the SSA application
(2) meet the SSA Holder duties as set out in:
  i. DSSR.LFL, DSSR.LRP or DSSR.POP
  ii. GR.300 and GR.400.
(3) promote a generative safety culture
(4) meet any additional SSA Holder duties that may be levied under the SSA
(5) advise the Defence Space Safety Regulator of any change or development that might affect or invalidate the SSA
(6) upon vacating the role, ensure the successor understands and accepts the SSA Holder responsibilities
(7) recognise that the Defence Space Safety Regulator may suspend, modify or revoke the SSA.

GM GR.210(i) – Duties of an SSA Holder

1. **Purpose.** The SSA Holder is a key position for maintaining the future safety of Defence space activities. The purpose of this regulation is to identify the safety behaviours expected of SSA Holders.

SSA Holder core duties

2. When applying for an SSA, the Applicant submits evidence that safety controls meeting the requirements of the DSSR have been implemented. Some safety controls become redundant once the space activity commences (eg configuration control of the launch vehicle), but some endure for the life of the space activity (eg configuration control of satellite software). The SSA Holder is expected to maintain the integrity of the latter controls for the life of the safety activity.

3. In addition to maintaining the integrity of the original safety controls, the three DSSR Parts identify technical and administrative activities to be completed by the SSA Holder to maintain the safety of the space system. For example, SSA Holders of a Payloads and Orbital Permit (POP) must advise the Regulator of changes to orbital parameters, identify/investigate/report safety occurrences, and cooperate with the Regulator's oversight and enforcement activities.

4. Cognisant that space safety is evolving internationally, the DSSR will also evolve. From time to time, the Regulator may identify a notable contributor to space safety that is not covered by the DSSR, and may levy additional duties on the SSA Holder. Additional duties might also be prompted by changes to Australian legislation or Defence policies.

5. To reinforce the primacy of the SSA Holder in managing space safety, SSA certificates include the following statement: "*For the duration of this SSA, the SSA Holder is to meet all SSA Holder requirements per GR.210(i) and (eg) DSSR.POP.xxx*"

Promoting a generative safety culture

6. Compliance with the DSSR provides a foundational, mandatory level of space safety. A generative safety culture involves an organisation's proactive, voluntary commitment to space safety that goes beyond mere rule-following to embed safety into daily thinking and behaviours. It aims to prevent harm through continuous improvement and open communication rather than just meeting minimum standards.

7. A generative culture builds upon compliance, using it as a structure while fostering a proactive, engaged approach to space safety. Importantly, it must be underpinned by a 'just' culture that does not focus on apportioning blame (but nonetheless is intolerant of actions that are negligent or cause deliberate harm).

8. The requirement for a generative approach to space safety is identified in GM to GR.310(a), GM to GR.320(a) and the 'safety management system' requirements in each of the three DSSR Parts. The SSA Holder is to champion and engender a generative safety approach throughout the lifecycle of the space activity.

Advising the Regulator of changes

9. The SSA Holder must notify the Regulator of any change or development in the space activity that may affect the level of safety evidenced in the SSA application.

10. As a matter of pragmatism, the SSA Holder should exercise judgement in complying with this regulation. The SSA Holder would be expected to notify the regulator when a change to the safety of the space activity is non-trivial or significant. This would include significant changes to the design, operation or other conditions that result in an appreciable effect on the safety of the space activity. Put another way, notification would normally be warranted by any change that, had the Regulator been aware of it during the initial SSA application, they may have paid it particular attention.

11. If the SSA Holder concludes a change is appreciable and warrants notification to the Regulator, they should provide:

a. a description of the nature of the change, including why the change has/will occur

b. identification of the DSSR regulations affected by the change,

c. how the affected regulations will be met as a result of the change.

Vacating the SSA Holder position

12. Cognisant of the transient nature of military postings, the Regulator issues the SSA to a position, not a person. Hence, when the incumbent vacates the position, the SSA Holder duties automatically pass to their successor, without the need to engage the Regulator. The SSA Holder must ensure their successor understands and accepts those duties, and that the Regulator is notified of the SSA Holder change.

Suspending, modifying or revoking an SSA

13. In exceptional circumstances, where the Regulator considers it essential to maintain a sufficient level of space safety, the Regulator may suspend, modify or revoke an SSA.

14. An SSA modification would be imposed where marked departures from the DSSR or an emergent safety issue has been identified, but the Regulator is satisfied they are localised, and safety can be maintained provided additional Limitations or Conditions are applied to the SSA. Suspension or revocation of an SSA is an extreme measure, reflective of the Regulator becoming aware of pervasive and significant departures from the DSSR that may present a marked reduction in the level of space safety. GR.440(a) describes the consequences of such an action.

Support from the Regulator

15. While the SSA Holder duties are not onerous, they can be complex. The SSA Holder has the right to reasonable support from the Regulator and their staff in executing these duties. This includes education/promotion on the role, interpretation of regulations, guidance on establishing a generative safety culture to complement the regulatory requirements, and any other required support.

16. Oversight and enforcement per GR.400 will be motivated by a shared goal to improve the SSA Holder's safety performance.

(j) The Defence Space Safety Regulator may cancel an SSA when the following conditions are met: ►**GM**

(1) For space facilities: the facility ceases to be used for space launches

(2) For space launches and returns: all space activities within the scope of the SSA are completed

(3) For payloads and orbital operations:

i. all included space objects cease to present a space safety hazard, or

ii. Defence ceases to hold any liability for the space objects and associated operations.

GM GR.210(j) – Cancellation of an SSA
1. **Purpose.** An SSA nominally remains active for as long as the Defence space activity continues to present a risk to human life and Defence has the obligation to manage that risk. The purpose of this regulation is to identify the conditions where the Regulator may cancel an SSA. **Conclusion of a space activity** 2. Managing the ongoing safety of Defence space activities, as reflected in the SSA Holder duties, consumes Defence resources. While this cost is expected while the space activity is contributing to Defence capability, it can become unwelcome once the capability need has expired. SSA Holders may therefore seek to cancel an SSA at the earliest opportunity, nominally as follows: a. ***Launch facility.*** An SSA for a launch facility issued under DSSR.LFL can be cancelled at any time. If future space launches are required from the facility, either the launch facility licence will need to be reinstated, or launch at the facility can be approved as part of the launch permit under DSSR.LRP. b. ***Launch.*** The end point for a launch SSA will be proposed by the Applicant and agreed by the Regulator. The launch SSA will nominally be cancelled when either the launch vehicle or its components cease to present a risk to human life, or the ongoing management of that risk is now subject to a separate SSA. For SSAs that cover multiple launches, the SSA ending and beginning cycle will repeat. c. ***Return.*** The end point for a return will be proposed by the Applicant and agreed by the Regulator. The end of a return nominally occurs when the space object has been returned to the earth and no longer presents an immediate threat to human life. d. ***Payloads and orbital operations***. The safety management obligations for payloads and orbital operations, and therefore the SSA, continue until either the risk to human life has ended, or Defence is relieved of any safety obligation. This might occur when: (1) the space object completes its atmospheric demise, or commences its return under a Return Permit (2) the space object is passivated and placed into a permanent graveyard orbit

Note: Passivation refers to permanently depleting, irreversibly deactivating, or making safe all on-board sources of stored energy on the payload capable of causing a break-up.

(3) the space object ownership fully transfers to a non-Defence entity
(4) there is an accident or incident where the space object is destroyed.

3. The cessation of Defence's liability under the UN Liability Convention, as discussed in GM3 to GR.110(a), may provide some insight into whether Defence has been relieved of its safety obligations. However, specialist legal advice may be needed to confirm no residual obligations exist.

Planning and resourcing

4. Since the conditions listed in paragraph 2 might transpire years after the Defence mission is completed, these extended safety obligation may need to be planned and resourced during the capability development phase.

GR.220 Conducting Space Activities

(a) Prior to the conduct of any Defence space activity within the scope of the DSSP, commanders and managers who are responsible for the activity must: ►**GM**

GM GR.220(a) – Obligations on commanders and managers

1. **Purpose.** Commanders and managers who are responsible for conducting space activities may not be in the command chain of the SSA Holder, or may be functionally removed and/or geographically isolated. Recognising the management of some space safety risks can be temporal and contextual, the DSSR therefore imposes certain obligations directly on the people operating the space activity, rather than on the SSA Holder. The purpose of this regulation is to identify those obligations.

Tactical safety obligations

2. GR.210(i) identifies the SSA Holder as a key contributor to space safety, responsible for implementing and maintaining long-term safety risk controls. However, some space safety risks need to be evaluated proximate or during a particular space activity. While the SSA Holder could assume this responsibility through approving procedures and authorising delegates to make risk management decisions, this may be impractical if the SSA Holder is outside the command chain for the space activity.

3. The DSSR therefore levies certain requirements on the people who are directly commanding or managing the space activity, collectively termed 'commanders and managers'. The division of responsibilities is generally as follows:

a. The SSA Holder will establish and maintain the arrangements, systems and procedures for safely conducting the safety activity,

b. Commanders and managers responsible for the direct execution of the space activity will manage safety risks when making operational decisions. The commander or manager must ultimately confirm that safety risks have been eliminated or otherwise minimised SFARP (in the circumstance), per GR.220(a)(3).

4. Another advantage of separating commanders from the SSA Holder is that certain risk management decisions can only be made by military commanders, for example exposing military members and others to elevated levels of risk when required to achieve a capability imperative. With this separation, SSA Holder do not need to be a military commander, and can be in a different command chain.

(1) ensure the activity is covered by a relevant SSA
(2) implement controls required to comply with all Conditions and Limitations on the SSA
(3) ensure space safety risks to people are eliminated or otherwise minimised so far as is reasonably practicable (SFARP) ►**GM**

GM GR.220(a)(3) – Duty to eliminate or otherwise minimise risk SFARP

1. **Purpose.** The DSSR is designed to achieve a safety standard commensurate with the safety standards established under the SLR Act. Additionally, cognisant that Defence is subject to the WHS Act, the DSSR assists commanders and managers with achieving those legislated obligations. The purpose of this regulation is to emphasise the WHS Act duties.

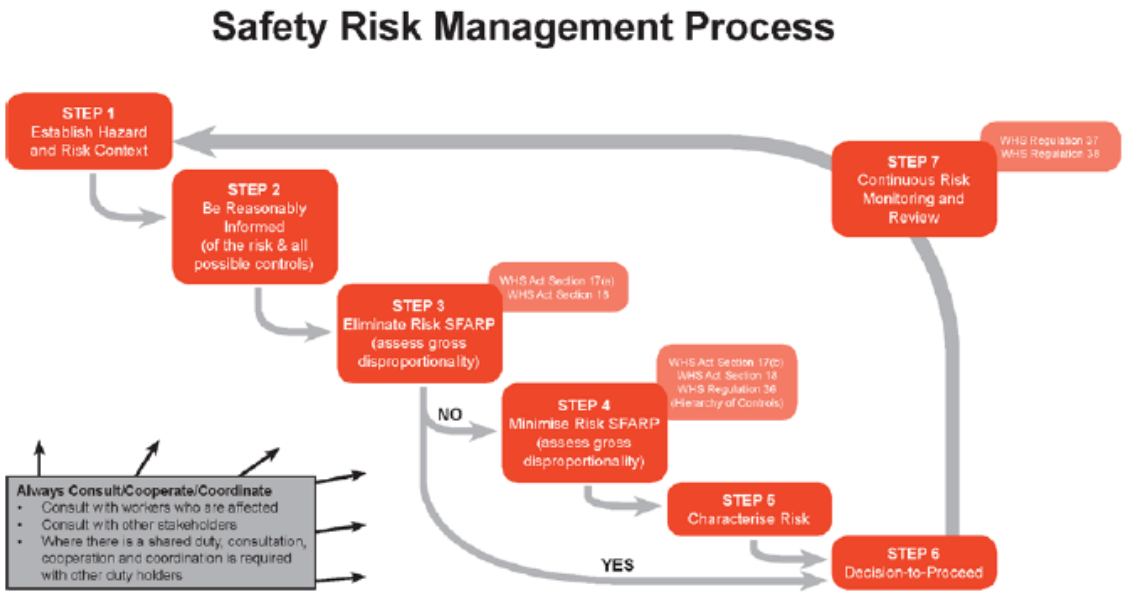
2. The following guidance material introduces space activity risk management in the context of the WHS Act. This guidance is not intended to be comprehensive; rather it provides an overview and points the reader to additional sources of information.

Risk management in the DSSP

3. The WHS Act requires safety risks to be eliminated so far as is reasonably practicable and if elimination is not reasonably practicable then risks must be minimised so far as is reasonably practicable. Risk minimisation requires all available and suitable controls be applied, in a regulated order of precedence, unless substantiated through a gross disproportionality argument. The legislated risk management process applies irrespective of the level of safety risk.

4. The DSSR have been established to work harmoniously with the WHS Act and 'amplify' certain provisions of that Act for management of hazards and risks associated with the scope of Defence space safety, as defined in GR.110. Safety risk management under DSSR aligns with the approach successfully applied in Defence aviation for many years, consisting of the following seven steps:

- Step 1. Establish hazard and risk context.
- Step 2. Be reasonably informed of the risk and all possible controls.
- Step 3. Eliminate risk SFARP.
- Step 4. Minimise risk SFARP.
- Step 5. Characterise risk.
- Step 6. Decision-to-proceed.
- Step 7. Continuous risk monitoring and review.



5. Guidance on the meaning and conduct of each of these seven steps is available in the Defence aviation advisory circular, AC 003-2018, Risk Management in the Defence Aviation Safety Program, which is available on the DASA public website. While this advisory circular is aimed at Defence aviation activities, the content is extensively applicable to Defence's space activities.

6. The remainder of this guidance material presents concepts that may assist commanders and managers with applying the above risk management approach.

Maintaining quantitative risk benchmarks

7. DSSR.LRP and DSSR.LFL present quantitative safety risk benchmarks for Mission Essential Personnel, Informed Personnel and the General Public, as explained in GM2 to GR.210(f)(1). Since meeting these benchmarks (or an agreed reduced level of safety as permitted under GR.130(b)) is a prerequisite for the issue of an SSA, commanders and managers must ensure their actions do not compromise these benchmarks, unless commanders are exercising the flexibility provision at GR.130(c) for a compelling operational imperative or emergency.

Exercising 'reasonable knowledge'

8. In determining whether a space safety risk control is reasonably practicable, the WHS Act requires a duty holder to take into account what the person concerned knows, or ought reasonably to know, about: (1) the hazard or the risk; and (2) ways of eliminating or minimising the risk.

9. Reasonable knowledge (ie what a person ought reasonably to know) of risks can be gained in multiple ways. The Safe Work Australia interpretive guideline, *Model Work Health and Safety Act - The Meaning of 'Reasonably Practicable'*, expands the concept of what a person ought reasonably to know (their 'state of knowledge') and includes the following sources of knowledge, among others, that are relevant to designers in the space context:

a. reputable standards

b. consulting workers and others in the industry

c. industry publications, and scientific and technical literature

d. analysing previous incidents, and

e. relevant WHS Regulations and 'codes of practice'.

10. The DSSR will assist commanders and managers in identifying and applying reasonable knowledge in the management of safety hazards, in particular via the AMC and the associated specifications and standards in the DSSP Manual of Standards (MOS). However, recognising that risk management is temporal and contextual, compliance with the DSSR will be a contributor, not a complete solution, to reasonable knowledge.

Risks outside the DSSP scope

11. The DSSR purposely constrains its focus to protecting human life, and hazards directly related to the space activity. GR.220(b)(4) emphasises that commanders and managers are responsible for managing all safety risks, regardless of whether they are covered by the DSSR. However, they do not receive the benefit of DSSR direction nor the Regulator's independent assurance.

(4) recognise that approvals in addition to an SSA may be required for certain Defence space activities, including but not limited to: ►GM
   i. approvals from Commonwealth, state/territory and local government departments, and
   ii. approvals from Defence's internal Regulators.

GM GR.220(a)(4) – Approvals outside the scope of the DSSP
1. **Purpose.** The DSSR constrains its focus to protecting human life, and hazards directly related to the space activity. SSAs provided by the Regulator

are similarly limited in scope. The purpose of this regulation is to make commanders and managers aware that other approvals may be required.

Additional approvals

2. Defence space activities may require various external (eg Commonwealth, state/territory and/or local government) and internal (eg Defence policy and regulatory) approvals prior to conducting space activities. Only where a particular government or Defence approval may directly affect space safety (within the scope of the DSSP), will the requirement be covered in the DSSR, and will be a prerequisite for the issue of an SSA.

3. The onus is on commanders and managers to identify and obtain all necessary approvals. As a service to commanders and managers, DSSP Manual Volume 3 (to be issued) will present a non-exhaustive list of candidate government and Defence approvals.

(b) For the duration of the space activity, commanders and managers who are responsible for the space activity must: ►**GM**

GM GR.220(b) – Ongoing duties

1. **Purpose.** Commanders and managers are directly responsible for the execution of Defence space activities, taking into account temporal and contextual risk issues when making operational decisions. The purpose of this regulation is to confirm their ongoing safety and other obligations.

(1) continue to meet the obligations in GR.220(a)
(2) continue to meet the requirements of the DSSR
(3) advise the SSA Holder where a planned activity might require a change to the SSA
(4) recognise that space activity risks outside the scope of the DSSP may require management, including but not limited to: ►**GM**
   i. damage to property, heritage sites and the environment
   ii. fulfilment of Defence's space capability requirements
   iii. health and safety outside the DSSP scope.

GM GR.220(b)(4) – Management of risks outside the scope of the DSSP

1. Per GR.110(a), the DSSR purposely constrains its focus to protecting human life, and hazards directly related to the space activity. Managing these safety risks will often contribute to the management of other Defence risks, for example protecting property, reputation and capability risks. However, those benefits are incidental, and will rarely be sufficient to fully manage those other risks.

2. This regulation identifies three risk domains where focused risk management effort, beyond what is incidentally provided by the DSSR, will probably be required by commanders and managers. The list is not intended to be exhaustive.

Damage to property, heritage sites and the environment

3. The Guidance Material to GR.110(a) identified the scope deltas between regulatory coverage for Australian civil space activities (as provided by the SLR Act) and the DSSR. One key difference was that the SLR Act regulates the protection of property, heritage sites and the environment, whereas the DSSR does not regulate these issues.

4. Although protecting Defence and civil property is not a focus for the DSSP, the DSSR does recognise that certain property damage can magnify the safety consequences of a space activity accident. The following examples, drawn from the DSSP Manual Volume 1 Chapter 1, are illustrative:

a. On the ground: Space object debris striking fuel storage facilities, chemical plants, multi-storey buildings, and so on, would probably result in multiple fatalities

b. On water: Space object debris striking ships and fixed platforms would present a high fatality risk to the often large number of occupants

c. In the air: Space object debris striking an aircraft would likely result in total fatalities,

d. In space: Modern satellites are increasingly used for safety-related activities (eg emergency communications, aircraft safe separation, medical services, etc), so damage from other space objects could credibly contribute to fatalities. This effect would be magnified if resultant space debris collides with other satellites.

5. Outside of protecting ‘assets with catastrophic potential’ (referenced in ASA’s Flight Safety Code), the DSSR otherwise provides no coverage of property. The DSSR also do not cover damage to heritage sites or the environment. Commanders and managers still retain full responsibility for managing these risks, but they do not receive the benefit of DSSR direction or the Regulator’s independent assurance.

Achievement of Defence’s space capability requirements

6. The DSSR provide no direct coverage of Defences’ capability requirements. When a particular attribute of a space object can have both safety and capability implications, for example cyber protection of a satellite datalink, only the safety elements are within scope of the DSSR.

Health and safety outside the DSSP scope

7. The DSSR endeavour to minimise duplication with extant Defence regulations, policies and systems that already manage health and safety effectively. For this reason, the DSSR do not cover those hazards that are

common across Defence, for example hazardous materials and common workplace hazards. Instead, the DSSR focus on hazards that are unique to space activities, and often require risk controls that may not be evident to the Defence space safety community. Furthermore, to reduce the complexity of the regulations, the DSSR focus only on the more severe hazards, where the loss of human life is a credible risk.

8. While commanders and managers remain responsible for the health of persons affected by a Defence space activity, they do not receive the benefit of DSSR direction or the Regulator's independent assurance.

Other risks

9. The numerous other risk dimensions, for example reputational, personnel, financial and others, are not covered by the DSSR.

10. While the DSSR do assess liability in relation to space accidents, it is primarily to gain insight into Defence's shared safety duties. The DSSR do not assess whether liability risks have been adequately addressed.

(c) The commander must inform the Defence Space Safety Regulator if the flexibility provision at GR.130(c) is invoked for a compelling operational imperative or emergency. ►**GM**

GM GR.220(c) – Notification of employing flexibility provision for a compelling circumstance

1. **Purpose.** GR.130(c) makes provision for commanders to deviate from the substantive requirements laid down in the DSSR in the event of compelling operational imperatives or emergencies. The purpose of this regulation is to require commanders to notify the Regulator if exercising this provision becomes necessary. For example, a commander is required to notify the Regulator if this flexibility provision is enacted to operate a satellite payload outside SSA Limitations to support to ADF members in an emergency.

Why notify the Regulator?

2. When this flexibility provision is enacted, commanders are required to notify the Regulator, who in turn uses this information for several purposes specific to the SSA:

a. to confirm the ongoing validity of the SSA (through confirming that re-compliance with the DSSR was re-established as soon as practicable after the event)

b. to confirm the commanders' use of the flexibility provision was likely to be credible and defensible in the circumstance. Importantly, the Regulator does not evaluate or second-guess the

commander's operational imperative, which will be taken at face value; rather, the Regulator confirms that:

(1) an operational imperative/emergency was identified

(2) compliance with the DSSR would probably have impeded that imperative

(3) the commander took reasonable steps in the circumstance to ensure safety risks were eliminated or otherwise minimised SFARP.

c. to identify opportunities to modify the SSA, so flexibility provisions are less likely to be needed in the future.

3. More generally, the Regulator uses the amalgamated information from these notifications to:

a. identify those DSSR elements that regularly trigger the use of flexibility provisions, to assess whether they might warrant changes (since it could suggest they are not well suited to Defence's unique military requirements)

b. identify possible systemic issues in Defence's approach to space activities (since over-use of flexibility provisions can be indicative of a system under stress).

How to notify the Regulator

4. The notification should be provided to the Regulator within a reasonable time after the emergency or compelling circumstances has concluded, nominally within 7 days. A short email to dasa.dspace@defence.gov.au will suffice, identifying:

a. the capability imperative/emergency that led to exercising the GR.130(c) flexibility provision

b. the regulation or SSA Condition/Limitation that impeded the capability imperative

c. the alternative approach that was adopted, and steps taken (cognisant of the circumstance) to ensure safety risks were eliminated or otherwise minimised SFARP

d. the steps that have/will be taken to return the system to its previous (DSSR compliant) state.

5. The Regulator will approach the notifier if further information is needed.

GR.300: Accidents, Occurrences and Investigations

GR.310 Occurrences

(a) The SSA Holder must have a system for investigating occurrences and take action to address any identified safety issues. ►**GM**

GM GR.310(a) – Investigating and resolving occurrences

1. **Purpose**. A key component of a generative approach to space safety is for occurrences to be identified, investigated and resolved locally. This includes determining what occurred, why it occurred, and what might prevent a similar occurrence in the future. The purpose of this regulation is to ensure SSA Holders implement and maintain an occurrence investigation system

What is an occurrence?

2. An occurrence under the DSSR is an incident, malfunction, defect, technical defect or exceedance of limitations that endangers or could endanger the safe operation of a space object. It is characterised by an event occurring that involves a safety-related portion of the space object, facility and/or supporting systems failing in some way that could credibly endanger a persons life. Each of the DSSR Parts provides guidance on what might constitute an occurrence within the scope of the DSSR. For avoidance of doubt, a space activity accident per GR.320 also constitutes a reportable occurrence.

3. A 'safety-related portion' is any aspect that has some control, or influence over safety risk controls, or is directly involved in, operational use of the space object/facility upon which the SSA was issued. Failure of a safety-related portion of the space object/facility may directly result in a loss of control of the space object; or exhibit, or could reasonably have been expected to, exhibit an unintended behaviour.

4. Space safety events are categorised into one or more of the following:

a. ***Operations events.*** Operations events are those safety events that degrade the performance of any of the approved risk controls that occurs during activities associated with operation of a space object.

b. ***Maintenance events***. Maintenance events are those safety events that degrade the performance of any of the approved risk controls during the conduct of maintenance activities. These safety events, at the time of identification, had not manifested during the conduct of operations.

c. ***Other support systems events***. Other support systems events that degrade the performance of any of the approved risk controls involving systems or services that functionally and/or physically support the conduct of safe operations. These safety events, at the time of identification, had not manifested during the conduct of operations.

SSA Holder actions on an occurrence

5. Under this regulation, the SSA Holder must, with all reasonable practicality, initiate appropriate levels of investigation to determine the root cause of an occurrence. This may include engaging the OEM to evaluate the circumstances and determine the likely cause.

6. The DSSR does not mandate a particular approach or depth of investigation; rather, the SSA Holder is expected to conduct an investigation that is proportionate to the seriousness of the occurrence and the likelihood of its recurrence. In deciding what is proportionate, the SSA Holder is expected to harness the space domain knowledge and experience of operators, engineers and others involved in the space activity.

7. The immediate actions that the SSA holder may take to eliminate and/or minimise the safety risks associated with the occurrence will vary on a number of factors. However, a likelihood/consequence risk assessment is expected to ultimately dictate the level of attention, timeliness and resources that are attributed to the actions.

(b) Occurrences must be reported to the Defence Space Safety Regulator.
►**GM**

GM GR.310(b) – Reporting occurrences to the Regulator

1. **Purpose.** In addition to implementing a system for investigating and acting on occurrences, the SSA Holder is required to report the occurrences to the Regulator. The purpose of this regulation is to identify the reporting requirements.

Why report to the Regulator?

2. The objective of the occurrence reporting, collection, investigation and analysis system is to use the reported information to contribute to accident prevention, and the improvement of space safety. Reporting occurrences makes the Regulator aware of an event that has caused or has potential to cause an unsafe condition in the current timeframe. This enables the Regulator to begin their assurance function in real time and allow for intervention (where necessary) without undue delay.

3. The aim of occurrence reporting is not to attribute blame or take other enforcement actions. Rather, they contribute to the Regulator's

assurance that the SSA Holder is effectively managing the SSA. Importantly, reporting does not remove the SSA Holder's responsibility to commence corrective actions to prevent similar occurrences in the future.

Reportable occurrences

4. Each of the three DSSR Parts identifies triggers for reportable occurrences. Ultimately, however, SSA Holder judgement is required in determining what is a reportable occurrence.

Timing

5. Accidents (causing deaths or serious injury) or serious incidents (having a high potential/likelihood of becoming an accident due to the lack of remaining controls) require immediate notification to the Regulator. Otherwise, the reporting time is 72 hours for an occurrence once deemed reportable. The 72 hour timeframe begins at the point where the SSA Holder has enough information to make an informed determination of the safety impact.

How to report

6. Due to the likely low number of reportable space safety occurrences, the Regulator does not mandate a particular reporting mechanism. An email to dasa.dspace@defence.gov.au will normally suffice, identifying:

a. the SSA identifier

b. date and time if relevant

c. description of the occurrence,

d. the results of any investigation to date, any actions they are taking or propose to take in order to correct the deficiency along with the submission of relevant data to support the actions.

7. Where security concerns exist regarding the reporting of an occurrence, the SSA Holder should agree on an alternative approach with the Regulator.

Regulator actions

8. The Regulator will review the occurrence details and SSA Holder actions to gain assurance that the risk to space safety has been eliminated or otherwise minimised SFARP. This is not a one-off assessment; rather it is an ongoing safety assurance activity conducted by the Regulator. It commences upon receipt of the occurrence and closes upon the

Regulator's decision that the risk no longer warrants on-going monitoring by the Regulator.

9. Where the Regulator does not have confidence that the safety risk or an emergent safety risk has been eliminated or otherwise minimised SFARP, the Regulator may recommend the SSA Holder to take particular actions. Failure to take those actions may result in a partial or full suspension of the relevant SSA, per GR.440(a).

GR.320 Independent Investigations

(a) The Defence Spaceworthiness Authority may direct that an independent safety investigation be conducted for an accident involving a Defence space object. ►**GM**

GM GR.320(a) – Independent safety investigations for accidents

1. **Purpose.** The Defence Instruction, Military Command Support Provision 3 (MCS3), requires the DSSP to encompass the independent investigation of accidents involving Defence space objects. The purpose of this regulation is to identify the circumstances requiring an accident investigation.

Accident investigations

2. An accident involving a space object occurs if a person dies or suffers serious injury as a result of the operation of the space object. In alignment with GR.310, the Regulator must be notified immediately when an accident has occurred.

3. Accident investigations are an essential element of a generative safety system. Defence investigates space activity accidents to explore the circumstances surrounding the accident, with the aim of preventing future accidents. The objective is not to provide a way of apportioning blame for an accident, or provide a way of determining the liability of any person in respect of an accident. At the same time, an investigation report must include factual material of sufficient weight to support the analysis and findings.

4. The following general requirements apply to all accident investigations:

a. The investigation must commence as soon as practicable to ensure all perishable information is collected and protected

b. The size and scope of the investigation, and the resources expended, must be commensurate with the classification and scale of the event and the anticipated safety outcomes

c. The investigation must follow a structured process to gather information, determine an event sequence, determine what active

failures occurred, analyse how and why those active failures occurred, and compile findings

d. Investigations must seek to identify the systemic factors that contributed to the event to enable appropriate and effective recommendations to be proposed to improve the safety system

e. Safety actions and recommendations must focus on the implementation (or improvement) of controls that will eliminate or minimise safety risks and prevent re-occurrence of the event in an enduring manner

f. In the course of an investigation, safety actions and recommendations should also be made against evidence of sub-optimal practices, even if not contributory to the event, in order to further enhance safety programs

g. Safety actions and recommendations in investigations must not recommend disciplinary or administrative action against individuals

h. Investigation reports must be communicated organisation-wide and distributed to other parties that are likely to benefit

i. Where safety actions are deemed necessary before investigations and/or reports are complete, relevant authorities must be informed of the immediate action required so that they can decide whether such action is appropriate, and implement accordingly.

5. Where security concerns exist regarding the independent investigation of an accident, the SSA Holder and DG DASA will collaboratively derive an alternate proposal that addresses the security concern, and will present it to the Defence Spaceworthiness Authority for approval.

6. **SSA suspension.** An SSA issued by the Regulator reflects their confidence that space safety risk management is credible and defensible. Pending the outcomes of an investigation, a space accident challenges that confidence. Accordingly, immediately after a space accident, the relevant SSA is suspended until the Regulator revokes the suspension.

7. **Investigative capability.** While the investigation of space activity accidents is a component of the DSSP, investigations should be conducted independently of the Regulator and any other party or entity that could conflict with, or influence, its objectivity. Cognisant of the likely low number of future Defence space activity accidents, Defence is unlikely to maintain an internal space investigative capability. Circa 2025, options for providing the independent investigative capability have not yet been explored.

Incident investigations

8. An incident is an occurrence associated with the operation of a space object that affects or could affect the safety of the operation of the space object or that involves circumstances indicating that an accident nearly occurred. The MCS3 does not make provision for the independent investigation of space activity incidents.

9. Incident investigations are an essential element of a generative safety system. Accordingly, GR.310(a) requires the SSA Holder to internally investigate space activity incidents. The Regulator will monitor the conduct of this internal investigation via the Occurrence Reporting obligation per GR.310(b).

10. Notwithstanding the lack of an explicit MCS3 provision, the Defence Spaceworthiness Authority may still direct an independent investigation for an incident, as a Command-led initiative.

Effect of the SLR Act

11. The SLR Act makes provision for the investigation of both accidents and incidents involving space objects launched from a launch facility in Australia or from an aircraft that is in the airspace over Australian territory, or space object returned to a place or area in Australia. Furthermore, the SLR Act includes "damage to the space object" as warranting investigation, although the SLR Rules partially constrain that provision.

12. Defence may be bound by the requirements in the SLR Act for accident and incident investigations, thus providing the Minister with powers to conduct an investigation for a Defence space object. DG DASA may pursue an agreement with the Minister for these roles to be conducted by Defence. However, a prerequisite for such an agreement would probably be for Defence to demonstrate that it has a credible investigation capability that addresses all space safety accidents and incidents. If an agreement is reached with the Minister, this GR will be updated.

(b) The SSA Holder, and others involved with the space activity, must cooperate with an independent accident investigation. ►**GM**

GM GR.320(b) – Cooperation with investigations

1. **Purpose.** The purpose of this regulation is to require the active cooperation of all people who might provide insight into the circumstances surrounding an accident.

Obligation to cooperate

2. The Defence Instruction, Military Command Support Provision 3 (MCS3) makes provision for the Defence Spaceworthiness Authority to

issue directions to Defence personnel, which are considered necessary or convenient for carrying out or giving effect to the DSSP. The MCS3 identifies accident investigations as an element of the DSSP; accordingly, Defence personnel may be compelled to cooperate with an accident investigation.

3. Where Defence is obtaining space services from Defence Industry, a contractual obligation to cooperate with an accident investigation may be necessary.

GR.400: Oversight and Enforcement

GR.410 Obligation to Cooperate

(a) The SSA Holder must: ►**GM**

(1) give the Defence Space Safety Regulator access to staff and data as required to support space safety assurance

(2) cooperate with the Defence Space Safety Regulator with a view to assuring compliance with the DSSR.

GM GR.410(a) – Obligation to cooperate with the Regulator's oversight

1. **Purpose.** Oversight is a fundamental role for a Regulator, as their primary responsibility is to assess compliance with regulations and standards, thereby promoting the required safety behaviours. The purpose of this regulation is to ensure SSA Holders are aware of, and cooperate with, space safety regulatory oversight.

The role of regulatory oversight

2. The effectiveness of the DSSP is underpinned by the suitability of, and the level of compliance with, the behaviours targeted by DSSR. Entities that operate within the regulatory framework maintain compliance in two ways:

a. by developing and implementing organisational systems, supported by processes and instructions, that address the regulations

b. by developing feedback mechanisms to verify that the processes and instructions have been followed, and remain suitable for meeting regulatory requirements.

3. Oversight is a systematic means of monitoring entities that operate within the regulatory framework for their level of understanding and observance of the regulatory system. Alignment with the regulatory system is reflected by the presence of a generative space safety culture driving adherence to policies and procedures that reflect behaviours consistent with safety objectives of the SLR Act.

4. The Regulator conducts oversight activities to assure ongoing compliance with the DSSR and the continued validity of SSAs. Regulatory oversight contributes to space safety by identifying potential compliance concerns that may then be further evaluated, and addressed if necessary. Compliance with behaviours targeted by the DSSR also mitigates systemic and human errors that often dominate hazardous safety events.

5. A natural consequence of regulatory oversight is that it also provides insight into the suitability and effectiveness of the regulatory controls themselves, which is essential for their ongoing development.

SSA Holder organisation

6. While the DSSR levy SSA Holder duties on a single person, in reality the SSA Holder functions will often be conducted by staff within, and outside, the SSA Holder's organisation and command chain. The contributing organisations may be in Defence, industry, national and international government entities, and others.

7. When conducting regulatory oversight, the Regulator will rarely constrain their oversight activities to the SSA Holder (the person). Rather, the safety behaviours required by the DSSR may be assessed across part or the entire dispersed SSA Holder organisation. The depth of assessment may be influenced by the domain experience of the particular organisation, the credible safety consequences of non-compliance and the likelihood that those consequences may transpire.

Cooperation

8. In order to facilitate the taking of appropriate oversight action, the SSA Holder, and all organisations that support the SSA Holder in implementing the SSA Holder duties, are required to:

a. cooperate with the Regulator and their staff with a view to assuring compliance with the DSSR

b. exchange information on identified infringements with the Regulator,

c. give access to the Regulator and their staff to data as required to support space safety assurance.

Note: Any concerns regarding data sharing, including issues of security or sensitivity, must be communicated to the Regulator.

Obligations of the Regulator

9. In conducting oversight, the Regulator will:

a. ensure its oversight decisions are transparent and evidence-based

b. ensure compliance is always assessed in the context of it being a step towards achieving a particular safety behaviour

c. establish requirements that any response to a non-compliance is effective, fair, proportional and graduated

d. promote a generative safety culture that supports voluntary reporting of safety issues, underpinned by a just culture that does not focus on apportioning blame (but nonetheless is intolerant of actions that are negligent or cause deliberate harm),

e. take necessary measures to ensure appropriate confidentiality of information received.

10. With the permission of the regulated entity, the Regulator may disseminate space safety information both within and outside Defence, where that dissemination may contribute to Defence or international space safety.

GR.420 Management of Findings

(a) When objective evidence is found showing non-compliance with the applicable requirements of the DSSR, the Defence Space Safety Regulator will issue a finding classified as follows: ►**GM**

(1) Level 1 Finding: Any non-compliance with a DSSR requirement that presents a credible serious hazard to space safety and no organisational safety controls remain in place or the organisational safety controls in place are not effective to treat the hazard

(2) Level 2 Finding: Any non-compliance with a DSSR requirement that presents a credible hazard to space safety and organisational safety controls remain but the total effectiveness is minimal to treat the hazard

(3) Level 3 Finding: Any non-compliance or potential problem that, if left untreated, would likely manifest into a credible hazard to space safety.

GM GR.420(a) – Management of Findings

1. **Purpose.** Making regulatory findings is a core role for a Regulator, as it involves assessing evidence to determine compliance with regulations, and then making decisions on whether further action is needed. The purpose of this regulation is to define the classification system for findings employed by the Regulator, to enable effective coordination with the SSA Holder.

2. Findings will be classified and released to the Defence Spaceworthiness Authority as part of periodic safety assessments that capture all relevant information received through space safety reporting systems and space safety assurance activities.

GR.430 Action on Findings

(a) After receipt of notification for a Level 1 or Level 2 finding, the SSA Holder must, to the satisfaction of, and within a period agreed by, the Defence Space Safety Regulator: ►**GM**

(1) implement an immediate action to eliminate or otherwise minimise SFARP, the space safety risk associated with the non-compliance

(2) identify the root cause of the non-compliance

(3) define a corrective action plan

(4) demonstrate effective corrective action implementation.

GM GR.430(a) – Action on findings

1. **Purpose.** The making of a Level 1 or Level 2 finding by the Regulator indicates that a regulatory non-compliance has been identified that presents a credible hazard to space safety. The purpose of this regulation is to identify the actions that must be taken by the SSA Holder to address a Level 1 or Level 2 finding.

Immediate action

2. Upon being notified of a Level 1 or Level 2 finding, the SSA Holder is expected to implement immediate action to ensure safety risks are eliminated or otherwise minimised SFARP. Cognisant that risk management is temporal and contextual, the actions might range from immediate suspension of all space activities through to the imposition of a temporary risk control.

Root cause analysis

3. Identifying the root cause of a regulatory non-compliance is an essential step in resolving the finding. It is important that the analysis does not primarily focus on establishing whom or what caused the non-compliance but why it was caused. Establishing the root causes of a non-compliance often requires an overarching view of the events and circumstances that led to it, to identify all possible systemic and contributing factors (regulatory, human factors, organisational, managerial, cultural, technical, etc) in addition to the direct factors.

4. A narrow focus on single events or failures, or the use of a simple method such as fault tree, to identify the chain of events that led to the non-compliance may not properly reflect the complexity of the issue. This may then give rise to the risk that important factors that need to be addressed in order to prevent recurrence will be ignored. Such inappropriate or partial root-cause analysis often leads to defining ‘quick fixes’ addressing the symptoms of the non-compliance only. A peer review of the results of the root-cause analysis may increase its reliability and objectivity.

5. A system description of the organisation, considering organisational structures, processes and their interfaces, procedures, staff, equipment, facilities and the environment in which the organisation operates will support both root-cause (reactive) and hazard (proactive) analyses.

Corrective action

6. Corrective action is the action taken by the SSA Holder to eliminate or mitigate the root causes and prevent recurrence of an existing detected non-compliance, or other undesirable condition or situation. Proper determination of the root cause is crucial for defining effective corrective actions to prevent recurrence.

7. The corrective action plan links individual root causes and corrective actions defining the strategy to prevent non-compliance recurrence. It documents the expected objective quality evidence required to validate the effectiveness of the corrective action and the timeline for implementation (inclusive of collective evidence to validate effectiveness) of each corrective action.

(b) After receipt of notification for a Level 3 finding, the SSA Holder must: ►**GM**

(1) manage the finding internally through their own management system

(2) implement actions as necessary to address the non-compliance or potential problem.

GM GR.430(b) – Action upon notification of a finding

1. **Purpose.** The making of a Level 3 finding by the Regulator indicates a regulatory non-compliance or potential problem that, if left untreated, would likely manifest into a credible hazard to space safety. The purpose of this regulation is to identify the actions that must be taken by the SSA Holder to address a Level 3 finding.

Corrective actions

2. Unlike Level 1 or Level 2 findings, the Regulator does not prescribe steps to resolve a Level 3 finding; rather, the expectation is that the SSA Holder will adopt an approach proportionate to the seriousness of the non-compliance.

GR.440 Suspension of a Space Safety Authorisation

(a) The Defence Space Safety Regulator may partially or fully suspend the relevant SSA if: ►**GM**

(1) the SSA Holder does not comply with the actions identified in GR.430(a)

(2) a Condition or Limitation on the SSA is contravened

(3) the Defence Space Safety Regulator considers, for reasons associated with elevated safety risks to ADF members or other persons, the SSA should be suspended.

GM GR.440(a) – Suspension of an SSA

1. **Purpose.** The option of enforcement is an essential tool for a Regulator. However, it needs to be used judiciously, cognisant of the consequences where a culture of non-compliance is allowed to develop. The purpose of this regulation is to identify the circumstances where the Regulator may take the enforcement action of partially or fully suspending an SSA.

Reasons for suspension

2. The regulation lists three circumstances that may lead to the suspension of an SSA. Expanding on those circumstances:

a. ***Not acting on a Level 1/2 finding to the Regulator's satisfaction.*** The issue of a Level 1 or Level 2 finding reflects a marked reduction in the Regulator's confidence that Defence is safely managing the space activity, and urgent action is required. Failure to take timely and appropriate action undermines the Regulator's confidence that the space activity can be safely conducted.

b. ***Contravening a Condition or Limitation.*** Conditions on an SSA reflect an agreement with the SSA Holder to address a system deficiency prior to an agreed event or time, and in the meantime may reflect an elevated level of risk. Limitations on an SSA are imposed where a limitation on the conduct of the space activity is necessary to maintain a credible and defensible level of space safety. Contravening either of these risk controls will generally mean the space activities present an elevated level risk to what was originally agreed by the Regulator in issuing the SSA.

c. ***Other reasons.*** The regulation makes a general provision for the Regulator to suspend the SSA should they become aware that a space activity is presenting a markedly elevated safety risk, the risk is not being eliminated or otherwise minimised SFARP, and an extended period of risk exposure (pending the making and resolution of a Level 1 finding) is not defensible.

Regulator's actions preceding a suspension

3. The Regulator's risk-based approach enables them to make enforcement decisions that are based on an assessment of safety risk, are proportionate to that risk and that consider the best use of its range of regulatory tools to respond. In making enforcement decisions, the Regulator will:

a. establish requirements so that any representations from the entity, or any other party with a direct concern, who are subject to the enforcement decision are considered and addressed in the decision

b. provide for notification of the decision to all affected entities,

c. ensure that the decision notifications contain reasons for the decision.

4. However, the DSSP Manual Volume 1 Chapter 3 also makes provision for the Regulator to immediately react to a safety problem and to inform the relevant interested parties of actions that should be taken to address the hazard. The Regulator shall determine the timeline and required actions, in consultation with the SSA Holder, based on the nature and severity of the identified safety hazard. Where practicable, the Regulator will notify the Defence Spaceworthiness Authority prior to any enforcement action that may appreciably affect Defence space capability.

Consequences of a suspension

5. The Defence Instruction, Military Command Support Provision 3 (MCS3), precludes the Regulator from giving directions to Defence personnel. Hence, the Regulator cannot direct that the SSA Holder resolve the issue that causes the suspension. Rather, enforcement action is limited to the possible partial or full suspension the SSA.

6. An SSA suspension may indicate a non-compliance with the Defence Instruction. The MCS3 states that Defence personnel to whom an SSA is issued must comply with, and ensure Defence personnel whom they command or control comply with, any Condition of the SSA. There is a standard Condition on all SSAs outlining that the Holder must continue to comply with the DSSR. A failure to meet DSSR may constitute a non-compliance with MCS3. Hence, the Regulator would inform the Defence Spaceworthiness Authority of the possible MCS3 non-compliance. Further actions, for example informing the SSA Holder's senior command chain, would be at the discretion of the Defence Spaceworthiness Authority.

Partial vs full SSA suspension

7. GR.210(a) states that an SSA must be obtained before commencing a Defence space activity within the scope of the DSSP. Should the SSA be fully suspended, further space activities are not permitted under the DSSP. The decision to continue with the space activity in the absence of an SSA would fall to the Defence Spaceworthiness Authority, who would need to weigh the likely elevated level of risk resulting from the absence of regulation (and the safety deficiencies that led to the SSA being suspended) with the operational requirement for the capability.

8. GR.210(g)(2) makes provision for the Regulator to apply Limitations to an SSA when the proposed space activity does not meet an element of the DSSR, and the Regulator concludes a limitation on the conduct of the space activity is necessary to maintain a suitable level of space safety. A partial suspension of an SSA would have the same effect as applying a Limitation to the SSA. Depending on the expected timeline to resolve the safety deficiency, the Regulator may elect to re-issue the SSA with Limitations rather than partially suspend the SSA.

9. The decision whether to partially or fully suspend an SSA would depend on the extent and gravity of the regulatory non-compliances. Generally, a full suspension may be warranted where the non-compliances are so pervasive that the Regulator is not confident that even a subset of the space activities could be conducted safely.

Annex A: DSSR Parts

See menu page

- DSSR.LFL, *Launch Facility Licence*
- DSSR.LRP, *Launch and/or Return Permit*
- DSSR.POP, *Payloads and Orbital Permit*